

2009

## Graduate Catalog, 2009-2010

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# University of Connecticut

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GRADUATE CATALOG  
2009 - 2010

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## **UNIVERSITY ACCREDITATION**

The University of Connecticut is accredited by the New England Association of Schools and Colleges.

## **AFFIRMATIVE ACTION POLICY**

The University of Connecticut policy prohibits discrimination in education, employment, and in the provision of services on account of race, ethnicity, religion, sex, age, marital status, national origin, ancestry, sexual orientation, disabled veteran status, physical or mental disability, mental retardation, and other specifically covered mental disabilities.

# GRADUATE SCHOOL CALENDAR

## SUMMER SESSIONS 2009

The summer calendar and detailed information concerning the Summer Sessions may be obtained from the Registrar's Office. For course offerings, registration procedures, fees, and deadlines, please consult <<http://www.summersession.uconn.edu/summer/>>.

The conferral date for Summer 2009 degrees is August 24, 2009 (Monday). The last day for degree candidates to submit thesis and dissertation final copies and related paper work to the Graduate School for August conferral is Thursday, September 3, 2009.

## FALL SEMESTER 2009

Mon.	Aug.	31	Fall semester classes begin
Mon.	Sept.	7	Labor Day (no classes)
Mon.	Sept.	14	Last day to complete course registration without penalty fee(s) Last day to drop a course without "W" (Withdrawal) Course registration via the Student Administration System closes
Mon.	Nov.	2	Last day for graduate students to drop a course without major advisor's written recommendation and Graduate School permission Course registration via the Student Administration System begins on the Storrs campus for Spring semester 2010
Sun.	Nov.	22	Thanksgiving recess begins
Sat.	Nov.	28	Thanksgiving recess ends
Fri.	Dec.	11	Last day of Fall semester classes
Mon.	Dec.	14	Final examinations begin
Sat.	Dec.	19	Final examinations end
Sun.	Dec.	20	Conferral date for Fall 2009 degrees
Wed.	Dec.	30	Last day for degree candidates to submit thesis and dissertation final copies and related paper work to the Graduate School for December conferral

## SPRING SEMESTER 2010

Tues.	Jan.	19	Spring semester classes begin
Mon.	Feb.	1	Last day to complete course registration without penalty fee(s) Last day to drop a course without "W" (Withdrawal) PeopleSoft course registration system closes
Sun.	March	7	Spring recess begins
Sat.	March	13	Spring recess ends
Mon.	March	29	Last day for graduate students to drop a course without major advisor's written recommendation and Graduate School permission
Fri.	April	30	Last day of Spring semester classes
Mon.	May	3	Final examinations begin
Sat.	May	8	Final examinations end
Sat.	May	8	Graduate Commencement Ceremony 2010
Tues.	May	18	Last day for degree candidates to submit thesis and dissertation final copies and related paper work to the Graduate School for May conferral

Faculty members should construct course syllabi with awareness of religious holidays.

<http://www.registrar.uconn.edu>

## BOARD OF TRUSTEES\*

The Honorable M. Jodi Rell, Governor of the State of Connecticut  
*president ex officio* ..... Hartford  
 The Honorable Mark K. McQuillan, Commissioner of Education  
*member ex officio* ..... Hartford  
 The Honorable F. Philip Prelli, Commissioner of Agriculture  
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 The Honorable Joan McDonald, Commissioner of Economic and Community Development  
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 Lawrence Klobutcher, Ph.D., *Associate Dean of the Graduate School – Health Center*  
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 Anne Lanzit, B.S., *Program Administrator*  
 Melanie Dolat, M.S., *Program Specialist*  
 Terra A. Blakeslee, B.A., *Administrative Services Specialist II*



### GRADUATE FACULTY COUNCIL

The Graduate Faculty Council is the legislative body of the Graduate School. It establishes academic policy for graduate education, except for those areas reserved to the Board of Trustees, to the University Senate, or to the faculties of other colleges and schools. The 60 members, representing specific content areas derived from constituent Fields of Study, are elected to serve three-year terms. The membership includes two voting student members chosen by the Graduate Student Senate. The President, the Provost, the Vice Provost and Dean of the Graduate School, and certain other administrative officers of the Graduate School are nonvoting ex officio members. The Council, representing the Graduate Faculty at large, exercises legislative authority in such areas as admissions criteria, curricular and degree requirements, new course approval, academic program review, and the like.

### The Executive Committee

The Executive Committee has both executive and advisory responsibilities to the Graduate Faculty Council and to the vice provost. Its membership is drawn from the Graduate Faculty Council and from

the Graduate Faculty at large. The dean serves as chair. The Executive Committee is the steering committee for the Graduate Faculty Council. It advises the vice provost on matters of policy and regulatory interpretation, approves plans of study and dissertation prospectuses, and considers on the basis of academic merit proposals to modify or to create fields of study and areas of concentration. Members include:

William Abikoff, Ph.D., *Professor of Mathematics*  
 Mark Aindow, Ph.D., *Professor of Chemical, Materials, and Biomolecular Engineering*  
 Arlene D. Albert, Ph.D., *Professor of Molecular and Cell Biology*  
 Janet Barnes-Farrell, Ph.D., *Professor of Psychology*  
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Suman Singha, Ph.D., *Vice President for Research and Dean of the Graduate School (ex officio), Chair*  
 James G. Henkel, Ph.D., *Associate Vice Provost for Research and Graduate Education and Associate Dean of the Graduate School (ex officio)*  
 Lawrence Klobutcher, Ph.D., *Associate Dean of the Graduate School – Health Center (ex officio)*  
 Thomas B. Peters, Ph.D., *Program Director (ex officio), Secretary*



### Student Responsibility

In accepting admission, the student assumes responsibility for knowing and complying with the regulations and procedures set forth in this Catalog and subsequent ones, as appropriate.

### Exceptions to Policy

The approval of an exception to Graduate School policy is publicized to all interested parties. Persons who perceive that an approved exception to Graduate School policy has created a conflict of interest or has affected them adversely should make their concerns known to the Dean of the Graduate School.

\* As of December 2008

# As of March 2009

# ADMISSION

To study for a graduate degree, a student must be admitted by the Dean of the Graduate School. No course work taken before the date of admission to the Graduate School may be included on a plan of study for a graduate degree unless specific approval has been granted by the Dean of the Graduate School.

Unless students complete appropriate course work for credit in the semester or summer for which they have been admitted, or a written request for a limited postponement has been submitted to and approved by the Graduate School before the end of that semester or summer, the admission becomes invalid. If this occurs, the student must apply for readmission with no certainty of being accepted.

Students may earn a graduate degree only in a program to which they have been admitted. Ordinarily, a student is granted admission to pursue graduate study in one field at a time. On occasion, however, a student may be permitted with approval to enroll concurrently in two different programs.

There are several approved dual degree programs providing the opportunity for the student to pursue work toward two degrees simultaneously. These programs often involve the sharing of a limited and specified number of course credits between the two degrees. The list of dual degree programs offered by the Graduate School and the other participating schools and colleges within the University (e.g., the Schools of Law, Medicine, and Dental Medicine) can be found in the index under "Dual Degree Programs." In some cases, separate applications must be filed for each of the two degree programs.

To be admitted to Regular status and to begin studies, an applicant must hold a baccalaureate from an accredited college or university or present evidence of the equivalent. The applicant must submit to the Graduate School official transcripts covering all previous work, undergraduate and graduate, which must be of at least the following quality: a cumulative grade point average of 3.0 for the entire undergraduate record, or 3.0 for the last two years, or excellent work in the entire final year. The grade point average is computed on the basis of the following scale: A = 4.0, B = 3.0, C = 2.0, D = 1.0, F = 0. Applicants from foreign colleges and universities must meet equivalent standards of eligibility and are expected to submit official transcripts showing all work completed. All advanced post-baccalaureate course work is considered, as well. Failure to send transcripts from all educational institutions, regardless of whether or not a degree was received, may be grounds for cancellation of admission.

Applicants to most programs are encouraged to submit test scores from the General Test of the Graduate Record Examinations to the department or program to which they are applying.

Many departments or programs require or recommend that test scores be submitted for the Graduate Record Examinations and/or the Miller Analogies Test. Letters of recommendation, usually three, preferably from members of the academic profession, are required by all departments.

Meeting the minimum requirements does not guarantee admission. Applicants must show promise of superior achievement and must have specific preparation for the course of study they wish to undertake. If their records indicate deficiencies, they may be refused admission or required either to take background courses without graduate credit or to demonstrate by examination that they have acquired the requisite knowledge or skills for graduate study. In addition, since each graduate program has a limited number of places, the successful applicant must have a record competitive with those of other applicants in the same field.

**Regular and Provisional Status.** Application procedures and required credentials for admission to Regular status are specified above. Occasionally students who hold the baccalaureate but do not qualify fully for admission to Regular status may give evidence of ability in their chosen field sufficiently convincing to warrant their provisional admission to a master's degree program only. (Applicants are not admitted provisionally to a doctoral program.) If a Provisional student's initial twelve credits of completed course work (excluding 1000's-level courses) meets the minimum scholastic requirement of the Graduate School, he or she is accorded Regular status. Otherwise, he or she is subject to dismissal. In situations where special consideration is warranted, and only upon the specific request of the major advisor, the dean may approve changing a student to Regular status if at least nine credits of advanced course work have been completed with superior grades. Regular, not Provisional, status is required for degree conferral.

**Language-Conditional Status.** International graduate applicants whose English language proficiency does not meet the minimum standard to qualify for Regular admission (a computer-based score of 213 or greater, or a written test score of at least 550, on the Test of English as a Foreign Language, or an overall band score of 6.5 on the IELTS (International English Language Testing System) may be admitted at the master's level as Language-Conditional Students. Those admitted on F-1 visas must be fully academically admissible as a Regular student (see above). Those admitted on J-1 student visas may be academically admissible as a Provisional student (see above).

**Admission to the D.P.T. Program.** The Department of Physical Therapy in the Neag School of Education offers study leading to the degree of Doctor of Physical Therapy. In addition to the standard requirements of the Graduate School, applicants must have the required prerequisite courses which include cellular biology, comparative anatomy and physiology (8 credits), general chemistry (8 credits), general psychology, pre-calculus or calculus, statistics, and general physics (8 credits). Recommended courses include biology of

human health and disease, organic chemistry with lab, human development, human genetics, biochemistry, fundamentals of nutrition, nutrition for exercise and sport, developmental psychology, physiological psychology, abnormal psychology, and pathology.

**The Sixth-Year Diploma in Professional Education.** This post-master's diploma program is offered by the School of Education. It is not administered by the Graduate School. Inquiries regarding the Sixth-Year Diploma in Professional Education should be addressed to the Office of the Dean, School of Education, 249 Glenbrook Road, Unit 2064-C, Room 227, Storrs, Connecticut 06269-2064.

**Admission to the D.M.A. Program.** Applicants are expected to demonstrate outstanding musical ability and to have a superior record of previous performance and scholarship. A completed master's degree is required for admission. Holding a master's degree from this or from any other institution, however, does not render the applicant automatically admissible to the D.M.A. program. Areas of Concentration offered are Conducting and Performance (specifically cello, piano, trumpet, violin, viola, and voice). A personal audition is required as part of the application process. Inquiries should be addressed to: Director of Graduate Studies, Department of Music, 876 Coventry Road, Unit 1012, Storrs, Connecticut 06269-1012.

**Admission to Ph.D. Programs.** Applicants to Ph.D. programs are expected to demonstrate outstanding ability and to show on the record of previous scholarship and experience that they are likely to do superior creative work in their respective fields. Holding a master's degree from this or any other institution does not render the applicant automatically admissible to a doctoral program. Certain master's programs, on the other hand, are open only to applicants likely to qualify for doctoral study. In general, doctoral applicants must meet all admission requirements for the master's degree as Regular graduate students and must present evidence that they are capable of doing independent work of distinction.

**Visiting Students.** Individuals who otherwise would qualify for admission with Regular status but who do not seek a degree from this University may be permitted to take courses for an unspecified time if their work here meets Graduate School standards. Special students may be working toward an advanced degree at another institution, in which case they are presumed to be fully qualified to pursue degree work at this University. Others may wish to take courses as Special students for personal enrichment.

**Graduate Certificate Programs.** An earned baccalaureate degree (or its equivalent) is required for admission. Each certificate program sets specific admissions criteria, including minimum grade point average and standardized test scores (including the Test of English as a Foreign Language, if required). Detailed information concerning admissions criteria and procedures can be obtained from the coordinator of the specific graduate certificate program or from the Graduate Admissions Office.

**Other Non-Degree Categories.** Individuals with appropriate preparation who have not been admitted to any of the admissions categories described above may take courses as non-degree students. All non-degree students are presumed to be taking courses for reasons other than earning a certificate, sixth-year diploma in professional education, or a graduate degree at this institution. Should they later be admitted to a graduate degree program at this University, usually not more than six credits will be acceptable toward the master's degree. In any event, such credits accepted toward a graduate degree must be of B (not B-) quality or higher. For further information, contact the College of Continuing Studies, One Bishop Circle, Unit 4056, Storrs, Connecticut 06269-4056.

**Admission of University Faculty and Staff.** University of Connecticut faculty members who hold tenure or a rank higher than instructor leading to tenure ordinarily may not earn a graduate degree at this institution. Exceptions to this policy may be made by the Dean of the Graduate School, with the advice of the Executive Committee of the Graduate Faculty Council, who must be satisfied that the intended program is in the best interest of the University.

**New England Regional Student Program.** The University of Connecticut participates in a regional program administered by the New England Board of Higher Education. This program, known as the New England Regional Student Program, permits qualified residents of the New England states to study with reduced out-of-state tuition privileges. \*

The purpose of the program is to expand opportunities in higher education for New England residents by making available on a substantially equal basis to all students those programs not commonly offered at every institution. This practice tends to reduce duplication of courses and thus to utilize most efficiently the higher educational facilities in each state.

Detailed information about this program can be obtained from the Graduate School, 438 Whitney Road Extension, Unit 1006, Storrs, Connecticut 06269-1006, or from the New England Board of Higher Education, 45 Temple Place, Boston, Massachusetts 02111.

**Application Processing Fee.\*** A non-refundable fee of \$55 for electronic submission or \$75 for paper submission must accompany the application. It may not be applied toward other charges. This fee must accompany every application submitted except for a doctoral degree program to follow immediately a master's degree program in the same field at this University, or for re-application requested by the Dean.

**Application Deadlines.** Students are advised to file the application for admission several months in advance of the first semester of course work. Because many programs are filled far in advance of

application deadlines, prospective students are encouraged to submit their applications for admission as early as possible. Applicants should check with appropriate academic departments concerning deadlines. All credentials, including official transcripts covering all undergraduate and graduate work taken up to the time of application, as well as the non-refundable processing fee, must also have been received by deadline dates.

**International Applicants.** Students who are not United States citizens or permanent resident aliens must meet additional requirements before their admission is finalized. They must present documentary evidence of their ability to meet all expenses for at least the first year of study and an acceptable plan for financing the remainder of their program. Students whose native language is not English must show evidence of proficiency in the English language by having earned either a computer-based score of at least 213 or a written score of at least 550 on the TOEFL (Test of English as a Foreign Language), or an overall band score of 6.5 on the IELTS (International English Language Testing System). Some departments require the Test of Spoken English (TSE) or the Test of Written English (TWE). All graduate students who will be serving as teaching assistants will be required to present evidence of competence in spoken English. This may take the form of a score of 50 or higher on the Test of Spoken English if the student's native language is not English and if the student does not hold a degree from an anglophone college or university. Further information is available from the Graduate Admissions Office.

**Application Forms and Instructions.** With the exception of the programs listed below, application materials may be obtained by writing to the Graduate School, 438 Whitney Road Extension, Unit 1006, Storrs, Connecticut 06269-1006. The application may also be completed and filed electronically from the Graduate School's Web site at <http://www.grad.uconn.edu>.

Inquiries regarding the Master of Business Administration should be addressed to the director of that program, School of Business, 2100 Hillside Road, Suite 238, Unit 1041-MBA, Storrs, Connecticut 06269-1041. Inquiries regarding graduate degree programs located at the University of Connecticut Health Center should be addressed to: University of Connecticut Health Center, Graduate Student Affairs Office, Room MC 3906, Farmington, Connecticut 06030. Inquiries regarding the Master of Social Work, should be directed to the School of Social Work, University of Connecticut, 1798 Asylum Avenue, West Hartford, Connecticut 06117-2698. Inquiries regarding study in Law should be directed to the School of Law, 55 Elizabeth Street, Hartford, Connecticut 06105-2296.

**Supplementary and Departmental Transcripts.** If a student is admitted before

completing a baccalaureate or graduate degree or additional non-degree course work which is in progress at the time of application, admission is conditional on the completion of the degree or course work and the submission to the Graduate School by the end of the first semester of study of a satisfactory supplemental official transcript. A duplicate set of official transcripts of all work taken prior to the commencement of work in the Graduate School should be sent to the student's major advisor. Until all transcripts have been received, the plan of study will not be approved. All transcripts submitted, including test scores, become the property of the Graduate School and are not returnable.

\* Fees are subject to change without notice.

# ADVISORY SYSTEM

Degree programs are planned by the advisory committee after consultation with the student. There is considerable flexibility in meeting special needs insofar as these are consistent with the regulations of the Graduate School. A degree program may entail course work in more than one field of study, but each program must include a coherent emphasis within one existing field of study and area of concentration, if applicable.

A major advisor must be appointed at the appropriate level by the Dean of the Graduate School, by authorization of the President of the University, to advise in a particular field of study or area of concentration. In applying for admission, an applicant may indicate a preference for a particular major advisor. If at the time of admission an applicant expresses no preference, or if the preferred advisor is unable to accept, another may be appointed. Since consistency of direction is important, a durable relationship between the student and advisor should be formed as early as possible. Occasionally, it may be desirable or appropriate for a student's degree program to be directed by co-major advisors (not more than two). Each co-major advisor must hold an appropriate appointment to the graduate faculty in the student's field of study and area of concentration (if applicable).

If a change of major advisor becomes necessary for any reason, the student must file a special form, bearing the signatures of the former advisor and the new advisor, with the Graduate School. The signature of the former major advisor is requested for informational purposes only. It does not, in any way, signify permission or consent on the part of the former major advisor.

If a major advisor decides that it is not possible to continue as a student's major advisor and wishes to resign, the Graduate School must be notified in writing as soon as possible. The student is then provided with a reasonable opportunity to arrange for a new major advisor. If a new major advisor is not identified within six weeks of the resignation of the former major advisor, the student's graduate degree program status is terminated. A student whose status has been terminated may request a hearing before the Associate Dean by filing a written request within 30 days of receipt of the letter of termination.

The advisory committee of a master's degree program student is formed after consultation between the major advisor and the student and must include at least two associate advisors, at least one of whom must hold a current appointment to the graduate faculty of the University of Connecticut. An associate advisor must possess suitable academic or scientific credentials in the field of study of the degree. The advisory committee

should be formed before the student has completed twelve credits of degree program course work and shall then supervise the remainder of the student's degree program.

The advisory committee of a doctoral degree program student is formed after consultation between the student and the major advisor and shall include at least two associate advisors with suitable academic or scientific credentials. The major advisor and at least one associate advisor shall be members of the graduate faculty appointed to advise doctoral students in the student's field of study and area of concentration, if applicable. In addition to the three or more members chosen in the usual way, another member, ordinarily a member of the graduate faculty outside the student's field of study but in a related field, may be appointed by the Dean of the Graduate School. If the committee consists of three members, committee decisions must be unanimous. If the committee consists of four or more members, committee decisions are considered adopted if there be no more than one negative vote, although the major advisor must always vote in the affirmative. Committee decisions involving the outcome of the General Examination, approval of the dissertation proposal, oral defense of the dissertation, or approval of the dissertation itself, however, must be unanimous in any event.

A member of the University of Connecticut Graduate Faculty who has retired from active service may be considered for appointment as Major Advisor for a newly-admitted master's or doctoral student. Application is made to the Executive Committee of the Graduate Faculty Council and requires submission of a curriculum vita and letters of support as well as the endorsement of the appropriate department or program head. The retired faculty member must present substantial evidence of ongoing research and scholarly activity in the field. Separate application is required for each newly-admitted student for whom a retired faculty member wishes to serve as Major Advisor. Such appointments are made by the Dean with the advice of the Executive Committee.

A current graduate student may *not* serve as a member of another graduate student's advisory committee.

If deemed appropriate by a graduate student's major advisor, the major advisor may request that a suitably qualified external associate advisor be appointed to the student's advisory committee by writing to the Graduate School. The request should be accompanied by a curriculum vita for the individual being recommended for appointment. Such appointments are made on the basis of advanced training and significant experience in the field of study. An appointment as external associate advisor is limited to an individual student's advisory committee and does not imply in any way membership on the Graduate Faculty of the University. Ordinarily, not more than one external associate advisor is appointed to any master's or doctoral student's advisory committee. The major advisor and at least one associate advisor on any

doctoral student's advisory committee must be members of the University of Connecticut Graduate Faculty.

The major advisor is responsible for coordinating the supervisory work of the advisory committee. Therefore, when the major advisor is to be on leave or is not in residence, it is the major advisor's responsibility to appoint an acting major advisor. The acting major advisor must be a member of the Graduate Faculty or be fully eligible for such an appointment. The acting major advisor will assume all duties and responsibilities of the major advisor for the duration of the appointment. The major advisor will inform the Graduate School of the appointment and provide any information that may be required concerning the credentials of the acting major advisor.

Students' advisory committees are responsible directly to the Dean of the Graduate School. For advisory committees of doctoral students, it is required that the written consent be obtained from the Graduate School before any changes are made in the membership of an advisory committee which has been duly established.



## FEES AND EXPENSES

The schedule of fees contained in this section is expected to prevail during the 2009-2010 academic year, but the Board of Trustees and the Board of Governors for Higher Education reserve the right, at any time, to authorize changes in fees and to establish new fees applicable to all currently enrolled students.

All fees are collected by the Office of the University Bursar in the Wilbur Cross Building. Fees pertaining to off-campus programs in social work and business administration are payable at those locations. (See applicable brochures for fees, billings, and payment procedures.)

Fee bills, covering the semester's charges, are computed by and are payable to the Office of the University Bursar no later than the tenth day of the semester (see "Graduate School Calendar"). Failure to make payment on time will result in cancellation of registration and any residence hall assignment. A graduate student may apply for a limited deferment of the payment date for a semester fee bill at the Deferment Office in the Wilbur Cross Building. Partial payment of fees is not accepted by the Bursar. A receipt for payment or evidence of an approved deferment is necessary to complete registration.

### Financial Responsibility

Failure to receive a bill does not relieve a student of responsibility for payment of fees by the specified due date. A student who fails to make timely payment of an outstanding balance may be barred from all privileges normally accorded to a student in good standing. These include but are not limited to: advance registration (which if already completed will be subject to cancellation), registration, class attendance, advisement, dormitory room (for which any assignment will be cancelled), dining hall, library, infirmary, certification-of-status, and academic transcript privileges. Additionally, any pending University of Connecticut employment authorization may not receive approval or may be subject to cancellation. If there is a question concerning a bill, it is the student's responsibility to contact directly the Office of the University Bursar for clarification and resolution.

If a graduate student does not meet his or her financial obligations to the University by the tenth day of a given semester or by the expiration date of an approved deferment, cancellation of the student's registration and student privileges will result.

### Application Processing Fee

A non-refundable fee of \$55 for electronic submission or \$75 for paper submission must accompany an application to the Graduate School. It may not be applied toward other charges. This fee must accompany every application submitted except for a doctoral degree program to follow immediately on a completed master's degree program in the same field at this University, or for re-application requested by the Dean.

### In-State and Out-of-State Status

Each student must file an affidavit of residence with the application for admission to the Graduate School. A form for this purpose is provided as part of the application packet. On the basis of this information, each entering student is classified as either a Connecticut student or an out-of-state student. Failure to file the form will result in classification as out-of-state.

Questions concerning the classification of graduate students as resident (in-state) or non-resident (out-of-state) are resolved by the Graduate School. In the event that a student believes that he or she has been incorrectly classified, a request for a review, along with supporting documentary evidence, should be directed to the Graduate School.

Residents of other New England states enrolled in certain graduate degree programs may be eligible for special tuition rates through the New England Board of Higher Education Regional Student Program. (See "New England Regional Student Program.")

### Tuition

All graduate students – except in Summer Sessions programs (Division of Continuing Studies) and certain graduate programs conducted at centers away from Storrs – are subject to a tuition charge in addition to the other fees charged Connecticut, New England Regional Student Program, and out-of-state students.

Students who are classified as Connecticut residents pay tuition of \$4,725 per semester if registering for nine or more credits. Students who are classified as out-of-state students pay tuition of \$12,267 per semester for nine or more credits. Newly-entering students eligible for the New England Regional Student Program pay tuition at the rate of 175% of in-state tuition while continuing students eligible for the Regional Student Program who entered at the rate of 150% of in-state tuition pay that rate.

Tuition is pro-rated for students registering for fewer than nine credits per semester, according to the accompanying schedule.

**Tuition (but not the associated fees) is waived for graduate assistants.** If an assistantship begins or terminates during the course of a semester, tuition will be prorated on a weekly schedule – charged for that portion of the semester when the assistantship is not in force, and waived when it is in force. This can result in either a partial tuition assessment (if the student is registered throughout the semester for tuition-

bearing course work) or a partial refund (if tuition has been paid).

Additionally, tuition (but not the associated fees) is waived for certain groups of individuals. One of these groups includes any dependent child of a person whom the U.S. armed forces has declared either to be missing in action or to have been a prisoner of war while serving in the armed forces after January 1, 1960, provided that person was a resident of Connecticut at the time of entering the service of the armed forces of the United States or was a resident of Connecticut while so serving.

A second group includes any veteran having served in time of war, as defined in subsection (a) of section 27-103, or who served in either a combat or combat support role in the invasion of Grenada (from October 25, 1983 to December 15, 1983), the invasion of Panama (from December 20, 1989 to January 31, 1990), the peace-keeping mission in Lebanon (from September 29, 1982 to March 30, 1984), or Operation Earnest Will (escort of Kuwaiti oil tankers) (from February 1, 1987 to July 23, 1987), and is a *resident of Connecticut at the time of acceptance for admission or readmission to the University*. Eligible individuals should contact the Office of Student Financial Aid Services in the Wilbur Cross Building, Room 25, phone (860) 486-2819, for an application for the tuition waiver. Additional information on the *Veterans Administration Educational Assistance and Training Waiver* is located in the Financial Aid section of this Catalog.

The third group of individuals includes any person sixty-two years of age or older who has been admitted into a degree-granting program or who wishes to take courses on a space available basis as a non-degree student. If any person who receives a tuition waiver in accordance with the provisions of this subsection also receives educational reimbursement from an employer, the waiver is reduced by the amount of the educational reimbursement.

### General University Fee

The General University Fee is assessed each semester on the basis of the student's course load status (part-time, half-time, or full-time) as determined by Graduate School policies. Students who are part-time are charged \$193, while students who are half-time are charged \$386, and full-time students are charged \$585 per semester. Students paying this fee at any level have access to the Student Health Service.

### Audit Fees

Students auditing courses pay the same tuition and fees as those students who have enrolled for course credit. Tuition is charged on the basis of course credit hours, while the charge for the other fees (e.g., the General University Fee), is dependent on the student's total course load (part-time, half-time or full-time), as determined by Graduate School policies. (See "General University Fee.")

**Graduate Matriculation Fee**

Each degree-seeking student under the jurisdiction of the Graduate School pays a Graduate Matriculation Fee of \$42 per semester. This fee is payable regardless of the credit load or the campus of registration, and applies to students registering for Continuing Registration or other zero-credit courses as well. Graduate students who enter graduate school with more than six credits of advanced course work and apply it to their degree requirements are responsible for payment of the Graduate Matriculation Fee for those semester(s) in which the excess non-degree work was taken, unless the fee is waived by the Dean of the Graduate School.

**Infrastructure Maintenance Fee**

All full-time registered students are subject to an Infrastructure Maintenance Fee of \$190 each semester, used to defray the operating and maintenance costs related to new capital projects funded by the UConn 2000 and UConn 21st Century initiatives. This fee is prorated for half-time and part-time students, as presented in the accompanying chart.

**Graduate Activity Fee**

A non-refundable fee of \$13 per semester is

charged all students taking courses at the Storrs campus. The proceeds from this fee are used by the Graduate Student Senate for its programs for graduate student welfare and recreation.

**Student Transit Fee**

Graduate students on the Storrs campus are charged a Transit Fee of \$35 per semester. This fee supports the campus shuttle bus service.

**Student Union Building Fee**

Students pay a nonrefundable fee of \$13 each semester to support the ongoing expansion and renovation of the Student Union.

**International Sponsored Student Fee**

A fee of \$300 per semester is charged all international students who apply through, and are funded by, governmental, quasi-governmental, private, or public organizations.

**Non-Credit Continuing Registration**

Students not registering with the University for credit-bearing course work or other curricular offering in a given semester are required to maintain a continuing registration in the Graduate School by registering for one of the Graduate

School's zero-credit Continuing Registration courses. These courses include GRAD 5998 for non-thesis master's degree students, GRAD 5999 for thesis master's degree students, GRAD 6998 for doctoral students not yet engaged in dissertation research or writing, and GRAD 6999 for doctoral students currently engaged in dissertation research or writing (see "Continuous Registration" under Registration). Students who register for the zero-credit Continuing Registration courses are considered to be part-time students. They pay the Graduate Matriculation Fee as well as the General University Fee and other fees at the part-time level, but they are ineligible for need-based or merit-based financial aid.

If a graduate student does not complete payment for his or her Continuing Registration course to the Office of the University Bursar by the first day of the semester, the registration is cancelled and a reinstatement fee of \$65 may be assessed when the student is reactivated.

**Deposit Account**

A deposit of \$50 must be maintained by every registered student. This deposit, less deductions for breakage, fines, medicines charged at the pharmacy of the Infirmary, and any other

**Semester Tuition and Fee Schedule for Graduate Students**

Course Credits	Tuition #		Fees				Totals #	
	In-State	Out-of-State	General University	Infrastructure Maintenance	Graduate Matriculation	Activity, Transit, and Student Union	In-State	Out-of-State
Part-time								
0 *	\$ 0	\$ 0	\$ 193	\$ 50	\$ 42	\$ 13	\$ 298	\$ 298
1	525	1,363	193	50	42	61	871	1,709
2	1,050	2,726	193	50	42	61	1,396	3,072
3	1,575	4,089	193	50	42	61	1,921	4,435
4	2,100	5,452	193	50	42	61	2,446	5,798
Half-time								
5	2,625	6,815	386	100	42	61	3,214	7,404
6	3,150	8,178	386	100	42	61	3,739	8,767
7	3,675	9,541	386	100	42	61	4,264	10,130
8	4,200	10,904	386	100	42	61	4,798	11,493
Full-time								
9 or more	4,725	12,267	585	200	42	61	5,613	13,155

# Newly-entering NEBHE Regional Student Program students pay tuition at the rate of 175% of in-state tuition. Continuing NEBHE Regional Student Program students who entered at the rate of 150% of in-state tuition pay that rate.

\* Graduate non-credit registration only.

**Important Notes:**

1. Tuition (but *not* fees) for Graduate Assistants is waived, if the appointment is at the level of 50%-time (i.e., 10 hours per week) or greater.
2. All Graduate Assistants must pay the associated fees at the full-time rate and must register for a minimum of six credits of course work.
3. Students registered *only* for non-credit Continuing Registration (i.e., GRAD 5998, 5999, 6998, or 6999) or other zero-credit course pay the General University Fee at the part-time rate of \$183/semester in addition to the Infrastructure Maintenance, the Graduate Matriculation, and the Student Union Building Fees.
4. Different course fees apply to the degree programs identified individually on the following page.
5. Other applicable fees and required deposits are added to student fee bills as appropriate.

**Fees are subject to change at any time without notice.**

outstanding charges, will be refunded after the student leaves the University, either through graduation or other action.

### **Cooperative Bookstore Account**

A one-time, refundable Cooperative Bookstore payment of \$25 is required of all students, with the exception of Health Center students at Farmington, M.B.A. students at Hartford or Stamford, students registered solely for Summer Sessions, non-degree students, and students engaged exclusively in non-credit extension work. When students terminate their association with the University, the \$25 Cooperative Bookstore Account will be refunded.

### **Off-Campus M.B.A. and M.S. in Accounting Course Fees**

Students registering through the graduate programs offered by the School of Business at locations away from Storrs do not pay a tuition fee, but do pay a per-credit fee, with no maximum for the semester. Information concerning this fee is available from the program directors at each of the locations.

### **Stamford Educational Administration Graduate Program Fees**

Students enrolled in graduate programs in Educational Administration at the Stamford Campus should obtain information concerning fees from the Bursar's web site: <<http://www.bursar.uconn.edu/html/grad.html>>.

### **Master of Engineering Program Fees**

Students enrolled in the M.Engr. program should obtain information concerning required fees from the director of the program.

### **Doctor of Physical Therapy Program Fees**

Students enrolled in the D.P.T. program should obtain information concerning required fees from the director of the program.

### **Residence Hall Fee and Room Deposit**

In 2009-2010, the basic fee charged students living in a residence hall is \$3,178 per semester. Several on-campus options exist. Information about these options is available at <<http://www.reslife.uconn.edu/>>.

A room deposit of \$140 is required to reserve a room in a graduate residence hall for the fall semester. The room deposit will be applied toward the room fee or the room cancellation charge only. Failure to remit this payment will result in cancellation of the room assignment.

Newly entering students applying for a room must pay the \$140 room deposit within fifteen days of the date stamped at the top of the room application form enclosed with the notification of admission.

### **Board Fee**

Graduate students living in a graduate residence hall may purchase meals on a cash basis at many on-campus locations or at the guest rate in a University dining hall, or may choose to subscribe to a board plan in a University dining hall. The fee for the basic plan is \$2,362 per semester.

Failure to pay the board fee as billed does not relieve the student of the financial obligation. If a student gives notice of cancellation to the Department of Residential Life, the student will be held responsible for payment of the board fee as indicated under "Refunds and Cancellations of Charges."

### **Late Registration/Payment Fee**

An accumulating penalty fee is charged students registering for credit courses through the University Registrar at the Storrs campus, the regional campus at Avery Point, and at the Health Center in Farmington who fail to complete initial course registration and to pay all due fees on or before the tenth day of classes of any semester (additions to and deletions from a student's initial registration and payment of the resulting adjusted fee bill can occur freely through the end of the tenth business day of the semester).

This fee is \$6 for each weekday (excluding Saturdays, Sundays, and legal State holidays) occurring after the tenth day of the semester that registration and payment have not been completed. Students granted a limited deferment by the Deferment Office (in the Wilbur Cross Building) are charged the late fee if they fail to meet any of the terms of the deferment. For these students, the fee begins to accumulate on the first business day following a deferment date. Students whose semester bills are only for Continuing Registration courses (GRAD 5998, 5999, 6998, or 6999) are not eligible for a deferment.

This fee will accumulate to a maximum of \$60, at which point the student's registration may be cancelled. To become reinstated, the student must apply for reinstatement and pay a reinstatement fee of \$65. (See "Reinstatement Fee.") The registration process has not been completed unless the student has either received a fee bill receipt from the Bursar or has been granted a limited deferment of the payment date of the semester fee bill by the Deferment Office.

### **Reinstatement Fee**

Graduate School regulations require registration in each semester by all graduate degree program students. (See "Continuing Registration.") Students at the Storrs campus, at the Avery Point regional campus, the M.B.A. programs in Hartford and Stamford, or at the Health Center in Farmington who fail to complete initial course registration by the end of the tenth day of classes of any semester may be dropped from active status and will be required to pay a penalty fee of \$65. (Additions to and deletions from a student's initial registration and payment of

the resulting adjusted fee bill can occur freely through the end of the tenth business day of the semester.) The reinstatement fee is added to a student's bill along with any late registration/payment fee that has accrued.

A student who has an unpaid reinstatement fee is not allowed to register, have an official transcript issued by the Registrar's Office, obtain a deferment of any fee payment date, retain a key to a room in the Graduate Center, or use the services of the Babbidge Library. A student with an unpaid reinstatement fee is not considered to be in good standing by the Graduate School. (See "Financial Responsibility.")

### **Applied Music Fee**

Information concerning non-refundable fees for applied music instruction can be obtained from the Department of Music.

### **Summer Sessions Fees**

The bulletin published by the Center for Continuing Studies, One Bishop Circle, Unit 4056, Storrs, Connecticut 06269-4056, should be consulted for information on these fees and payment.

### **Extension Fees**

The bulletin published each semester by the Center for Continuing Studies, One Bishop Circle, Unit 4056, Storrs, Connecticut 06269-4056, should be consulted regarding fees and payment.

### **Refunds and Cancellations of Charges**

In order to be eligible for a refund or cancellation of charges, a student must officially drop *all* courses currently being taken. (See "Dropping all Courses; Withdrawal from the Program.")

The University grants a full refund of fees to any student dismissed for academic deficiency or other cause, provided that the dismissal takes place prior to the start of classes. In certain other instances, including illness, full refunds or cancellations of charges may be made at the discretion of the Dean of the Graduate School, provided that the interruption or termination of the student's program takes place prior to the start of classes.

A student inducted into military service will receive a prorated refund or cancellation of charges based on his or her date of separation. The student in this situation must furnish the Office of the University Bursar with a copy of the orders to active duty, showing this to be the reason for leaving the University.

Refunds or cancellations of charges are available on the following schedule for students whose programs are interrupted or terminated prior to or during a regular academic semester. When notice is received prior to the first day of classes of a semester, full refund (less nonrefundable fees) will be made if the fees have been paid in full. Thereafter, refunds or cancellations of refundable

charges will be made according to the following schedule:

- |                               |     |
|-------------------------------|-----|
| a) 1st week*                  | 90% |
| b) 2nd week*                  | 60% |
| c) 3rd and 4th week*          | 50% |
| d) 5th week through 8th week* | 25% |

For graduate degree-seeking students who paid fees to the Center for Continuing Studies, refunds are governed by the above schedule.

### Summary of Nonrefundable and Refundable Fees

#### Nonrefundable fees:

- Application Processing
- International Sponsored Student Fee
- Late Registration/Payment
- Reinstatement
- Room Deposit
- Student Union Building

#### Refundable fees:

- Tuition
- General University
- Graduate Activities
- Graduate Matriculation
- Infrastructure Maintenance
- Applied Music
- Audit
- Deposit Account balance
- Cooperative Bookstore Account balance
- Board
- Residence Hall
- Transit

### Student Identification Card

Each newly entering student is furnished with a personal identification card which is revalidated each semester upon full payment of applicable fees. Should the student's card become lost or destroyed, a replacement fee of \$15 is charged.

### Students Attending Under Public Laws

Students attending the University for the first time under the auspices of the Veterans Administration must have a Certificate of Eligibility, which must be presented at the Office of Student Affairs prior to registration.

### Completion Fees

The Graduate School requires submission of two

copies of a master's thesis or doctoral dissertation which become the property of the Homer Babbidge Library. Binding of these two copies is arranged by the Library. There is no charge to the student for the binding of the two final copies of a thesis or dissertation.

All doctoral dissertations are sent to ProQuest for microfilming. This is a requirement of the Graduate School. The student is required to pay ProQuest's charge for the service, which at press time was \$55 for traditional publishing or \$95 for open access publishing (subject to change without notice). The master's thesis is *not* microfilmed.

There is an additional and separate charge (\$65 at press time; subject to change without notice) for the optional copyright of a doctoral dissertation.

### Student Parking Fee

A parking fee is assessed to each student who has permission to park in University parking areas during the two semesters of the academic year. The fee is \$43 per semester for commuting students and \$55 per semester for students residing on-campus. (See "Parking of Student Cars") The fee for graduate assistants is \$44 per semester. In all cases, the parking fee is paid directly to Parking Services.

### Bad Checks

A \$25 fee is charged on any check returned by the bank for any reason.

### Mandatory Student Health Insurance

All full-time students must have adequate insurance coverage for accidents and illnesses. Students who

currently are covered by personal or family health insurance must present evidence of such coverage to the Student Health Service by filling out a waiver card. Students who fail to provide proof of coverage via submission of a waiver card will be enrolled automatically in the University sponsored plan and will be charged a premium on their student fee bills.

Full-time students should inform the Student Health Service whenever a change occurs in their health insurance coverage, including any termination of health insurance benefits provided to graduate assistants.

All non-immigrant international students will be required, at the time of registration, to show evidence of adequate insurance coverage for basic medical, major medical, and repatriation expenses. This requirement is a condition of admission and registration. International students should consult the Division of International Affairs, Department of International Services and Programs, regarding compliance with this requirement and assistance in enrolling in an approved insurance program, if necessary.

### Study Abroad Supplemental Health Insurance

Students choosing to study abroad through the University's Office of Study Abroad may also be assessed an international health insurance premium that will cover them for the time period that they are abroad. This insurance is in addition to any other health insurance coverage that a student may have, including the university sponsored health insurance plan. Please call 486-5022 for further information or visit this website: <[www.studyabroad.uconn.edu](http://www.studyabroad.uconn.edu)>.

\* Calendar weeks run Monday through Sunday; regardless of the day of the week that the semester begins, the following Sunday ends the first calendar week.

# ASSISTANTSHIPS, FELLOWSHIPS, AND OTHER AID

The University of Connecticut has agreed to abide by the following resolution of the Council of Graduate Schools:

Acceptance of an offer of financial support (such as a graduate scholarship, fellowship, traineeship, or assistantship) for the next academic year by a prospective or enrolled graduate student completes an agreement that both student and graduate school expect to honor. In that context, the conditions affecting such offers and their acceptance must be defined carefully and understood by all parties.

Students are under no obligation to respond to offers of financial support prior to April 15; earlier deadlines for acceptance of such offers violate the intent of this Resolution. In those instances in which a student accepts an offer before April 15, and subsequently desires to withdraw that acceptance, the student may submit in writing a resignation of the appointment at any time through April 15. However, an acceptance given or left in force after April 15 commits the student not to accept another offer without first obtaining a written release from the institution to which a commitment has been made. Similarly, an offer by an institution after April 15 is conditional on presentation by the student of the written release from any previously accepted offer. It is further agreed by the institutions and organizations subscribing to the above Resolution that a copy of this Resolution should accompany every scholarship, fellowship, traineeship, and assistantship offer.

Support for graduate students engaged in full-time degree study at the University comes from a wide variety of sources. More than 1,500 graduate students hold graduate assistantships for teaching or research, and more than 1,000 fellowships and traineeships are available to properly qualified students. Any employment within the University is subject to terms of the funding source and to approval by the Dean.

All students holding fellowships awarded by the University are expected to maintain their enrollment in the program to which the fellowship

applies. Transfer from one program to another or withdrawal from the University terminates the fellowship.

The general University fee and the graduate matriculation fee as well as the Connecticut resident tuition fee or the nonresident tuition fee must be paid by holders of University Predoctoral Fellowships, if applicable, but these fees are paid for holders of certain Federal fellowships and traineeships, according to the terms of the grant.

## TYPES OF FINANCIAL AID

Two general types of financial aid are available: (1) aid based on academic merit and (2) aid based on demonstrated financial need.

**Awards based on academic merit** include: Graduate Assistantships (for teaching or research), University Predoctoral Fellowships, Dissertation Fellowships, and Summer Fellowships. Application for merit aid should be made directly to the academic department. Continuing University of Connecticut graduate students should apply early in the spring semester. New applicants for admission to the Graduate School should apply as early as possible and not later than the deadline imposed by the appropriate academic department. (See the Graduate Application form for merit aid deadlines.)

**Need-based financial aid** includes: Federal Direct Stafford Loans (FDSL), Federal Work-Study (FWS), and University of Connecticut Tuition Remission Grants. Citizens or permanent residents of the United States apply for need-based financial aid by completing the Free Application for Federal Student Aid (FAFSA) on the web at <http://www.fafsa.ed.gov> each year. UConn's on time deadline each year is March 1 (May 1, for entering graduate students).

**[Note:** International students are not eligible to receive need-based financial aid.]

All need-based financial aid recipients and University funded and merit scholarship recipients must meet Satisfactory Academic Progress (SAP) requirements, which are based on federal regulations. These requirements include maintenance of an appropriate grade point average (3.00) and satisfactory completion of a percentage (75%) of the number of credit hours attempted in each award year, as well as not exceeding published credit maximums for the student's program plan. A warning is sent to students once they have reached their degree minimums. A complete text of this policy is available at <http://financialaid.uconn.edu/sap>.

Assistantships, fellowships and other awards from University sources are used in combination with need-based aid to calculate final financial aid amounts offered either for a semester or an academic year.

Additional information regarding need-based financial aid for Graduate students is available from the Office of Student Financial Aid Services at <http://financialaid.uconn.edu/index.php/Gradprocess>.

The following list of assistantships, fellowships, and other forms of aid includes only the major sources of support available to students at this University. Other sources may be available upon further inquiry.

## Graduate Assistantships

Graduate School degree-seeking students and students in the program leading to the Sixth Year Diploma in Professional Education, who meet the criteria listed below, are eligible. Appointments ordinarily are made for the nine-month period, August 23 through May 22, but may be of shorter duration for a variety of reasons. Recipients usually serve the University as teaching assistants, readers, or laboratory and research assistants. They may take fewer than the usual number of courses per year because of this added workload. To be appointed, to retain an appointment, or to be reappointed, a student must have been accorded Regular (not Provisional) status, must have been maintaining a cumulative average of at least B (3.00) in any course work taken, must be eligible to register (i.e., must not have more than three viable grades of Incomplete on his or her academic record), must be enrolled in a graduate degree program scheduled to extend through the entire period of the appointment or reappointment, and must be a full-time student, counting course work and/or its equivalent together with assistantship duties (see "Course Loads"), throughout the period.

The holder of a full assistantship devotes one-half of available time to studies and one-half (approximately 20 hours per week) to assistantship duties, while the holder of a half assistantship ordinarily devotes three-quarters of available time to studies and one-quarter (approximately 10 hours per week) to assistantship duties. Assistantships are not available for less than 10 hours per week.

Ordinarily, a graduate student is not permitted to earn more in a given academic year than the applicable maximum stipend rate indicated below. With the written recommendation of the student's advisory committee and the consent of the Dean of the Graduate School, however, approval may be granted for a student's earnings from University sources to exceed the maximum stipend rate by a limited and specified amount.

Since graduate assistants divide their full-time efforts between their studies and their assistantship responsibilities, ordinarily they may not hold concurrent employment outside the University.

Stipend rates for graduate assistants are graduated in terms of progress toward the advanced degree and experience. Ordinarily, a graduate assistant may not exclude any part of the stipend from U.S. taxable federal gross income. The rates for nine months in effect at press time follow:

- I. \$19,098 for graduate assistants with at least the baccalaureate.
- II. \$20,096 for experienced graduate assistants in a doctoral program with at least the master's degree or its equivalent in the field of graduate study. Equivalency consists of twenty-four credits of appropriate course work beyond the baccalaureate completed at the University of Connecticut, together with admission to a doctoral program.
- III. \$22,342 for students with experience as graduate assistants who have at least the master's degree or its equivalent and who have passed the doctoral general examination.

Tuition (but not the General University Fee, the Graduate Matriculation Fee, or other fees) is waived for Graduate Assistants. (See "Tuition," for possible proration.) If an assistantship begins or terminates during the course of a semester, tuition will be prorated on a weekly schedule – charged for that portion of the semester when the assistantship is not in force, waived when it is in force. This often results in an adjustment of the tuition charges, including partial assessment (if the student is registered throughout the semester for course work for which tuition is charged) or a partial refund (if tuition has been paid).

A graduate assistant is eligible for health insurance. Graduate assistants should be aware that it is necessary to complete the proper forms to activate the health insurance. The health insurance does not take effect automatically.

In exceptional cases a graduate assistant may be appointed on a twelve-month basis, with the stipend being increased proportionately. There are, however, no additional benefits or waiver of tuition in the summer months.

When students become eligible for the Level II or Level III stipend rate, it is the responsibility of their department to request such an increase promptly, by filing a new employment authorization effective the first day of the biweekly payroll period following the date on which the student completes master's degree requirements (or satisfies master's degree equivalency) or the date on which the student passes the doctoral General Examination in its entirety. Students are responsible for ascertaining that any required documentation — such as a report of a master's final or doctoral general examination, a transcript, or a report of a pertinent Incomplete grade made up — is promptly

filed with the Graduate School and that their current stipend conforms with their eligibility.

### **Tuition Assistance Program for Out-of-State Master's Degree Students**

This program provides tuition assistance for selected students, who are classified as out-of-state for tuition purposes, in terminal master's degree tracks. A limited number of tuition grants are awarded each year on a competitive basis to out-of-state master's students. These grants permit the selected students, in effect, to pay tuition at the in-state rate. The selection criteria for these grants include: full-time matriculation in a master's degree program that ordinarily does not lead to the doctorate, absence of graduate assistantship support (which carries with it a tuition waiver), out-of-state residency status, evidence of academic excellence (based on grade point averages, test scores, etc.), and U.S. citizen or permanent resident status. Each student chosen for participation in this program is eligible for a maximum of four semesters of support. This program is administered by the Graduate School. Students are nominated by faculty members in terminal-track master's degree programs.

### **University Predoctoral Fellowships**

These are awarded by the Graduate School on the recommendation of the graduate faculty in the degree program concerned. Students who intend to earn the D.M.A. or Ph.D. and who have demonstrated capability for completing a doctoral program may apply to their academic departments for such fellowships at any stage of their graduate career. Award amounts range from small amounts to full fellowships and/or tuition equivalency. Fellowship awards do not include the requirement of teaching, research, or any other service duties and are not considered to be employment. Predoctoral Fellows must be Regular (not Provisional), full-time students, regardless of the amount of the fellowship. Recipients must present evidence of such registration and payment or deferment of appropriate fees upon receipt of fellowship checks. The Dean of the Graduate School may cancel or reduce an individual award if the student fails to maintain satisfactory academic and financial standing.

### **Doctoral Dissertation Fellowships**

Funding may be available during the academic year to support the Doctoral Dissertation Fellowship program, which is designed to assist advanced Ph.D. students to complete their dissertations. Minimum eligibility requirements include having passed the doctoral general examination, having a fully approved dissertation proposal on file with the Graduate School, and not exceeding certain annual income limits. The amount of the fellowship

is \$2,000, and the fellowships are "one-time only" awards. Awards are made via announced competitions having specific application deadlines. The number of fellowships and the frequency of competitions are limited and contingent upon the availability of funding. Inquiries may be directed to Thomas Peters, Program Director, Unit 1006, Whetten Graduate Center, room 208, Storrs, Connecticut 06269-1006; telephone (860) 486-0977; e-mail <thomas.b.peters@uconn.edu>.

### **Doctoral Dissertation Extraordinary Expense Award**

Ph.D. students who have passed the general examination and whose dissertation proposal has been fully and officially approved may apply for up to \$500 for certain non-routine expenses directly related to data collection for the dissertation. Application may be made at any time. Awards are contingent upon the availability of funding. Inquiries may be directed to Thomas Peters, Program Director, Unit 1006, Whetten Graduate Center, room 208, Storrs, Connecticut 06269-1006; telephone (860) 486-0977; e-mail <thomas.b.peters@uconn.edu>.

### **Summer Fellowships for Doctoral and Pre-Doctoral Students**

Students pursuing the D.M.A. or Ph.D. degree are eligible, upon nomination by department heads, for up to \$1,500 during the summer for the general examination or dissertation research. Information is available from department and program heads in March of each year.

### **Part-time Employment**

**Federal Work-Study (FWS)** is a federally funded financial aid work program for students with a demonstrated financial need, as determined by information submitted on the FAFSA. Unlike other forms of aid, a Federal Work-Study award is not applied to a student's fee bill. Students receive bi-weekly paychecks for hours worked.

The **Student Labor Program** is a work program open to all University of Connecticut students and designed to supplement regular staff with students seeking part-time employment.

The Office of Student Financial Aid Services advertises available positions on their website: <[www.studentjobs.uconn.edu](http://www.studentjobs.uconn.edu)>. Students are prompted to select the category their job choice(s) and are provided with a list of supervisors seeking candidates for those jobs. Students then arrange interviews with prospective employers to discuss the details of the job.

### **Federal Loan Programs**

**Federal Stafford Loans (FSLs)** are offered to students attending the University at least half-time. Subsidized FSLs are based on financial need; the interest on these loans is subsidized by the federal government. If a student does not qualify

for a subsidized FSL, he or she may borrow an unsubsidized FSL. The student is responsible for the interest which accrues on the loan, and has the option to either pay the interest while in school or defer payment of the interest until repayment begins, six months following graduation.

Annual loan limits for eligible graduate students are: \$8,500 in Subsidized FSL and \$10,000 in Unsubsidized FSL per academic year. After July 1, 2007, the unsubsidized loan limit for graduate students was increased to \$12,000. The maximum aggregate FSL (Subsidized and Unsubsidized) amount a graduate student may hold is \$138,500.

An excellent, detailed source of information regarding federal aid programs and the financial aid process is *The Student Guide*, available at college and university financial aid offices.

### Graduate Student Senate Short-Term Loan Fund

This fund is administered by the Graduate Student Senate (GSS), and is generated by graduate student activities fees. It provides loans of up to \$500 to assist graduate students in dealing with financial emergencies. Loans are issued for 60-day periods and are interest free. Borrowers are urged to repay these loans on time so that other students in need can be accommodated. Applications are available in the Graduate Student Senate Office, Room 318, Whetten Graduate Center and online at the GSS Web site <<http://www.grad.uconn.edu/~wwwgss>>.

### International Students

Before their admission is complete and a student visa can be issued, non-immigrant international students must present documentary evidence of their ability to meet all expenses for at least the first year of study, together with an acceptable plan for financing the remainder of their program. International applicants are not eligible for need-based financial aid.

Grants providing tuition and the general University fee are available to a small number of international students who are sponsored by certain organizations [e.g., ATLAS and LASPAU] recognized by the Graduate School as being devoted to the promotion of advanced education programs and with which the University has a standing agreement.

### Veterans Administration Educational Assistance & Tuition Waiver Program

The Office of Student Financial Aid Services provides information concerning benefits under the various educational assistance programs provided by the Veterans Administration. Students who attend the University and receive educational assistance under the following chapters must contact the Office of Student Financial Aid Services prior to the beginning of each semester: Chapter 31 (Vocational Rehabilitation Training Act for Disabled Veterans);

Chapter 32 (Post-Vietnam Veterans Educational Assistance); Chapter 35 (Dependents Educational Assistance Act: children, wives, and widows of totally disabled and deceased veterans - service connected deaths); Chapter 1606 (Montgomery G.I. Bill - Selected Reserve); Chapter 30 (Montgomery G.I. Bill - Active Duty). Veterans must notify the University every semester of their registration for certification of enrollment. Any changes in veteran status (credit load, withdrawal, etc.) must also be reported promptly to the University.

Additionally, veterans may qualify for a tuition waiver under the State of Connecticut tuition waiver program. Veterans must provide a form DD214 (separation of service) and must be recognized as a resident of Connecticut at the time of admission or readmission to the University. Please see the tuition waiver criteria in the "Fees and Expenses" section of the catalog.

Veterans seeking tuition waiver applications or assistance should contact the Office of Student Financial Aid Services, 233 Glenbrook Rd., U-4116, Wilbur Cross Building room 102, Storrs, Connecticut 06269-4116 or call (860) 486-2442.

### Named Graduate School Fellowships

The Graduate School offers two fellowships, in cooperation with participating academic departments, which are available to eligible students.

These fellowships are supported jointly by Special Graduate Student Fellowship funds from the Graduate School and a 50% Graduate Assistantship from the department with which the recipient is affiliated. Only one student holds each fellowship at any given time, renewable annually, and the fellowship may not be held by the same person for more than two years. Candidates for these fellowships may be recommended to the Dean of the Graduate School by any graduate faculty member. These recommendations must be endorsed by the appropriate department head.

1) The Prudence Crandall Graduate School Fellowship honors Miss Crandall's contributions to the education of African-American youth in nineteenth century America.

2) The Rafael Cordero Graduate School Fellowship honors Maestro Cordero's contributions to education in nineteenth century Puerto Rico.

### Multicultural Scholars Program

The Graduate School and the Provost's Office have established a fund for the promotion of diversity within graduate education. This program functions to promote the recruitment and retention of diverse populations of graduate students by matching the funding support provided by schools, departments, or fields of study. Students are nominated by the graduate program to which they are applying. There is no application form. Eligibility for support is based on the student's academic qualifications, U.S. citizen or permanent resident status, and the demonstrated need for increased cultural diversity within the field of study.

### Outstanding Scholars Program

The Graduate School and participating academic departments and programs offer a number of fellowships for new outstanding graduate students pursuing study at (or through) the doctoral level. Each award includes a stipend of \$8,000 for the academic year, provided by The Graduate School, and a half graduate assistantship for each of the fall and spring semesters, which is provided by the department or program. The award is renewable for two additional years (a total period of three years). There is no application form. Each doctoral field of study should recommend as early in the recruiting year as possible applicants who intend to commence graduate study in the following Fall semester.

### The Thomas G. Giolas Fellowship Fund

The Thomas G. Giolas Fellowship Fund was established as a permanent endowment fund held by the University of Connecticut Foundation in honor of father and husband, Thomas G. Giolas, Dean Emeritus of the Graduate School. This fund will provide scholarship support for an incoming or continuing graduate student enrolled full-time at the University of Connecticut's Graduate School. The award shall be given annually to a student who demonstrates high academic achievement in their field of study. The scholarship(s) may be renewed annually to the recipient(s) provided satisfactory academic progress is achieved.



### Aid for Graduate Students in Specific Disciplines or Areas

Awards are available in the areas of study listed alphabetically below. Availability and terms of the following awards are subject to change at any time without notice.

#### Agricultural and Resource Economics

Several graduate research assistantships in food marketing, resource economics, and international agricultural development are available. Application is made to the Department of Agricultural and Resource Economics, Unit 4021, Storrs, Connecticut 06269-4021.

#### Allied Health

The Frederick G. Adams Scholarship was established by the faculty of the Department of Allied Health Sciences to honor their first Dean, Frederick G. Adams, D.D.S., with continuing support from his family and friends as a memorial. Awards in varying amounts are made to undergraduate and graduate students enrolled in the School of Allied Health who have emergency needs which can be met in no other way. Application is made to the College of Agriculture and Natural Resources at <[www.myagrn.uconn.edu](http://www.myagrn.uconn.edu)>.

The Dr. James P. Cornish Scholarship was established by the Cornish family in memory of the late Dr. Cornish. The \$500 scholarship is awarded annually to a graduate student in the Department of Allied Health Sciences who demonstrates leadership potential, warmth and humor, creativity and innovation, commitment to lifelong learning and service, and dedication to the values of multiculturalism and diversity. Application is made to the College of Agriculture and Natural Resources at <www.myagrn.uconn.edu>.

#### **Animal Science**

Graduate research assistantships from various sources, including federal grants as well as business and industry, are available. Applications are processed through the Graduate School. Requests for financial aid upon admission are considered during the review of applications. Ordinarily, students are nominated for support by their major advisors. Assistantships and scholarships are awarded competitively on the basis of academic and scholarly achievement as well as the potential for future academic and professional accomplishments.

#### **Art**

(See "Fine Arts.")

#### **Biomedical Sciences**

Graduate assistantship awards for qualified incoming and current students are available. Recipients must be full-time students and work with faculty advisors at the Health Center. Awards include assistantship stipend, waiver of tuition, and health insurance (additional funds are available for travel to scientific conferences). Current students apply to the Graduate Programs Committee at the Health Center. Incoming students are recommended for this award by the Biomedical Admissions Committee. Students applying for admission and assistantship consideration to commence study in the following fall semester should apply by December 15.

#### **Business Administration**

The T. K. Lindsay Scholarship is an annual award established by the Connecticut Bank and Trust Company in honor of Professor Tamlin K. Lindsay to be given to an outstanding undergraduate or graduate student in the School of Business. Criteria for selection include high scholastic achievement, professional promise, participation in University activities, and financial need. Candidates are chosen by a Scholarship Committee chaired by the dean of the School of Business.

#### **Chemistry**

The Charles E. Waring Memorial Scholarship is awarded each year to an outstanding graduate student in chemistry. The recipient is selected from among those students who have completed two or three semesters of graduate study and who have qualified for admission to the Ph.D. program. This \$250 award is given on the basis of progress in course work and research. There is no application.

#### **Civil Engineering**

The Narasimha Rao Adidam Memorial Scholarship was established by Dr. and Mrs. Adidam S. R. Sai of Kanpur, India in memory of their son, Naren. The award is presented annually to a full-time graduate

student in Civil Engineering who is pursuing studies related to structures/applied mechanics. Preference is given to students with financial need who best exhibit the qualities of personal integrity and intelligence, the research aptitude, the academic performance and the understanding of multicultural values as personified by Narasimha Rao Adidam. Nominations are solicited from faculty members by the Civil Engineering Awards Committee in March.

The Edson B. Gerks Award recognizes an undergraduate or graduate student interested in Transportation Engineering who shows outstanding promise. The award is administered through the Department of Civil and Environmental Engineering.

The New England University Transportation Center Fellowship for Transportation Studies offers a stipend of up to \$5,000 per semester (in addition to a 50%-time graduate assistantship) for full-time graduate study in Civil Engineering with emphasis in one or more of the following areas: transportation management, policy, or operations. Expressions of interest should be forwarded to Unit 2037, Storrs, Connecticut 06269-2037 as soon as possible after admission to graduate study.

#### **Communication Sciences**

The Department of Communication Sciences has a number of stipends available to qualified graduate students enrolling in the Master's programs in Communication and in Speech, Language, and Hearing. In addition, aid is available to students enrolling in the Ph.D. programs in Communication Processes and Marketing Communication and in Speech, Language, and Hearing.

#### **Computer Applications and Research**

The Taylor L. Booth Engineering Center for Advanced Technology (BECAT) provides a limited number of graduate assistantships. The major responsibilities for these positions are: assisting the technical staff in setting up and maintaining networked research laboratories and supercomputing facilities with PCs and workstations; providing support for technical seminars and short courses on available facilities and software systems; and assisting users with system usage and software problems. Application is made to the BECAT, Unit 2031, Storrs, Connecticut 06269-2031.

#### **Computer Science and Engineering**

The Taylor L. Booth Graduate Fellowship is awarded on the basis of annual competitions to qualified graduate students in Computer Science and Engineering who intend to pursue a faculty career at an American university upon completion of the Ph.D. at the University of Connecticut. Interested students should submit a letter of application which details career goals and emphasizes experience and contributions as a teacher. Additionally, letters of support, including one from the applicant's major advisor, should be sent to the Chair of the Graduate Admissions Committee, Department of Computer Science and Engineering, Unit 2155, Storrs, Connecticut 06269-2155. Application deadlines and information can be obtained by writing to the same address.

#### **Dental Science**

A limited number of graduate assistantships are available to students in the Master of Dental Science and the combined Ph.D. /resident programs and are awarded on a competitive basis. Training fellowships for research and clinical programs also are available. Application is made to the Office of Dental Academic Affairs, Room AG036, University of Connecticut Health Center, Farmington, Connecticut 06030-3905.

#### **Dramatic Arts**

(See also "Fine Arts.") Information, including application procedures, can be obtained from the Department of Dramatic Arts, Unit 1127, Storrs, Connecticut 06269-1127.

The Ballard Institute and Museum of Puppetry Award is given to an undergraduate or to a graduate student in puppetry who has maintained an excellent scholastic record and who has demonstrated exceptional talent in puppetry.

The Frank W. Ballard - UConn League Scholarship is awarded annually to an undergraduate and/or to a graduate student majoring in Puppetry in the Department of Dramatic Arts. The award is given on the basis of demonstrated talent, contribution to department productions, and professional promise.

The Victor Borge Scholarship is awarded to a current or to an incoming M.F.A. student in acting.

The Connecticut Repertory Theatre Patrons' Award was established through the generosity of patrons of the Connecticut Repertory Theatre. The award is made to undergraduate or graduate students in Dramatic Arts on the basis of outstanding academic and artistic accomplishment.

The Cecil E. Hinkel Department of Theatre Award is given to a graduate student who preferably has excelled in either dramatic form and structure or in the history of theatre. Secondary preference would be given to an outstanding graduate student in directing.

The Nafe E. Katter-Ron Palillo Scholarship in Acting is awarded to an undergraduate or to a graduate student majoring in acting. The award is made on the basis of demonstrated talent, contributions to departmental productions, and professional promise.

The Valerie M. Schor Memorial Scholarship is in memory of Professor Schor, who taught Dramatic Arts from 1970-1993. Awarded annually to undergraduate or graduate students majoring in acting.

The Special Dramatic Arts Award for Excellence is given to an undergraduate or graduate student in Dramatic Arts on the basis of outstanding academic and artistic accomplishment.

The United Bank and Trust Company Scholarship is awarded on the recommendation of the faculty of the department to a talented student in either the design/technical or performance areas.

The George B. Wallis III Award is presented at the end of the theatre season to a student judged by the faculty of the department to be the best actor or actress, with emphasis on talent and dramatic ability.



### Ecology and Evolutionary Biology

The Ronald Bamford Fund provides a small research grant in the area of botany to be awarded to graduate students in the Department of Ecology and Evolutionary Biology for visits to collections, field work, supplies, or other expenses directly related to research. Application is made to the Department Head, Ecology and Evolutionary Biology, Unit 3043, Storrs, Connecticut 06269-3043.

Several endowed funds provide small research grants in various research areas that are awarded to graduate students in the Department of Ecology and Evolutionary Biology for travel to scientific meetings, visits to collections, field work, supplies, or other expenses directly related to research. The endowed funds and research areas are: Henry N. Andrews Fund (botany), Alfred Hunyadi Fund (forestry), Jerould Manter Fund (ornithology), Lawrence R. Penner Fund (parasitology and invertebrate zoology), James A. Slater Fund (entomology), Francis R. Trainor Fund (aquatic ecology), and the Ralph M. Wetzel Fund (vertebrate biology). Application is made to the Department Head, Ecology and Evolutionary Biology, Unit 3043, Storrs, Connecticut 06269-3043. Deadlines are variable but often have been February 15.

### Economics

The Audrey P. Beck Scholarship is shared between Economics and Political Science. A stipend of \$500 (or more, depending on endowment return) is awarded to a student with an interest in a career in public policy. Criteria for the award include career potential, academic achievement, character, breadth of interests, and need.

The W. Harrison Carter Award is given each fall to a graduate student judged to be the best teaching assistant in the Department of Economics. The award was established in memory of W. Harrison Carter, Professor of Economics from 1931 to 1966 and former Dean of the College of Liberal Arts and Sciences.

The Abraham Ribicoff Graduate Fellowship for the Study of Economic Policy is awarded to an outstanding graduate student in Economics. The student must be a Connecticut resident with a strong academic record and must have a primary interest in the application of economic analysis to the formulation and implementation of state and national economic policies. Students are nominated by members of the faculty.

The Albert E. Waugh Scholarship in Economics provides an annual award to a graduate student interested in pursuing a career in teaching economics. This award was established in memory of a former professor of economics, Dean and Provost at the University from 1924 to 1965.

### Education

The Neag School of Education has numerous scholarships available. Information regarding these scholarships can be found on the Internet at the following website: <[www.education.uconn.edu/students/scholarships](http://www.education.uconn.edu/students/scholarships)>.

### Engineering

The Al Geib Graduate Fellowship is a supplemental fellowship to encourage top entering graduate students to conduct research on an environmental, sustained development topic. Preference is given to University of Connecticut graduates and to Connecticut residents. One or two awards may be given each year. Nominations are made through department heads and graduate field of study coordinators to the Dean of Engineering. The deadline for nominations is mid-February.

The Harold Torgersen Fellowship provides financial assistance to a graduate student in the engineering fields. Preference is given to B.S. graduates of the University of Connecticut. Nominations are made to the Dean of Engineering by the appropriate Engineering Department Head.

### English

The Aetna Graduate Creative Nonfiction Prize provides one or more cash awards from the Aetna Foundation for an outstanding nonfiction essay.

The Aetna Graduate Critical Essay Prize is a \$400 award from the Aetna Foundation. Second, third, and honorable mentions may be awarded. Any essay or dissertation chapter which has not yet been accepted for publication is eligible.

The Wallace Stevens Award for Poetry is offered in the spring semester. There are three prize awards. Undergraduate and graduate students are eligible. The award involves a brochure publication and a public reading.

### Finance

The Stephen D. Messner/School of Business Administration Scholarship and Fund provide support for undergraduate and graduate students in the areas of real estate and finance. Application is made either through the Real Estate Center or the Head of the Finance Department. There is no application deadline.

The Hartford Society of Financial Analysts' Scholarship is awarded under the auspices of the University of Connecticut Foundation. One or more scholarships of \$200 to \$500 are awarded each Spring semester to outstanding students enrolled in the master's degree program in the School of Business Administration. This scholarship is made available by the Hartford Society of Financial Analysts. Application is made to The Department of Finance, Unit 1041F, Storrs, Connecticut 06269-1041. The application deadline is March 1.

### Fine Arts

The Dean Jerome M. Birdman Scholarship is awarded annually to an undergraduate or graduate student in each of the departments of the School of Fine Arts. Criteria include academic distinction and professional promise. Awards are made by the dean of the school in consultation with department heads.

The William Brand Scholarship is awarded to an undergraduate or graduate student in the School of Fine Arts. The scholarship committee selects recipients based on past academic achievement and demonstration of potential for future academic and professional accomplishments. The scholarship is

presented alternately to a student from each department.

The Jan Keiley Scottron Scholarship is awarded to an undergraduate or graduate student in the School of Fine Arts. The Scholarship Committee selects recipients who meet the following criteria: (1) senior student or graduate student standing with a major in puppetry or musical stage (e.g., opera), (2) demonstrated financial need, and (3) demonstrated academic achievement.

The Rhoda Shivers Memorial Award in the Arts is awarded to an undergraduate or graduate student in the School of Fine Arts. Departmental Scholarship Committees select recipients based on past academic achievement, demonstration of potential for future academic and professional accomplishments, and on financial need. The scholarship is presented alternately to a student from each department (Art, Dramatic Arts, and Music).

### Geography

Graduate research assistantship awards for qualified incoming and current students are available. Recipients must be full-time students and work with faculty advisors. Awards include assistantship stipend, tuition waiver, and health insurance options. Incoming and current full-time students who request graduate assistantships are considered for the research assistantship awards based on their academic standing and research skills. Several of the research assistantships are based at the University of Connecticut Center for Geographic Information and Analysis housed in the Homer Babbidge Library.

A graduate research assistantship is also supported by the Connecticut Geographic Alliance based in the Department of Geography. The Connecticut Geographic Alliance is an organization designed to advance the status of geography in primary and secondary education in Connecticut. The award includes assistantship stipend, tuition waiver, and health insurance options. Incoming and current full-time students who request graduate assistantships are considered for this award based on their academic standing and interest in geographic education.

A departmental fund provides small grants to graduate students in the Department of Geography for presentations at scholarly meetings. Students in good academic standing who are participating in a scholarly meeting may apply to the Department Head for funding.

### Geological Sciences

The Andrew J. Nalwalk Memorial Award is given to a continuing graduate student demonstrating independent scholarship in geology, marine geology, or physical oceanography. Selection of the recipient is coordinated by the Department of Geological Sciences and the Department of Marine Sciences. The award was established by family and friends of the former professor of geology at the Marine Sciences Institute.

### Health Care Management

The Center for Healthcare and Insurance Studies offers a number of scholarships on an annual basis to qualified M.B.A. students concentrating in healthcare management and insurance studies. Graduate assistantships also are offered, contingent upon the availability of funding.

Please check with the Health Care Management Program at <healthcare@business.uconn.edu> or call (860) 486-4122 to obtain additional information.

### History

The James M. Bozzuto Fellowship has been established in association with the Emiliana Pasca Noether Chair in Modern Italian History. It is named in memory of Mr. Bozzuto, whose family generously contributed to the Chair's endowment. The Fellowship is awarded to a graduate student of exceptional promise to undertake advanced study leading to the Ph.D. with an emphasis in Italian political, social, economic or cultural history since 1750 or with an emphasis in comparative European history in the same period that bears substantially on Italy (including emigration). Recipients of this fellowship shall be selected by the Admissions and Financial Aid Committee of the Department of History in conjunction with the holder of the Noether Chair. The Fellowship normally is awarded on a triennial rotation. Information is available from the holder of the Noether Chair, Department of History.

The Aldo De Dominicis Graduate Fellowship in Italian American history is attached to the Emiliana Pasca Noether Chair in Modern Italian History and has been established to promote research into all aspects of Italian American history. The Fellowship, normally tenable for up to three years, is awarded to a graduate student of exceptional promise to undertake advanced study leading to a Ph.D. in an aspect of Italian American history. Recipients are selected by the Admissions and Financial Aid Committee of the Department of History in conjunction with the holder of the Noether Chair.

The department annually awards the James L. and Shirley A. Draper Dissertation Fellowship in Early American History to an outstanding qualified Ph.D. student. The fellowship allows for a full-year of dissertation research in the student's fourth year of study provided the student has passed the Ph.D. General Examination. The recipient is selected by the Department of History Admissions and Financial Aid Committee in conjunction with the holder of the James L. and Shirley A. Draper Chair in American History.

The Michael Dunphy Award is given annually to a graduate student with a strong interest in American government, society, history, or culture. Outstanding intellectual ability and financial need must be demonstrated. The History Department shares this award with Sociology and Political Science. The Department of History will name the winner in 2010, 2013, etc. Students are nominated by faculty members.

The Harry J. Marks Fellowship is awarded to a superior graduate student and, when appropriate, with priority given to one with a special interest in European social and intellectual history and who is returning to pursue an advanced degree while, or after, working as a high school teacher. The fellowship is named in honor of a late colleague who was esteemed for his teaching and intellectual vitality. Recipients of this fellowship shall be selected by the Department of History Prize Committee.

The Albert E. and Wilda E. Van Dusen Scholarship has been established through the

generous gift of the late Professor Van Dusen and his wife, Wilda. An annual scholarship is awarded to a graduate student in history who has completed at least nine credits of work, has demonstrated financial need, and ranks in the top one-quarter of graduate students in history. The selection of the recipient is made by the Department of History Prize Committee.

Also awarded annually are the James L. and Shirley A. Draper Summer Fellowship in Early American History, the Hugh M. Hamill Graduate Fellowship in Latin American History, the Thomas G. Paterson Graduate Fellowship in the History of U.S. Foreign Relations, and the Bruce M. and Sondra Astor Stave Prize in Recent American History to an outstanding graduate student in each of the four areas. Recipients are selected by the Department of History Admissions and Financial Aid Committee or its Prize Committee.

### Home Economics Education

The Merrilyn Niederwerfer '68 Cummings Award in Home Economics Graduate Education is granted to a graduate student in home economics education who is dedicated to a career in extension, secondary, or university education and who has shown promise and leadership in these fields. The \$400 award is made available by the Frank Niederwerfer Family Fund. For more information contact Dr. Mary Anne Doyle, Unit 2033, 249 Glenbrook Road, Storrs, Connecticut 06269-2033.

### Judaic Studies

Students interested in obtaining further scholarship information should contact the Center for Judaic Studies and Contemporary Jewish Life, Unit 1205, (860) 486-2271.

The Harold J. Arkava Scholarship is named in honor of Harold J. Arkava. Awarded to student(s) in the Center for Judaic Studies and Contemporary Jewish Life, with preference given to those students studying the Holocaust. Priority is given to graduate students but undergraduates may apply. Number of awards and amounts to vary.

The Cohen and Henes Scholarship was established by Stephen I. Cohen, Class of 1965, and Robert L. Cohen, Class of 1967, in honor of their late grandparents, Isadore and Dora Cohen, and Samuel and Rebecca Henes of Waterbury, who came to the United States from Czarist Russia in the 1890's and who valued highly the qualities represented by this scholarship. Awarded to one or more students with an academic concentration in Judaic Studies on the basis of scholarship, financial need, high moral and ethical character, demonstrated commitment to community service. Number of awards and amounts to vary.

The Winkler Israel Study Award is awarded to a student attending a college or a university in Israel in a program administered by the Study Abroad Office. Number of awards and amounts to vary.

### Latin American and Caribbean Studies

The Center for Latin American and Caribbean Studies has a limited number of graduate assistantships and predoctoral fellowships to award to qualified master's students planning to enter doctoral programs.

The Nathan L. Whetten Fellowship (which carries a small stipend) is awarded to the most outstanding doctoral student in any discipline with a concentration in Latin American Studies.

The Center also awards the Robert G. Mead, Jr. Fellowship to the best first-year M.A. student specializing in Latin America.

All fellowships are awarded on the basis of merit. Deadline for application is February 1st. Financial aid decisions are made only in the spring.

Application forms and further information are available from the Center for Latin American and Caribbean Studies, 2006 Hillside Road, Unit 1161, Storrs, Connecticut 06269-1161; telephone (860) 486-4964; Web <www.clacs.uconn.edu>.

### Marine Science

The S.Y. Feng Marine Sciences Student Activities Fund provides small research grants that are awarded to graduate students in the Department of Marine Sciences for travel to scientific meetings, field work, supplies and other expenses directly related to research. The Fund was established by family and friends of the founding Head of Marine Sciences. Selection of recipients is made throughout the year by a committee of faculty members in the department.

The S.Y. Feng Memorial Scholarship Fund provides financial support for graduate students in the field of Oceanography. Awards to support coursework associated with the student's degree program are made throughout the year; recipients are selected by a committee of department of faculty members.

The William A. Lund, Jr. Fellowship provides support to graduate students enrolled full-time or part-time in the Department of Marine Sciences. Selection of recipients is made throughout the year by a committee of faculty members in marine sciences. Priority consideration is given to students demonstrating potential to submit work for publication.

The Northeast Utilities Marine Sciences Fund provides support for development of programs to encourage participation and retention of women and under-represented groups in environmental marine sciences. The Northeast Utilities Predoctoral Scholarship in Marine Sciences provides a Graduate Research Assistantship and summer stipend for one year to incoming or enrolled eligible students in Marine Sciences. One award is made each academic year, with the recipient to be selected by a committee of department faculty members.

The Marine Sciences Research & Outreach Fund provides support for graduate student research activities using the R/V Lowell Weicker, a 36-foot research vessel in the department's fleet. Recipients are selected based on short proposals reviewed by a committee of department faculty members.

(See also "Andrew J. Nalwalk Memorial Award" under Geological Sciences.)

### Mathematics

A certain proportion of graduate students receive financial support as teaching assistants. International applicants must have matriculated from an English-speaking university or have taken the IELTS with

a score of at least 6.5 or have taken the TOEFL with a score of at least 600 to be eligible for financial aid for the first year of graduate study. In addition, there are some computer support and math Q Center tutoring positions available. Supplemental fellowships are available to qualified applicants. Summer teaching opportunities are sometimes available, and advanced students are given research fellowships for one summer.

Under an agreement with Aetna and Hartford Life Insurance Companies, actuarial graduate students are eligible for internships that emphasize both practical experience and more theoretical research.

The Louis J. DeLuca Award was established in memory of the former Associate Dean of the College of Liberal Arts and Sciences and Professor of Mathematics, who was a recipient of the University of Connecticut Alumni Association's Award for Excellence in Teaching. The fellowship is awarded each year to an outstanding graduate teaching assistant on the basis of teaching performance and academic achievement.

### Medieval Studies

The Fred Cazel Fellowship is an annual award open to graduate students in Medieval Studies, especially those whose primary field is history.

### Modern and Classical Languages

Most graduate students receive financial support in the form of graduate teaching assistantships and graduate fellowships. In addition, research stipends of \$500-\$1,000 sometimes are available to qualified applicants during the summer, along with summer teaching opportunities.

The Jaime Homero Arjona Memorial Fund makes available non-interest-bearing, short-term loans to graduate students in the Department of Modern and Classical Languages. Application forms may be obtained in Room 228, J.H. Arjona Building.

The David Luckey Memorial Fund makes available non-interest-bearing, short-term loans (usually 60-90 days), with a maximum of \$200, to graduate students in the Department of Modern and Classical Languages. Application forms may be obtained in Room 228, J.H. Arjona Building.

The Josefina Romo-Arregui Memorial Scholarship consists of one or two scholarships of \$500 each to master's or doctoral students of Spanish or Spanish American Poetry or the Golden Age Theater in Spain. Application forms may be obtained in Room 228, J.H. Arjona Building.

### Music

(See also "Fine Arts.") The Victor Borge Scholarships are awarded in varying amounts to deserving School of Fine Arts students.

The Annie and Wilma Elias Memorial Scholarship was established through the generosity of Julius Elias in memory of his wife Wilma and his mother Annie. The scholarship is awarded annually to students who have been accepted into a program of study leading to a degree in music. Recipients are chosen based on past academic achievement and demonstration of future academic and professional accomplishments. Financial need may be a criterion but is not a determining factor. Two or more scholarships of a minimum of \$500 are available.

The Herbert A. France Music Scholarship is awarded under the auspices of the University of Connecticut Foundation to a junior, senior, or graduate student whose primary interest is conducting. This fund was established by a gift from Mrs. Olive France.

The Alice Murray Heilig Graduate Assistantship in Piano is offered. To be eligible for this assistantship, candidates must meet the following criteria: (1) full-time enrollment in the M.M., M.A., D.M.A. or Ph.D. program in the Department, (2) demonstrated promise as a pianist, and (3) demonstrated academic excellence. Recipients are selected by the Head of the Department in consultation with the Department's faculty.

The Charles, Alice (Murray), and Cheryl A. Heilig Scholarship is awarded annually. Priority is given to undergraduates, but the scholarship may be awarded to a graduate student who meets the standards set by the Scholarship Committee of the Department of Music.

The Minnie Helen Hicks Scholarship is awarded annually to one or more students in Music. Preference is given to residents of Connecticut. The basis for selection includes financial need and musical ability.

The Mae K. Kaplitz Memorial Scholarship Fund was established by Paul Kaplitz in memory of his wife, Mae K. Kaplitz. Awarded annually to students with financial need who are majoring in vocal performance and are outstanding contributors to University choral organizations.

The Musical Club of Hartford, Inc. – Evelyn Bonar Storrs Piano Scholarship is awarded to a talented graduate student of outstanding commitment pursuing study in piano. Student financial need is considered. If no graduate student meets these criteria, the scholarship may be awarded to an undergraduate.

The Walter H. and Rowena R. Tinker Scholarship was established in memory of Walter and Rowena Tinker, devotees of opera and other vocal music. The award is made to a sophomore, junior, senior, or graduate voice student for outstanding progress.

The Alexander-Hewitt Trust, Vera Jean Berg, Edward Evans, Eugene List/Carrol Glenn, Zara Nelsova, John Poellein, Nadja Salerno-Sonnenberg, Henryk Szeryng, J. Louis von der Mehden, and the Friends of Music Scholarships also are offered. Priority is given to undergraduate students, but graduate students who meet the standards established by the Department of Music Scholarship Committee also are eligible.

Students should contact the Department of Music, Unit 1012, Storrs, Connecticut 06269-1012 for information and application forms.

### Natural Resources

Several graduate research assistantships, graduate teaching assistantships, Bishop Carder Scholarships, and scholarships related to natural resources and the environment generally are available. For additional information concerning the graduate program, visit the website: <[www.canr.uconn.edu/nrme/](http://www.canr.uconn.edu/nrme/)>.

### Neurosciences

The Neurosciences Area of Concentration Fellow-

ships up to \$2,000 are awarded periodically to students (selected from those currently enrolled in the Neurosciences area of concentration) who have demonstrated the potential for excellence in research. Application is made to Chair, Neurosciences Committee, Unit 4156, Storrs, Connecticut 06269-4156.

### Nursing

In the spring semester, students may apply for funding from several scholarship funds and the Advanced Education Nurse Traineeship Grant.

The Ralph and Ruby Gilman Scholarship honors the Gilmans' 50 years of service to the Mansfield and university communities. Dr. Gilman was hired in 1931 as the University's first full-time physician. Mrs. Gilman helped to establish the Public Health Nursing Association. Undergraduate and graduate students in Nursing are eligible. The scholarship is to be used for tuition and fees.

Newly established funds that can support graduate students include the School of Nursing Endowment Fund for Excellence, and the Mary and Katherine Connelly Nursing Scholarship.

Professional Nurse Traineeships are available for qualified full-time graduate students in Nursing. Based on the availability of funds, traineeships cover student tuition and fees. Interested students should request application materials and information concerning deadlines from the School of Nursing Academic Advising Services, Unit 2026, Storrs, Connecticut 06269-2026. Materials also are available on-line at <<http://www.nursing.uconn.edu/MSFINAN.HTML>>.

### Nutritional Science

The Janina M. Czajkowski Community Nutrition Scholarship is awarded each year to a graduate student in nutritional sciences. The recipient receives a certificate and a monetary award. The award is based on academic excellence in community nutrition, potential for scholarly achievement, and need. The scholarship was established by the friends of Dr. Janina M. Czajkowski Esselen, a Professor Emerita, who established the department's community nutrition program. The scholarship is awarded by the faculty of the department. There is no application.

The Elna E. Daniels Loan Fund makes available short-term, non-interest-bearing, small loans to graduate students in nutritional science. Application is made to Head of the Department, Department of Nutritional Sciences, Unit 4017, Storrs, Connecticut 06269-4017.

The Kirvin Knox and Hamilton D. Eaton Scholarships are awarded each year to graduate students in nutritional science. The student receives a certificate and a monetary award. The award is based on research accomplishment and potential for scholarly achievement in an area of nutritional science for students in the final phase of completing the degree program. The scholarship is awarded by the nutritional sciences faculty. No application is made.

### Pharmaceutical Science

The American Foundation for Pharmaceutical Education (AFPE) Fellowships are annual awards of approximately \$6,000-\$10,000 for students currently

enrolled in graduate study leading to the Ph.D. degree in pharmaceutical science. Application is made to the American Foundation for Pharmaceutical Education, One Church Street, Suite 202, Rockville, Maryland 20850.

The Boehringer Ingelheim Fellowship in Pharmaceutical Sciences supports advanced graduate students in the areas of medicinal and natural products chemistry, pharmaceuticals, or pharmacology (but not toxicology). The recipient must be in at least the third year of graduate study in the department. Application is made to the Pharmaceutical Sciences Graduate Affairs Committee early in the Spring semester. The fellowship is for one year and may be renewed for one additional year.

Boehringer Ingelheim Pharmaceuticals, Inc. makes available a graduate fellowship in toxicology. Application is made to the director of the toxicology program in the School of Pharmacy.

The Gerald J. Jackson Memorial Fellowship in pharmaceuticals is awarded to a deserving graduate student who holds an undergraduate degree in Pharmacy. Application is made to the Graduate Affairs Committee in the School of Pharmacy.

The Richardson-Vicks/A. Francis Summa Memorial Award supports research activity in the School of Pharmacy. Application is made to the Graduate Affairs Committee in the School of Pharmacy.

#### Physical Therapy

The Leslie Finney Laughlin Scholarship provides support for students in Physical Therapy.

#### Physics

Virtually all graduate students accepted into the Ph.D. program, and many accepted into the M.S. program, receive financial support in the form of teaching and research assistantships and fellowships. Special scholarship and fellowship support is available for exceptionally qualified graduate students. The Physics Department has substantial external support for research programs, and funded programs generally provide research assistantships (most with supplementary summer support). Ph.D. students who perform satisfactorily and make good progress receive financial support until they complete requirements for the Ph.D. degree.

The Physics Department annually awards the Marshall J. Walker Outstanding Teaching Assistant Award to the graduate student judged to be the most effective teaching assistant. *Outstanding Scholar Awards* also are available for very exceptional applicants to the Ph.D. program.

Further information about the Physics Department's academic and research programs is available at the Physics Department website at [www.phys.uconn.edu](http://www.phys.uconn.edu) and from a brochure that can be found on the website or requested by mail or e-mail at [gradphysics@uconn.edu](mailto:gradphysics@uconn.edu).

#### Plant Science

Sources of support for graduate students in all areas of concentration include: (1) Graduate research assistantships, from various sources including government and industry. (2) Teaching assistantships.

(3) C. R. Burr Memorial Scholarships. (4) Bishop-Carder Scholarships. (Eligibility for these is restricted to graduate students who are residents of Connecticut.) There is no application for any of these awards. Requests for financial aid on admission are considered during the review of applications. Students are nominated for scholarships generally by the major advisor. Assistantships and scholarships are awarded upon the recommendation of the faculty of the department, on the basis of academic and scholarly achievement, and the potential for future academic and professional accomplishments.

#### Political Science

The Fund for Legal Studies Fellowship is awarded annually to a graduate student in Political Science who specializes in public law. The recipient is selected by the Department of Political Science.

The Audrey P. Beck Scholarship is shared between Economics and Political Science. A stipend of \$500 (or more, depending on endowment return) is awarded to a nominated student with an interest in pursuing a career in public policy. Criteria for the award include career potential, academic achievement, character, breadth of interests, and need.

The George F. Cole Dissertation Fellowship in Public Law is awarded to a graduate student pursuing a dissertation in Public Law.

The Michael Dunphy Award is given annually to a graduate student with a strong interest in American government, society, history, or culture. Outstanding intellectual ability and financial need must be demonstrated. The Political Science Department shares this award with History and Sociology. The Department of Political Science will name the winner in 2008, 2011, etc. Students are nominated by faculty members.

The Ilpyong Kim Fellowship is awarded annually to a graduate student in political science who is conducting dissertation research related to Asia. The recipient is selected by the Department of Political Science.

The Norman Kogan Fellowship in Western European Politics is given annually to a graduate student in political science who specializes in the study of Western European politics.

The Everett Ladd Fellowship in American Politics is awarded annually to the graduate student with the highest scholastic standing who intends to pursue American Politics as a doctoral area of study.

The Governor Abraham Ribicoff Fellowship in American Politics is awarded annually to a graduate student in political science who specializes in the study of American politics. Preference is given to residents of Connecticut. The recipient is selected by the Department of Political Science.

#### Polymer Science

Financial aid is usually offered to those students who are admitted for a Ph.D. Nearly all PhD students receive full financial support. Financial aid may come from one or more of the following sources: graduate assistantships from the program and University Pre-doctoral Fellowships. Truly outstanding applicants may also be considered for

Outstanding Scholars Program Awards. In addition, the Polymer Program offers several special fellowships for exceptional students. These include: the Stephanie H. Shaw Scholarship, the Andrew Garton Scholarship, and the James P. Bell Scholarship. All scholarship awards are made upon the recommendation of the Polymer faculty. For further information, please contact [polymer@ims.uconn.edu](mailto:polymer@ims.uconn.edu).

#### Psychology

The Isabelle Liberman Scholarship Fund, established by friends and colleagues of the late Professor of educational psychology, provides an annual award given to a graduate student for outstanding research in the psychology of language.

#### Public Administration

The Karl A. Bosworth Award and the Morton J. Tenzer, the Albert Ilg, and the Phi Alpha Alpha Fellowships are awarded to students in the Master of Public Administration Program. Recipients are selected by the M.P.A. Program from applications submitted by students in the program. For more information, contact the MPA Program Office at (860) 570-9343.

#### Public Health

A small number of awards are available for qualified full-time students that provide a stipend of up to \$25,000 per year (with the possibility of renewal for a second year), a tuition waiver, and health insurance.

#### Real Estate

Information concerning each of the scholarships listed below is available from: The Center for Real Estate and Urban Economic Studies ("Real Estate Center"), School of Business, Room 4401, 2100 Hillside Road, Unit 1041RE, Storrs, Connecticut 06269-1041. Scholarship applications are taken at the beginning of the fall and spring semesters. All scholarships are administered through the Real Estate Center.

Byrl N. Boyce Valuation Scholarship is given to a students interested in pursuing careers in real estate valuation and who have demonstrated potential for future academic and professional accomplishments.

The William N. Kinnard, Jr./CREUES Alumni Scholarship is awarded to students having a strong interest in careers in real estate. Criteria include past academic achievements and demonstrated potential for future academic and professional accomplishments.

The Stephen D. Messner/School of Business Administration Scholarship and Fund provides support for graduate students interested in real estate and finance.

Society of Industrial and Office Realtors/Samuel F. Pierson Scholarship offers a number of awards given to students interested in careers in real estate, preferably sales.

#### Social Work

The Albert Brown, Jr. Scholarship Fund provides a major award in the form of a graduate assistantship to one or more students in the School of Social Work who undertake a field placement at the University Health Service on the Storrs campus. Field placement is determined by committee. Further information

mation is available from the Director of the Student Mental Health Service at the Storrs campus, (860) 486-4705.

### **Sociology**

The Michael Dunphy Award is given annually to a graduate student with a strong interest in American government, society, history, or culture. Outstanding intellectual ability and financial need must be demonstrated. The Sociology Department shares this award with History and Political Science. The Department of Sociology will name the winner in 2009, 2012, etc. Students are nominated by the Sociology Graduate Admissions and Financial Aid Committee.

The Ronald L. Taylor Award of \$100 is given annually for the best graduate student paper in Sociology. Students are notified by course instructors to apply. The award is available during the spring semester.

### **Statistics**

Graduate student support is available in the form of teaching assistantships, research assistantships, lectureships, and graduate fellowships. Advanced students can apply for summer teaching and research support. Internships with Connecticut firms can often be arranged for graduate students who have completed one year of study. In all cases, application is to the department's director of graduate studies.



### **Additional Sources of External Support**

The Office for Sponsored Programs, located in the Whetten Graduate Center, subscribes to *InfoEd*, a leading online funding database, offering over 50,000 potential funding opportunities from Federal government, private foundations, and corporate giving programs. This database is accessible through the OSP home page ([www.osp.uconn.edu](http://www.osp.uconn.edu)) and can be searched from any University computer. Students are encouraged to become familiar with these resources, which can be accessed to locate external sources of support for doctoral dissertation research, as well as general graduate student support.

Students can also consult the Peterson's Grants for Graduate Study, a compilation of federal and nonfederal resources available at the Babbidge Library. For further information, contact the Office for Sponsored Programs, Unit 1133, Storrs, CT 06269-1133 or [osp@uconn.edu](mailto:osp@uconn.edu).

# UNIVERSITY PROGRAMS AND SERVICES

## Requests for Official University of Connecticut Transcripts

Students at Storrs and the regional campuses can request official transcripts of their academic records by writing to the University of Connecticut, Office of the Registrar, Unit 4077-T, Storrs, Connecticut 06269-4077. Requests can also be transmitted by FAX to the Registrar at (860) 486-0062. All requests should include full name, date of birth, UConn ID (PeopleSoft empl ID) if known, dates of attendance, complete and accurate addresses of transcript recipients (including ZIP codes), as well as the requester's mailing and e-mail addresses and telephone number in the event that there is a problem with the request. Requests **must** be signed even if they are faxed or sent via e-mail. Students also may request official transcripts through the Student Administration System.

Request forms can be completed at the Registrar's Office in the Wilbur Cross Building on the Storrs campus. These forms are also available at the regional campus registrars' offices for mailing or faxing to the University Registrar at Storrs or on the Registrar's Website.

Students can request that their transcripts be sent to themselves. Note, however, that such transcripts are stamped "issued to student in a sealed envelope" and the envelope bears a similar stamp and a facsimile signature. Students are cautioned that some recipients will not accept transcripts that have not been sent directly to them.

Transcripts are sent out by U.S. Postal Service first class mail, Priority Mail, or Express Mail. For Priority, Express Mail, UPS, Federal Express, or DHL, the request must be accompanied by a pre-paid and pre-addressed company-specific envelope. Any and all arrangement must be made by the requestor.

There are other restrictions to this service. Official transcripts may be withheld by appropriate University officials if some financial or other obligation to the University remains unmet. Since official transcripts are issued on security bank paper they **cannot be sent by FAX**. Requests are processed in the order in which they are received in one to five business days. The University cannot honor telephone or e-mail requests for transcripts.

There is no service fee for official transcripts.

Students can obtain an unofficial transcript via a computer that has internet access by logging on to the Student Administration System using the unique USED ID and password or by presenting a photo I.D. in person at the Registrar's Office at Storrs or at any of the regional campuses; however, students should call the regional campus registrar in advance to make arrangements for transcript pickup.

## Housing

### Reserving On-Campus Graduate Housing.

In order to reserve graduate housing for the academic year 2009-2010, applicants must submit the Application for Housing Assignment for New Graduate Students with a non-refundable \$140 room deposit payment within 15 days of receipt of the application. The final deadline for accepting all applications is July 1, 2009. Information is included in the graduate school admissions packet. Housing will be assigned on a priority basis within the limits of available space.

Graduate students have three options for on-campus housing at the University of Connecticut. These options include the Graduate Residences, Hilltop Apartments and Northwood Apartments.

**Graduate Residences.** The Graduate Residences consist of three buildings in a co-educational complex that contains 439 carpeted single rooms. These buildings are subdivided into 16 residence halls with no more than eight students sharing a bathroom on a floor. The halls are open year-round (including recess periods) and are conveniently located in the center of campus which allows for easy access to the Graduate Center, the library, and academic facilities. Older undergraduates that are 21 years of age or older are also housed in this facility. Air conditioning is not available in this complex.

**Hilltop Apartments.** Hilltop Apartments is an apartment community built for graduate and undergraduate students. Every apartment is fully furnished, carpeted, and has air conditioning. A complete kitchen and amenities such as a full-size bed, washer and dryer, microwave, and dishwasher are standard. All utilities plus cable, local phone, and internet access are included in a competitively-priced housing package.

**Northwood Apartments (Single Applicants or Family Housing).** Northwood Apartments is a community that houses graduate students, undergraduate students, and married graduate students with families. Every apartment is fully furnished, carpeted, and has access to laundry facilities in the complex. All utilities plus cable and internet access are included (except land line telephone service). Air conditioning is not available in this complex. Single graduate students or married graduate students with families can live in designated two-bedroom apartments.

**Application Deadline.** Early application for a room is advisable since housing assignments fill quickly for the fall semester and applications are due within 15 days of receipt. The final deadline for accepting fall applications is July 1, 2009. The housing contract is binding for both the fall and spring semesters. Students should be aware that only extreme situations will warrant a contract release during the academic year so students should plan accordingly.

New students that are not familiar with the Storrs area should realize that Storrs is located in a rural area. There is limited public transportation. Students coming to Storrs from a considerable distance are well advised to seek housing on campus, at least for the first year of residence.

For students that would like to investigate off-campus options, they are advised to seek and secure

accommodations for off-campus housing prior to their arrival to campus. Off-campus housing within walking distance is limited due to the rural location of the campus.

Students may access the UConn Department of Residential Life site at <<http://www.reslife.uconn.edu>> for additional information.

## Health Services

The Department of Health Services, located in the Hilda M. Williams Building on Glenbrook Road, Storrs, provides primary level health care (medical and mental health). The Department of Health Services is a fully accredited ambulatory health care facility. Students are offered both in- and out-patient services. Health care treatment for non-life-threatening conditions is available. Because of certain limitations, some medical or psychological problems may be referred to the private sector for diagnosis and/or treatment.

In- and out-patient medical services are provided by the department. These services include outpatient nurse practitioner service, outpatient gynecological service, and outpatient mental health service. Supportive services include laboratory, x-ray, and pharmacy. Nutritional counseling also is available on an appointment basis. Health promotion and outreach programs are offered through the Health Education Office. Confidential HIV testing also is available.

The Department of Health Services is open continuously (24 hours a day) from 8:00 A.M. Monday through 4:00 P.M. on Saturday. Hours on Sunday are 8:00 A.M. to 4:00 P.M. There is an on-call telephone advice nurse service and on-call mental health clinician on Saturday and Sunday nights. There is reduced coverage during the semester breaks and the summer sessions. Services are available through appointment clinics and through daily walk-in clinics. The Women's Health Clinic specializes in all aspects of female sexuality and health care. The Women's Clinic also sponsors assault crisis intervention for sexual and physical abuse. Certain supportive services may be restricted when the University is not in full session.

Students who enter the University for the first time must furnish a detailed health history form for medical records purposes as well as documentary proof of adequate immunization against Measles and Rubella prior to registering for classes. Students living in University housing must present evidence of meningitis vaccination. Additionally, students must provide evidence of TB testing and appropriate medical intervention (or complete an assessment form, if applicable). All medical records are held in strict confidence and can be released only with a signed consent form.

Services are available to all properly registered Storrs students. Charges may be placed on the student's university fee bill. Such bills may be submitted to insurance companies for reimbursement, but remain the financial responsibility of the student. The Health Service is a participating provider with several major insurance plans. All full-time students must provide

for their own accident and illness insurance to cover medical care not provided through the Department of Health Services. Students may opt to be covered for accidents and illnesses through a personal insurance policy, a parental insurance policy, or a group policy sponsored by the University. Supplemental Student Health Insurance for accident and sickness is available from a private student medical insurance program. Full-time students who fail to provide proof of health insurance by filing an on-line insurance waiver through the PeopleSoft Student Administration System may be charged and automatically enrolled in the university sponsored plan. Insurance information and enrollment for the student insurance program is available at the Department of Health Services. Further information is available at <[www.shs.uconn.edu](http://www.shs.uconn.edu)>.

### Center for Students with Disabilities

A complete Statement of the University's *Policies and Procedures Regarding Students with Disabilities* can be accessed at this website: <[www.csd.uconn.edu](http://www.csd.uconn.edu)>.

Through the integration of teaching, research and service, it is the mission of the University of Connecticut to provide an outstanding educational experience for each student. The mission of the Center for Students with Disabilities (CSD) is to enhance this experience for students with disabilities. Our goal is to ensure a comprehensively accessible university experience where individuals with disabilities have the same access to programs, opportunities, and activities as all others. The Center is also committed to promoting access and awareness as a resource to all members of the community. While complying with the letter of the law, the CSD also embraces its spirit by providing services to all students with permanent or temporary disabilities to ensure that all University programs and activities are accessible.

Services offered include:

- Pre-admission counseling and new student orientation
- Academic accommodations and counseling
- Assistive technology training
- Residential accommodations and counseling
- Financial aid counseling
- Personal Assistant referral and training
- Transportation and parking services
- Referral and liaison services to other agencies such as the Commission on the Deaf and Hearing Impaired, Board of Education Services for the Blind, and Recordings for the Blind and Dyslexic
- Information and referral source to all University and community programs and services.

For more information, contact Donna M. Korbel, Director, CSD, Wilbur Cross Building, Room 204, Unit 4174, Storrs, Connecticut 06269-4174;

Voice (860) 486-2020, TDD (860) 486-2077, FAX (860) 486-4412.

### Career Services

The needs of graduate students as soon-to-be professionals are unique. The Department of Career Services provides a variety of resources to help graduate students (masters and doctoral) achieve professional career goals. Listed below is an overview of the resources provided for graduate students.

*Career Consultation* - Professional career consultants are available to discuss your unique plans for the future. During the fall and spring academic semesters, no appointment is required; come to our office during scheduled Walk-In Hours. Visit our website or call the office for available times. During breaks, please call our office to schedule an appointment.

*Resume/CV Assistance* - If you need assistance getting started, would like to see examples, or want a professional to review your document, please call our office to schedule an appointment.

*Career Resource Library* - This collection in the Department of Career Services houses many publications and other media of interest to graduate students. Occupational information; graduate school guides; tips for doctoral students; job postings and other career-related information are available.

*Practice Interviews* - If you seek employment in Industry, you can participate in a Mock Interview. These sessions are recorded and a DVD is provided to each participant to take home and view. For more information visit our web site. These interviews are not provided for those seeking academic/faculty positions.

*Ph.D. and the Job Search DVD* - A free DVD is available for Ph.D. candidates. This resource contains information about writing a CV, the Job Search, and Interviewing. Faculty and Industry professionals provide insight for Ph.D. students regarding these topics. A great resource for the Academic or Industry job search.

*Workshops/Presentations* - Each semester, Career Services offers workshops on various career-related topics. Check the web site or stop in to the office for a listing of events.

*Annual Career Fair* - During the Fall semester, a career fair takes place on campus bringing over 100 employers. This is a great opportunity to make contact with companies and organizations seeking to hire UConn graduates. Check the web site for exact date and location.

Career Services is located in room 217 of the Center for Undergraduate Education at 368 Fairfield Road (across from Babbidge Library). Please visit <[www.career.uconn.edu](http://www.career.uconn.edu)> or call 486-3013 for additional information.

### Graduate Student Senate

The Graduate Student Senate (GSS) was founded

in 1966 for the purpose of enriching the lives of graduate students and acting on behalf of their needs and interests. Composed of students who represent all graduate fields of study, the Senate serves as the liaison between graduate students and the university administration and non-university organizations.

The Senate is recognized as one of the five deliberative bodies on campus (the others are the University's Board of Trustees, the University Senate, the Graduate Faculty Council, and the Undergraduate Student Government). The Senate has voting representatives on some of these bodies as well as other university standing committees.

The Senate engages in student advocacy, service, academic, and social activities. Areas of student advocacy in recent years have included:

- a waiver of the general University fee for graduate students not taking courses who are pursuing research, etc. at locations distant from the university;
- cost-of-living adjustment for graduate assistant stipends;
- an earlier issuance of initial graduate assistant pay checks;
- increased graduate student residential options;
- fostering and supporting cooperation between the town and the University, including membership and active participation in the Mansfield Downtown Partnership; and
- the adoption of new guidelines concerning duration and level of support for graduate assistants.

Examples of recent service involvements include:

- the Senate short-term emergency loans for graduate students;
- annual publication of the *Graduate Student Handbook and Newsletter*;
- grants to departments and groups planning programs which contribute to the academic and professional development of graduate students;
- the dissemination of information to graduate students concerning university initiatives and policy changes;
- the Graduate Resource Fair, an annual orientation and resources fair for new graduate students; and
- representation on University-wide committees such as the Vice Chancellor's Leadership Committee, University Senate, the Graduate Faculty Council, and the Chancellor's Library Advisory Committee.

Recent academic and social activities have included:

- co-sponsorship of the 2004 Northeast Ecology and Evolution Conference;
- lunches with key university administrators;
- sponsorship and co-sponsorship of departmental lecture series; and
- social events such as weekly coffee nights, theme dinners, trivia tournaments and seasonal gatherings.

Programs and activities such as those listed above are funded largely by the graduate student



Activity Fee with additional program support provided by the Graduate School. The Senate encourages all graduate students to participate in campus as well as university and student governance activities. Additional information concerning Senate programs and meetings is available from the Senate office, room 213 in the Student Union [phone (860) 486-3907, e-mail <gss@huskymail.uconn.edu>, Web <<http://www.gss.uconn.edu>>].

## Parking and Transportation

**Parking of Student Cars.** Parking on campus is in high demand and it is suggested that students who can avoid bringing a vehicle to campus should do so. The number of parking spaces available makes it impossible to give all students permission to register motor vehicles at the University. It is therefore necessary to establish guidelines for the allotment of motor vehicle permits. Those guidelines are as follows:

- Commuter students may purchase parking, regardless of semester standing.
- Resident students living on campus must have successfully completed 54 or more credits to be eligible for parking.

Qualified individuals are required to register their vehicles with Parking Services, pay a registration fee, and to display their valid permit. Photo identification or a valid UConn I.D. must be presented when purchasing a permit.

In order to purchase a parking permit, the applicant and the vehicle must be registered and meet all legal requirements for operation within the State of Connecticut. The vehicle must be owned (or operated) by the applicant or a member of his/her immediate family and must carry insurance or other form of security as established under Connecticut Motor Vehicle Laws (Title 14). Students may not register vehicles belonging to other students. Applicants must provide proof of vehicle registration when registering and all outstanding University fee bill charges must be paid prior to obtaining a parking permit.

Further information about parking on the Storrs campus can be obtained by calling Parking Services at (860) 486-4930, by visiting the website at <<http://www.park.uconn.edu>>, or by stopping by the Parking Services Office at 3 North Hillside Road on the Storrs Campus.

**Bus Service.** The University offers an extensive, no-fare shuttle bus service on the Storrs campus when classes are in session. The shuttle bus routes and hours of operation can be obtained from the Transportation Website at <<http://www.park.uconn.edu>>.

The Windham Regional Transit District (WRTD) provides bus service which operates between Storrs and Willimantic (a nearby city). Information regarding the route, fares, and hours of operation can be obtained by calling WRTD at (860) 486-2223. Connections to out-of-town buses can be made in Willimantic or through the UConn Co-op.

## Office of International Affairs

The Office of International Affairs (OIA) and the Area Studies Programs (on Latin America and the Caribbean, Europe, India, and the Middle East) are located in the Ray Ryan Building (2006 Hillside Road).

The activities of the Office of International Affairs also include technical assistance and training projects (especially in developing countries), international exchange of faculty, coordination of research, and assistance with grant proposals.

The Center for European Studies encourages interdisciplinary study and research on Europe. The Center for Latin American and Caribbean Studies coordinates both undergraduate and graduate study of Latin America.

## International Center -- Department of International Services and Programs

The Department of International Services and Programs (DISP) is responsible for the immigration advising of all international undergraduate and graduate students. In addition, this office handles all requests for the J exchange visitor program which includes J exchange students and J visiting researchers and professors. DISP is the only authorized UConn department that processes the employment of H-1B petitions and other non-immigrant employments. DISP not only provides personal advising to immigration issues but also conducts monthly programs/workshops covering a wide range of topics from orientation programs to cultural adjustment to life in the U.S. to weekly coffee hours. DISP sponsors cultural events such as the World Fest and arranges various trips throughout the semester.

DISP is located in the International Center in the Student Union, suite 307, 2110 Hillside Road and is an ideal place for international students to meet and discuss their concerns. A full-time staff is available to assist any international student or visiting scholar.

## UConn American English Language Institute (UCAELI)

UCAELI, in the Center for Continuing Studies, offers a full service intensive English program for students of English as a second language. Courses are designed to prepare students for academic work and professional pursuits. Fifteen-week sessions are offered each fall and spring and eight- and four-week sessions are offered in the summer. A TOEFL preparation course is offered each session, as is the Institution TOEFL exam. An English Proficiency Certificate, accepted by the Admissions Office in lieu of the TOEFL score of 550, can be issued to qualified students. The majority of students in the program study full-time (22 hours per week); however, individual courses are also open to UCONN degree-seeking students. With permission, advanced students may elect to take UCONN credit-bearing courses in

combination with their UCAELI courses. Tutoring and customized courses can be arranged.

## International Proposal Development/Fulbright Program Advisement

The Coordinator of International Proposal Development seeks sources for funding for proposals to enhance area studies programs and internationalize the curriculum, and assists faculty, staff, and students in developing internationally-oriented grant and contract proposals.

The Fulbright Program Advisor publicizes and recruits applicants for Fulbright Scholarships and Fellowships and Fulbright-Hays Training Grants. Applicants are assisted in preparing competitive applications. The Fulbright Program Advisor chairs the University's Fulbright Scholarship Committee, a standing committee of the University.



# REGISTRATION

Applicants admitted on the basis of an expected baccalaureate or graduate degree must have completed all requirements for that degree prior to the start of classes. University of Connecticut seniors must have completed the baccalaureate prior to the start of classes. Otherwise they must continue to register as undergraduates, even though admitted to the Graduate School and registering for graduate courses.

Occasionally, a University of Connecticut senior planning to enter the Graduate School has less than a full course load remaining to complete for graduation. Such a student may take advanced courses along with the remaining undergraduate courses and may count those advanced courses toward the graduate degree. Inclusion of up to six credits of such course work is permissible under the following conditions: (a) the work is completed with grades of B or above; (b) the student is later admitted to Regular status in the Graduate School; (c) the work is approved as part of the graduate plan of study; and (d) the student presents a written statement from the University Registrar certifying that the work was not counted toward the baccalaureate degree.

Advance registration and fee payments are accepted on the assumption that students will remain eligible to continue, having met the scholastic standards of the Graduate School and by having complied with its regulations.

The following instructions apply to students registering for most courses conducted on the Storrs campus. Information on registering for courses offered through the Center for Continuing Studies, courses offered by the School of Social Work, or courses offered by the Master of Business Administration programs conducted at centers other than Storrs will be found in brochures published by those programs. All degree-seeking students must register for courses using one of the available methods of registration, and pay all fees at the Office of the University Bursar. All course charges (applicable tuition and fees) are due and payable by the close of business on the tenth day of the semester. Late fees and the reinstatement fee are assessed after that time. Part-time students who are not degree-seeking students must register through the Division of Continuing Studies.

Both new and continuing students should make appointments with their major advisors to determine the courses in which they plan to enroll. Instructions for registration are sent to all students by mail. Entering students receive it with their admission information, while continuing students receive it about a month prior to the registration period. The material is mailed to the student's last known address on file in the Graduate School. If a student fails to receive this material, replacement copies may be obtained

either from the Graduate School website ([www.grad.uconn.edu/registration.html](http://www.grad.uconn.edu/registration.html)) or through the Graduate School Office, Unit 1006, Storrs, Connecticut 06269-1006. Early registration will avoid confusion and increase the likelihood of obtaining the desired course(s). Ordinarily, there are two advance registration periods for the fall semester, one beginning in early April and the other beginning in mid-August. Similar periods for spring occur in late October and early January. The exact dates are contained in the registration mailing. Depending upon course selections, most students should be able to register entirely over the World Wide Web. Problems encountered during registration (including enrollment in restricted courses) may be brought to the Graduate School in the Whetten Graduate Center. In all cases, registration is not complete until all tuition and fees are paid at the Office of the University Bursar **or** a limited deferment of payment is obtained from the Deferment Office. In any event, both final registration for courses and final payment of fees (or issuance of a deferment) must be completed on or before the tenth business day of the semester. Failure to complete timely registration and payment of fees will subject the student in addition to the imposition of the Late Registration/Payment Fee and the Reinstatement Fee, as appropriate.

## Continuing Registration

Master's, doctoral, sixth year in education, and graduate certificate students must begin their programs with course work and must maintain registration continuously each semester thereafter (except summer sessions) until all requirements for the degree have been completed. Registration may be maintained either by taking course work for credit or by registering for one of the four non-credit Continuing Registration courses. These include Special Readings at the master's (GRAD 5998) or doctoral (GRAD 6998) level, Master's Thesis Preparation (GRAD 6999), and Doctoral Dissertation Preparation (GRAD 6999). Other zero-credit courses may be substituted, if appropriate. Non-credit registration requires payment of the Graduate Matriculation Fee as well as the appropriate level of the General University Fee (see "General University Fee," "Graduate Matriculation Fee," and "Continuous Registration" under "Fees and Expenses").

International students should consult with the Graduate School prior to registering for zero-credit courses. Per SEVIS guideline 8 C.F.R.214.2 (f) (6) (iii), students are permitted to register for zero credits for a maximum of one academic year. Continuous registration is granted on a semester-by-semester basis with the consent of the student's major advisor and the Graduate School.

Failure to maintain continuous registration during any semester results in the student's inactivation. Reinstatement is possible only after payment of all fees in arrears and the reinstatement fee. (See "Reinstatement Fee.") The consequences associated with matriculation via Continuing Registration rather than credit courses are addressed in the "Course Loads" section.

Neither enrollment for Continuing Registration nor payment for it is required for any semester,

during the first ten class days of which the student completes all requirements for a degree, if it is the only degree the student is pursuing.

Any currently matriculated student taking course work at another institution, either for transfer to a University of Connecticut graduate degree program or for any other reason, must register for Continuing Registration as specified above in any affected semester.

Enrollment in Continuing Registration is not required during the summer except as follows. A degree student, if not otherwise registered for the summer, must register for Continuing Registration and pay the Graduate Matriculation Fee if the student is fulfilling in part the doctoral residence requirement during the summer. To receive most forms of summer financial aid for study or research, a student must register for either 5 credits of coursework in each of two summer sessions or one of the full-time research courses, GRAD 5960 (Full-time Master's Research) or GRAD 6960 (Full-time Doctoral Research). For summer registration, permission numbers for GRAD 5960 and 6960 are issued by the Graduate School Office.

## Registration Deadlines

All graduate students registering with the University must have their initial registration in place no later than the close of business of the tenth day of classes each semester. Additions to and deletions from a student's class schedule may occur freely throughout the first ten business days of the term. Students who do not complete an initial registration by the close of business of the first day of classes are subject to a late registration fee and a reinstatement fee.

## Course Loads

The number of credits and choice of courses for which a student registers is a matter to be discussed by the student and the major advisor. A student may be classified as a full-time student in one of three ways: (1) enroll in 9 or more credits of course work; (2) enroll in 6 or more credits of course work while holding a graduate assistantship (50% or greater); or (3) enroll in one of the four special purpose 3-credit courses. These courses include GRAD 5960 (Full-time Master's Research), GRAD 6960 (Full-time Doctoral Research), GRAD 5930 (Master's Level Directed Studies), and GRAD 6930 (Doctoral Level Directed Studies). The former two courses may be taken by students who have completed all requirements for the respective degree except the research component and who have no other obligations at the University (i.e., no other course work and no graduate assistantship). The latter two courses denote a full-time off-campus directed project, such as an internship, field work, or other special activity. Students in GRAD 5930 or GRAD 6930 may hold graduate assistantships if those assistantships are in direct support of their studies. Such an assistantship may not be a standard teaching assistantship.

To be classified as half-time, the student's course credit load must be between 5 and 8 credits/semester. A credit load of fewer than 5

credits/semester is a part-time load. These criteria apply to all registered students at the University. The currently defined Continuing Registration courses (GRAD 5998, 5999, 6998, and 6999) are zero-credit “placeholder” courses denoting part-time study and do not count toward the credit load requirement for half-time or full-time enrollment status. Degree-seeking students who do not need to be certified by the University as holding at least half-time enrollment status may use these courses to maintain registration on a part-time basis.

Students holding graduate assistantships must register for 6 or more credits/semester. Such students are considered to be full-time students.

In addition to courses offered by each department, a student’s credit load may include GRAD 5950 (Thesis Research), GRAD 6950 (Dissertation Research), and other equivalent research courses defined by the Graduate School, including seminar and other “colloquium” courses that are not part of the plan of study. These variable credit courses carry S/U grading, with the student’s major advisor as the instructor of record.

No full-time member of the professional staff or faculty may take for credit academic work at this institution or elsewhere which conflicts with the staff or faculty member’s assigned working hours. To take courses at all, staff and faculty members must have the approval of their department head and dean. (See “Admission,” for regulations affecting staff or faculty members holding tenure or rank above instructor.)

### **Auditing Courses**

Students who do not wish to register for credit may be permitted to register as auditors under the following conditions: (1) they pay the appropriate tuition and fees for courses; (2) they obtain the consent of the instructor; (3) they audit only courses for which there are adequate classroom or laboratory facilities; and (4) in the case of students in degree programs, they obtain consent from their major advisors. All permissions and registrations for auditing courses must be filed in the Graduate School. Courses audited are entered on the student’s permanent record, but such courses cannot be used toward fulfilling requirements for a graduate degree at the University.

The privileges of an auditor in a course are limited specifically to attending and listening. Auditors must attend class regularly. The auditor assumes no obligation to do any of the work required of the course and is not expected to take any of the instructor’s time. In addition, the auditor does not submit any work, and is neither eligible to take any tests or examinations nor able to receive grades on all or any part of the course.

Students should not “sit-in” on classes for which they do not register as auditors.

### **Adding a Course**

After the beginning of a semester or summer session, a student may not add a course if the instructor feels that elapsed time might preclude its successful completion. For degree-seeking students, courses added after the tenth day of a

semester or after the fifth day of a summer-session term must be submitted to the Graduate School. Certain exceptions to this policy exist. Students in the Sixth-Year Program must obtain permission from the Associate Dean of the School of Education. Students in part-time M.B.A. programs conducted at locations other than Storrs must obtain permission from the director of the program at their location. Students in Social Work must follow the procedures in effect at the School of Social Work.

### **Dropping a Course**

Discontinuance of attendance or notice to an instructor or to an advisor does not constitute cancellation of course registration, and may result in a failing grade on the student’s permanent record. Before terminating class attendance, the student should ensure that the course has been dropped officially. Until this has been done, the student is obligated to complete all work. No grade is recorded for courses officially dropped, but a mark of *W* is recorded to signify withdrawal from a course after the tenth day of the semester or after the first week of a summer-session course. Cancellation of course registration does not automatically drop a course from a plan of study, nor does approved deletion of a course from a plan of study cause cancellation of course registration. The procedures are separate and unrelated.

***During the first nine weeks of a semester or prior to the midpoint of a summer-session course,*** a course may be dropped by the following procedure. Students registered directly by the Graduate School at Storrs must file properly completed and signed schedule revision request card with the Graduate School. Non-degree students registered during either semester through the Center for Continuing Studies must notify that office in writing. Students in part-time M.B.A. programs conducted at locations other than Storrs must notify the director of the program in writing. Students in Social Work must follow procedures in force at the School of Social Work.

***After the first nine weeks of a semester or the midpoint of a summer-session course,*** students ordinarily are not allowed to drop a course. If, however, a student must drop a course because of illness or other compelling reason beyond the student’s control, the student must request special permission as early as possible and well before the last day of classes. Permission to drop a course or to change from participant to auditor is granted only for good cause. All students – except those in the Sixth-Year Program, part-time M.B.A. programs conducted at locations other than Storrs, or the Social Work program – whether enrolled in daytime or evening classes, at Storrs or elsewhere, must obtain permission from the Graduate School. Permission is granted only on the major advisor’s written recommendation, which must be convincing and sufficiently specific regarding reasons beyond the control of the student. The recommendation should be accompanied by properly completed and signed schedule revision request card for the course(s) to be dropped. Students in the Sixth-Year

Program must obtain permission from the Associate Dean of the School of Education. Students in part-time M.B.A. programs conducted at locations other than Storrs must obtain permission from the director of the program. Students in Social Work must follow procedures in force at the School of Social Work. Under no circumstances is a student at any location or in any program permitted to drop a course after the course has officially ended.

### **Dropping all Courses; Withdrawal from the Program**

The general policies and procedures regarding dropping a course (above) apply to dropping all courses, whether the student wishes to remain active in the graduate degree program or to withdraw permanently from it. Permission from the Graduate School is needed for the student either to remain active in the program or to leave in good standing.

If a refund is due to a student (See “Refunds and Cancellations of Charges”), the schedule-revision-request card must be signed by the appropriate Graduate School officer, regardless of the week of the semester. This signature is required so that the refund process may be initiated. No refund is possible unless all course work for credit is dropped.

# STANDARDS AND DEGREE REQUIREMENTS

These represent general academic standards and requirements of the Graduate School as they apply to graduate students in degree programs. Some programs have special regulations more detailed or stringent. Students should acquaint themselves with their own program's requirements as set forth in this Catalog and subsequent ones, as appropriate. Undergraduate and non-degree students taking a graduate course should consult the appropriate bulletin for regulations which apply to them.

## Course Grades

Instructors are required to file with the University Registrar grades for all courses that a student takes for credit. While instructors are free to set the standard of performance they expect in their courses, a uniform scale is published to encourage general agreement on the meaning of grades.

The letter *A* signifies work of distinction. The letter *B* represents work of good quality, such as is expected of any successful graduate student. The letter *C* represents work below the standard expected of graduate students in their area of study. It is recognized that work of *C* quality in a supporting area may be of benefit to students and that they should not be discouraged by the grading system from including some supporting work in their programs. Such work shall be identified on the plan of study. Plus and minus values may be assigned to all but failing grades, are entered on the permanent record, and are computed into the student's grade point average.

A grade of *D+*, *D*, or *D-* signifies work of unsatisfactory quality. If a graduate student receives any form of a *D* grade, the course may not remain on the plan of study and the student's eligibility to continue in the degree program is reviewed by the student's advisory committee.

The grade of *F* or *U* signifies failure in the course and necessitates a recommendation by the advisory committee to the Graduate School as to whether or not the student shall be permitted to continue graduate study.

Final grades of *S* (Satisfactory) or *U* (Unsatisfactory) are associated only with certain courses designated as such by the Executive Committee of the Graduate Faculty Council. Certain foreign language courses designed under method (2) for fulfillment of a doctoral language requirement also may carry the *S/U* grading option, if chosen by the student. (See "Foreign Language; Related or Supporting Area of Study.") All but the foreign language courses are identified

in this bulletin by the symbol † preceding the course number. This type of grading is designed for courses or sections of courses in which student performance cannot readily be evaluated due to the nature of the course as conducted at the time. An *S* is not computed into the student's grade point average, while a *U* is viewed as an *F* (except that no computation is made for 1000's level courses).

Graduate students are not permitted to take any regular course, undergraduate or graduate, on a Pass/Fail basis.

A mark of *I* (Incomplete) is assigned if a student has been doing work of acceptable quality but, for some reason satisfactory to the instructor, has not completed all of the work required to earn credit for a course by the end of the semester or session.

The letter *W* signifies withdrawal from a course after either the tenth day of a semester course or the first week of a summer-session course. Except in extraordinary cases where academic factors or extreme or unusual circumstances warrant it, this mark is not deleted from the permanent academic record.

If a student whose work in a course throughout the semester has been of satisfactory quality fails to take a required final examination in the course because of illness or other serious cause, the instructor is permitted to give a mark of *X* (Absent) and may, with the permission of the Graduate School, reschedule the examination. If the student's work up to the time of the examination was not clearly of passing quality, the instructor is to enter a mark of *F* or *U* if a required final examination is missed.

The letters *L*, *N*, and *Y* are administrative symbols signifying that a letter grade had not been reported by the instructor when grades were processed. The letter *L* signifies lateness in reporting grades for an entire section of a course. The letter *N* signifies that no grade was reported for an individual student duly registered for a course. The letter *Y* signifies that no grades were due to be reported for an entire section of a course (because of the scheduling of the course) when grades were processed.

Beginning with the Fall 2004 semester, the symbol *I* or *X* is replaced by the final course grade on the permanent academic record when the student completes all required work for the course and the instructor reports the final grade to the Registrar. Prior to the Fall 2004 semester, the symbols *I* and *X* appear together with final course grades on students' permanent academic records.

The letter *T* indicates that course credit has been accepted in transfer from another institution.

The letter *R* is an administrative symbol signifying that a student is registered. Any zero-credit course (e.g., GRAD 5998, 5999, 6998, or 6999) for which a student registers appears on the permanent academic record with the letter *R* as the grade.

## Scholastic Standards

Students are required to maintain in their course program at least a *B* (3.00) average, for which a grade point average will be computed on a scale where:

<i>A+</i> = 4.3	<i>B-</i> = 2.7	<i>D+</i> = 1.3
<i>A</i> = 4.0	<i>C+</i> = 2.3	<i>D</i> = 1.0
<i>A-</i> = 3.7	<i>C</i> = 2.0	<i>D-</i> = 0.7
<i>B+</i> = 3.3	<i>C-</i> = 1.7	<i>F</i> = 0
<i>B</i> = 3.0		

Maintenance of good academic standing in the Graduate School requires at all times a cumulative grade point average of 3.00 or higher in course work completed while enrolled in a graduate program. An official transcript of an individual's graduate academic career, however, includes grade point average calculations based on all course work completed during the student's graduate career (including any 1000's level courses). Credits completed elsewhere and accepted in transfer by the Graduate School do not affect the student's University of Connecticut grade point average in any way.

Whenever a student's cumulative average falls below 3.00, the program is reviewed by the student's advisory committee to determine whether or not the student shall be permitted to continue graduate study.

If all work required to change a mark of *I* or *X* is not submitted to the University Registrar within twelve months following the end of the semester or session for which the mark was recorded, or within a shorter period of time specifically designated by the instructor, no credit is allowed for the course, and the indicated *I* or *X* becomes a part of the permanent record. The instructor has the option of changing such a mark to a grade of *F* or *U* within thirteen months following the end of the original semester or session. For grades of *I*, it is the student's responsibility to reach and to maintain an understanding with the instructor concerning the timely completion of the work. For grades of *X*, it is the student's responsibility to seek the required permission to take the final examination from the Graduate School as soon as possible after it has been missed.

Upon the recommendation of the instructor to the Graduate School, a limited extension of an Incomplete may be granted. The Graduate School is not obligated to approve an extension if the instructor of the course no longer is a faculty member at the University of Connecticut.

If more than three courses have been left incomplete, the student may be required to complete those still viable before being allowed to register for additional course work. Too many permanent Incompletes on the record may be grounds for the student's termination or dismissal. An employment authorization for a graduate assistantship appointment may not be approved for a student who has four or more viable incomplete courses on his or her academic record.

For further information the reader is referred to the document, "Key to the Transcript," available from the Office of the University Registrar.

## Termination of Status

To remain in good standing, a student at all times must have a major advisor as well as a viable terminal date (the date by which all degree requirements must be completed). A viable terminal date may be the result of an extension of a student's expired

original terminal date. Once the plan of study has been approved by the Executive Committee of the Graduate Faculty Council, a student at all times must have a duly constituted advisory committee with at least two associate advisors in addition to the major advisor.

In the event that a student's major advisor determines that resignation from the advisory committee is necessary, the student is provided with a reasonable opportunity to arrange for a new major advisor. If a new major advisor is not identified within six weeks of the resignation of the former major advisor, the student's graduate degree program status is terminated.

A graduate student and his or her major advisor should always be cognizant of the student's terminal date or terminal date extension, the date by which the Graduate School expects that all degree requirements will have been completed. The student and the major advisor are notified of the student's terminal date when the Graduate School sends approved copies of the student's plan of study. Any written recommendation to extend the terminal date must be submitted in a timely manner by the major advisor to the Graduate School. In the event that the major advisor determines that he or she cannot support a recommendation to extend an expiring terminal date or terminal date extension further, the Graduate School must be notified by the major advisor in writing at the earliest possible opportunity. Limited extensions of the terminal date are granted by the Graduate School only on the basis of substantial evidence that the student is making consistent and satisfactory progress toward the completion of degree requirements. In the absence of a timely recommendation to extend an expired terminal date, or in the event that a recommended extension has been denied by the Graduate School, the student's graduate degree program status is terminated.

Whenever a student's graduate degree program status is terminated, a letter is sent to the student by the Associate Dean. If the student wishes to request a hearing, the provisions outlined under "Hearing and Appeal Procedures" apply.

### Academic Dismissal

A graduate student's progress in a degree program is monitored regularly by the student's advisory committee. If at any time, a student's academic performance, progress in a graduate degree program, or professional development and/or suitability is judged by his or her advisory committee to be unsatisfactory, and if the advisory committee determines that dismissal on any of these grounds is warranted, the advisory committee must submit its written recommendation that the student be dismissed on such grounds to the Dean of the Graduate School. A student may be subject to academic dismissal if he or she: (1) fails to maintain the minimum cumulative grade point average required by the Graduate School (3.00); (2) receives a grade of *D+*, *D*, *D-*, *F*, or *U* in any course; (3) fails to satisfy a foreign language

requirement for a degree; (4) fails the doctoral general examination; (5) fails to produce an acceptable doctoral dissertation proposal; (6) performs unsatisfactorily in any aspect of the research or writing for a master's thesis or doctoral dissertation; (7) fails the final examination for the master's or doctoral degree; or (8) fails to satisfy any other academic requirement of the student's graduate degree program. The specific judgment on which the advisory committee's recommendation is based must be stated. The recommendation must bear the signature of each member of the advisory committee. For a student whose advisory committee has not yet been established, the major advisor alone submits the recommendation. If the student is to be dismissed on any of the above grounds, a letter of dismissal is issued by the Associate Dean. If the student wishes to request a hearing, the provisions outlined below under "Hearing and Appeal Procedures" apply.

### Hearing and Appeal Procedures

If a student's graduate degree program status is to be terminated or if a student is to be dismissed on academic grounds, the Associate Dean issues a letter to the student stating this intent. If a student wishes to request a hearing before the Associate Dean, the student must submit a written request within 30 days of receipt of the letter. Following the hearing, the student may appeal the decision of the Associate Dean to the Dean. This appeal does not constitute a new hearing. Rather, it is a review of the record of the original hearing and is entertained only on one or both of two grounds: (1) the claim of an error in the hearing procedure, and (2) the claim of new evidence or information that was not available at the time of the hearing. If the student's termination or dismissal is upheld by the Dean, the student may appeal further to the Provost on only the same grounds as the appeal to the Dean. In any event, the decision of the Provost is final.

## GRADUATE CERTIFICATE PROGRAMS

Graduate certificate programs may be offered within the structure of the Graduate School. Students may be awarded these certificates upon completion of a well-defined program of course work. The graduate certificate is not defined as a degree by the Graduate School; rather, it is simply a focused collection of courses that, when completed, affords the student some record of coherent academic accomplishment in a given discipline or set of related disciplines. Moreover, the graduate certificate is not viewed as a guaranteed means of entry into a graduate degree program. While the courses comprising a graduate certificate may be used as evidence in support of a student's application for admission to a graduate degree program, the certificate itself is not

considered to be a prerequisite. The didactic material contained within a graduate certificate program may represent a more practice-oriented subset of an existing graduate discipline. Detailed information concerning admissions criteria and procedures can be obtained from graduate certificate program coordinators.

An appropriate number of academic credits must comprise the certificate program. The number of graduate (5000- or 6000-level) credits may not be fewer than nine nor more than one-half of the credits necessary for a related Master's degree from the Graduate School. Ordinarily, the credit requirement ranges from 12 to 15 graduate semester credits. When there exists no related Master's program, the number of credits required for a graduate certificate is limited to 12.

A certificate student may enroll on either a part-time or a full-time basis, as determined by the certificate program coordinator and the number of credits taken by the student. Students enrolled on a full-time basis have access to many of the same campus services as other full-time graduate students. They may live in on-campus graduate student housing and they may be granted student library access and campus parking privileges, among others. They also may be considered for merit-based financial aid by the department or program, as well as for need-based financial aid by the Student Financial Aid Office, but at a reduced priority compared to degree-seeking students.

Graduate School Certificate programs currently approved for offering include but are not limited to the following:

- Biomedical Science Research Experience
- Culture, Health, and Human Development
- Geographic Information Systems
- Global Governance Studies
- Health Promotion and Health Education
- Health Psychology
- Human Rights
- International Studies
- Music Performance
- Nonprofit Management
- Nursing Practice
- Occupational Health Psychology
- Public Financial Management
- Quantitative Research Methods
- Sixth-Year Certificate Programs in Education
  - Adult Learning
  - Bi-lingual and Bi-cultural Education
  - Cognition/Instruction
  - Counselor Education and Counseling Psychology
  - Educational Administration
  - Educational Technology
  - Gifted and Talented Education
  - Professional Education
  - Reading and Language Arts Consultant
  - Remedial Reading and Remedial Language Arts Teacher
  - School Psychology
  - Special Education
- Women's Studies

## MASTER'S DEGREE PROGRAMS

Master's degree programs are offered in approximately 70 fields of study in the Graduate School. The Master of Arts degree usually is awarded to properly qualified candidates in the humanities, the social sciences, education, and all non-scientific fields except art, business administration, public affairs, and social work. The Master of Science degree is awarded to candidates in the natural, physical, mathematical, pharmaceutical, nutritional, and agricultural sciences, as well as Accounting, Nursing, and Engineering. Other Master's degrees awarded are the Master of Business Administration, the Master of Dental Science, the Master of Engineering, the Master of Fine Arts, the Master of Music, the Master of Professional Studies, the Master of Public Administration, the Master of Public Health, and the Master of Social Work. A master's degree program represents the equivalent of at least one year of full-time study beyond the baccalaureate (or its equivalent).

Since the Master's degree is the only intermediate degree offered by this University, it should be emphasized that the education it provides may prepare students for a variety of goals. The advisory committee should take into consideration the student's objectives and insist on the student's giving sufficient time to the program so that they may be fulfilled. Those students who are committed to doctoral study generally need less time to complete a Master's degree than those for whom the master's program provides the only opportunity to prepare for various professions. Recognizing the difference between a research degree and a terminal Master's degree, the committee should determine the student's goals and potential as early as possible, so as to help the student develop an appropriate predoctoral or terminal plan of study.

In most fields of study, work for the Master's degree is offered mostly, if not exclusively, on the main campus at Storrs. There are some exceptions. The Master of Business Administration is offered on a part-time basis at the West Hartford and Stamford campuses and on a full-time basis at the Storrs campus. The Master of Dental Science program and the Master of Public Health program are offered primarily at the Health Center in Farmington. The Master of Social Work program is offered at the West Hartford campus. Certain courses in education, engineering, geological sciences, and oceanography are offered at locations other than Storrs. With the exception of the programs listed above, at least nine credits at the graduate level must be earned on the Storrs campus.

### Time Limits

The student is expected to register for course work with reasonable regularity and to complete all requirements for the degree within a moderate span of time to assure continuity and adequate familiarity with developments in the field of study.

(See "Continuous Registration.") Ordinarily, the Master's degree should be completed within two years or so. In any event, all work for the Master's degree must be completed within a maximum period of six years from the beginning of the student's matriculation in the degree program. Failure to complete the work within this period or failure to maintain continuous registration (see "Continuous Registration") will require re-evaluation of the student's entire program and may result in termination.

An extension of a student's terminal date is considered only when there is substantial evidence that the student has attempted to make regular and consistent progress toward completion of degree requirements. A written recommendation to extend the terminal date must bear the signature of the student's major advisor, and it must be submitted in a timely manner to the Graduate School. Approval is granted by the Dean. Each subsequent request to extend a student's terminal date requires greater justification and more extraordinary circumstances. Third requests for extension are rarely, if ever, granted.

### Plan A and Plan B Master's Degrees

Master's degrees may be earned under either of two plans, as determined by the advisory committee. The first plan (Plan A) emphasizes research, while the second (Plan B) requires comprehensive understanding of a more general character. Plan A requires not fewer than fifteen credits of advanced course work and for students entering Fall 1998 or later, not fewer than nine additional credits of Master's Thesis Research (GRAD 5950 or GRAD 5960), as well as the writing of a thesis. Plan B requires not fewer than twenty-four credits of advanced course work, a final examination, but no thesis. In either case, advisory committees may require more than the minimum number of credits.

Up to six credits of advanced course work taken on a non-degree basis at the University of Connecticut may be included on a Master's degree plan of study provided the following conditions are met: (1) the grades earned in such course work are *B* (not *B-*) or higher; (2) such course work is within the six-year limit for completion of Master's degree requirements; and (3) such credits have not been applied toward any other degree, here or elsewhere (already completed or to be completed in the future). In any event, inclusion of non-degree course work on the plan of study requires the consent of the advisory committee and is subject to the approval of the Executive Committee.

Up to six credits of advanced course work completed or to be completed at other institutions may be approved for transfer to the student's Master's degree program at the University of Connecticut. Such credits are to be listed "below the line" on the plan of study. The following conditions must be met before final approval of any transfer of credit is granted: (1) the advisory committee must indicate its approval of the transfer of credit by signing the plan of study; (2) the courses must be at a level appropriate for a graduate degree and offered by an accredited

institution; and (3) the grades earned in any courses to be transferred must be *B* (not *B-*) or higher. Official transcripts of any course work to be transferred must be on file in the Graduate School. When the student's plan of study has gained the approval of the Executive Committee and official transcripts indicating satisfactory completion of the course work to be transferred are received, the transfer of credit is noted on the student's permanent academic record. Any credits transferred to a graduate degree program at the University of Connecticut must not have been used toward a degree elsewhere (already completed or to be completed in the future).

Students admitted to study for the degree of Doctor of Philosophy may earn a Master's degree, if one is offered specifically in their field, under either Plan A or Plan B. They also may apply for this degree if they have on file a fully approved doctoral plan of study including at least twenty-four completed credits of suitable course work taken at this University and have passed a master's final examination. They also may apply for this degree if they have completed at least 24 credits on an approved Ph.D. plan of study, have passed the doctoral general examination, and have been recommended by their major advisor or by the Dean of the Graduate School for award of the Master's degree.

More than one Master's degree may not be awarded at this institution to an individual student unless the degree titles are different or unless the degrees are earned in different fields of study. The same course may not be offered for credit toward more than one degree, except in the case of officially approved dual degree programs.

### Candidacy and Plan of Study

To become a candidate for a Master's degree, the student must have on file with the Graduate School a plan of study prepared with the aid and approval of an advisory committee and approved by the Executive Committee of the Graduate Faculty Council. To be eligible for degree conferral, a Master's degree student must have been granted Regular status. The student may not take the final examination for the degree before the plan of study has been fully approved. The plan of study must be prepared in triplicate, signed by the student and the members of the advisory committee, and submitted to the Graduate School for approval by the Executive Committee when the student has completed not more than twelve credits of course work to be applied to the degree. Failure to present the plan on time may prolong the period of study for the degree. Before drawing up and approving the plan, the major advisor should have on file and should consult for guidance a set of transcripts of all undergraduate and graduate work the student has taken. The advisory committee may require that the student take an exploratory examination to guide the committee in formulating the plan of study.

Courses elected shall be consistent with the student's objectives and related to the field in which the degree will be taken. Plans of study shall consist largely of courses at the 5000's level or above. A

limited number of credits at the 4000's level (not more than six) may be accepted. In addition to the minimum number of course credits required for the degree, the advisory committee may require the student to take other courses with or without graduate credit, depending on the student's objectives and previous preparation. Course credit by examination is not allowed as a means of accumulating credits to meet the requirements for advanced degrees at this institution.

After approval of the plan by the Executive Committee, any request for change must be submitted to the Graduate School on the official form bearing the signatures of the advisory committee and the student for approval by the Executive Committee. Successful completion of all work indicated on the approved plan of study is a fundamental prerequisite to the conferral of the degree.

Once the plan of study is approved, the student and the advisory committee should reevaluate it regularly and modify it, following the established procedure, if appropriate.

### The Master's Thesis

The advisory committee must approve the topic and scope of the thesis required under Plan A and upon its completion, ascertain that it represents an independent investigation of a significant topic and is an important contribution to ongoing research in the candidate's field. The thesis must be acceptable in literary style and organization. The thesis is regarded as an important part of the student's program. Specifications for preparation of the thesis can be obtained at the Graduate School or from the Graduate School's website. It is the student's responsibility to be certain that the thesis conforms exactly to the specifications prescribed by the Graduate School.

No restrictions that limit or delay the accessibility, use, or distribution of the results of any student's research are acceptable, if such delays interfere with the timely completion of a student's academic program.

The thesis must be dated as of the calendar year in which all requirements for the degree are completed. Two high quality copies of the thesis must be deposited in the Graduate School by the conferral period deadline in August, December, or May. Each copy must contain an approval page bearing original signatures of all members of the advisory committee. At least 25% cotton-content bond paper of at least 20-pound weight must be used for both copies. Only one side of the paper is to be used for printing. After binding, both copies become the property of the Homer Babbidge Library, and the identical second copy is made available for faculty and student use. If the thesis is lengthy, the Babbidge Library may require that it be bound as more than one volume. If a program requires one or more extra copies, it is the student's responsibility to supply them directly to the program.

### Final Examination

Near the close of the candidate's period of study – not later than one year after the completion of

course work or the thesis – the student must pass a final examination under the jurisdiction of the advisory committee. The student may not take the final examination before the plan of study has been approved by the Executive Committee or before Regular status has been granted. The advisory committee has discretion to determine whether the examination shall be written, oral, or both. Invitation to participate in an oral examination is issued by the advisory committee, although any and all members of the faculty may attend. The examination must be completed by the published deadlines for the appropriate conferral period for the degree to have that conferral date.

The decision as to whether a student has passed or failed the examination rests solely with the advisory committee, which shall take into account the opinions of other participating faculty members. The vote of the advisory committee must be unanimous. Immediately following the examination, the major advisor shall communicate the results to the student and send a report on the official form to the Graduate School. If the student has failed the examination or if the advisory committee considers the result of the examination inconclusive, the committee has the option of requiring the student to retake it. In such cases, the recommendation must reach the Graduate School promptly, and any re-examination must take place within twelve months from the date of the original examination.

Under Plan A the examination may center on the candidate's research and its relation to the field of study as a whole, but may have a wider scope. Under Plan B the examination shall be comprehensive and designed to assess the candidate's mastery of the field and ability to integrate the knowledge acquired. The Master's final examination often is used as a qualifying examination for doctoral study.

## ■ THE DOCTOR OF MUSICAL ARTS DEGREE

The D.M.A. degree is the highest practice-oriented degree offered by the Graduate School in the field of Music. The program leading to its attainment is intended to give persons of outstanding ability the opportunity to become creative contributors in musical performance and scholarship. Award of the degree testifies to broad mastery of the art of music, an ability to practice that art on an exceptionally high level, and acquisition of appropriate research skills.

While certain minimum requirements are set by the Graduate School and the Music Department, it is important for students to realize that work toward this degree is not merely a matter of accumulating course credits or satisfying other requirements. The degree will be conferred only after the advisory committee and the Graduate Music Faculty are convinced that the student is able to demonstrate consummate artistry in a public

forum, and has developed independence of judgment and mature scholarship.

### Time Limits

The equivalent of at least two years of full-time study beyond the Master's degree is required. All work must be completed within seven years of the beginning of the student's matriculation in the degree program. The general examination shall be passed within four years of the beginning of doctoral study. Failure to complete the work within the periods specified or failure to maintain continuous registration (See "Continuous Registration") will require re-evaluation of the entire program and may result in a notice of termination. A five-year time limit applies to the acceptance of foreign-language courses. (See "Foreign Language.")

An extension of a student's terminal date is considered only when there is substantial evidence that the student has attempted to make regular and consistent progress toward completion of degree requirements. A written recommendation to extend the terminal date must bear the signature of the student's major advisor, and it must be submitted in a timely manner to the Graduate School. Approval is granted by the Dean. Each subsequent request to extend a student's terminal date requires greater justification and more extraordinary circumstances. Third requests for extension are rarely, if ever, granted.

### Residence Requirement

A graduate student can fulfill the special demands of a doctoral program only by devoting a continuous period of time to concentrated study, practice, and research with a minimum of outside distraction or employment. The D.M.A. student must complete one year (two semesters) of full-time study in residence. This residence period must be completed through registration for and completion of appropriate course loads or research at the Storrs campus. Students ordinarily must register for full-time student status during the residence period (*see* "Course Loads").

The principal criterion for full-time study as required for fulfillment of the doctoral residence requirement is whether the student is in fact devoting essentially full-time effort to studies, without undue distraction caused by outside employment. It is left to the advisory committee to determine whether a student's outside employment is a distraction that prevents the student from devoting essentially full-time effort to the planned program. The advisory committee will record this determination on the plan of study, along with a description of the nature, extent, and period(s) of outside employment during the residence period.

### Plan of Study

The plan of study must be prepared; signed by the student, the members of the advisory committee, and the Director of Graduate Studies in Music; and then submitted to the Graduate School for approval by the Executive Committee of the Graduate Faculty Council. The student may not take the general examination before the plan of study has

been fully approved. Failure to present the plan on time may prolong the period of study for the degree. Before formulating and signing the plan, the major advisor should have transcripts of all of the student's undergraduate and graduate work on file and should consult them for guidance. The advisory committee may require that the student take an exploratory examination to guide the committee in formulating the plan of study.

A limited number of credits at the 3000's or 4000's level (not more than six) may be accepted. The degree ordinarily requires at least 43 credits, depending on the area of concentration. The plan will designate any foreign language(s) in which the student is to be tested. Course credit by examination is not allowed as a means of accumulating credits to meet the requirements for advanced degrees at this institution. For students entering in Fall 1998 or later, at least fifteen credits of GRAD 6950 must appear on the plan of study. This effort represents the research for the D.M.A. Dissertation, which is an essential component of the student's program.

Advanced course work taken on a non-degree basis at the University of Connecticut may be included on a D.M.A. plan of study provided the following conditions are met: (1) the grades earned in such course work are *B* (not *B-*) or higher, (2) such course work is within the seven year limit for completion of D.M.A. degree requirements, and (3) such credits have not been applied toward any other degree here or elsewhere (already completed or to be completed in the future). In any event, inclusion of non-degree course work on the plan of study requires the consent of the advisory committee and is subject to the approval of the Executive Committee.

After approval of the plan by the Executive Committee, any request for change must be submitted in advance to the Graduate School on an official form bearing the signatures of the members of the advisory committee and the student. Such changes are subject to approval by the Executive Committee. The successful completion of all work indicated on the approved plan of study is a fundamental prerequisite to conferral of the degree.

Once the plan of study is approved, the student and the advisory committee should reevaluate it regularly and modify it, following the established procedure, if appropriate.

### Foreign Language

Students in all areas of concentration shall be required to have a competent reading knowledge of at least one foreign language appropriate to the general area of study.

Students should plan to meet the language requirement early in their graduate career and well before they begin preparation for the general examination. Methods for establishing evidence of reading competence are the same as those for the Ph.D. (See explanation of the Foreign Language requirement under "The Doctor of Philosophy Degree.")

### Transfer Credit

Transfer of credit for course work completed at other institutions is approved only after the student has demonstrated the ability to do acceptable graduate work at the University of Connecticut. Such ability must be demonstrated by successful completion of graduate level University of Connecticut course work. The maximum number of credits accepted from accredited institutions is six, provided it is of at least *B* (not *B-*) quality and contributes to the objectives of the proposed doctoral program. Such graduate work may be approved for transfer provided that the general examination is to be passed and all degree requirements are to be completed within the prescribed period – seven years – from the beginning date of the earliest course, wherever taken, listed on the approved doctoral plan of study. (See "Time Limits.") Transfer credit is not granted for individual courses used for a degree elsewhere (already completed or to be completed in the future). Instead, consideration is given to that degree program as an entity when the doctoral plan of study is being prepared.

### Evaluation of Performance

The advisory committee shall evaluate continually the student's performance. Any graduate student whose scholastic performance does not meet the minimum requirements of the Graduate School may be subject to dismissal. The first recital for all D.M.A. students, except for those in conducting, is considered to be a qualifying recital, and must be presented during the first year of D.M.A. study. The hearing for this recital is evaluated by the full performance faculty. Any student who does not demonstrate an appropriate level of performance in this hearing and recital is subject to dismissal.

### General Examination

The general examination shall be taken near the end of the course program but not later than eight months prior to the conferral of the degree. Before arrangements for the examination are made, the foreign language requirement(s) should have been met and the plan of study must have been approved by the Executive Committee of the Graduate Faculty Council. The examination is comprehensive in nature, and incorporates elements of music history and literature, music theory, performance practice, and practical application of these constituent components.

The examination is under the jurisdiction of the student's advisory committee and contains both written and oral components. Not fewer than five faculty members, including all members of the advisory committee, constitute the examining committee and participate in the examination. The final decision as to whether or not the student has passed the examination is determined solely by majority vote of the examining committee.

After the examination, the major advisor communicates the results to the candidate and sends the official report on the examination to the Graduate School.

### D.M.A. Dissertation Proposal

Before preparation of the D.M.A. Dissertation is well under way, the student must file a proposal describing the intended research with the Graduate Studies Committee of the Music Department. Failure to file the proposal early may result in wasted effort on a document if changes are required in the project. The proposal must be approved by the Graduate Studies Committee in Music at least four months before the filing of the D.M.A. Dissertation and it must be approved by the Executive Committee of the Graduate Faculty Council at least three months before the filing of the D.M.A. Dissertation.

### Candidacy, Recitals, and D.M.A. Dissertation Preparation

Upon passing the general examination, the foreign language requirements, and (in the case of all students except conducting majors) the qualifying recital, the student becomes a candidate for the degree Doctor of Musical Arts. Students are notified of their advancement to candidacy.

Students in every D.M.A. area of concentration except conducting must present three full-length recitals during the course of study for the degree. The first of these is considered a qualifying recital, which must be preceded by a pre-recital hearing. This hearing must be presented on a designated date at least three weeks before the scheduled recital, and is adjudicated by the full performance faculty. Hearings for subsequent degree recitals may be held at the discretion of the major advisor or applied instructor. These recitals and concerts represent the culmination of the performance aspect of this degree, and will be judged according to the highest levels of musical artistry. Majors in conducting must appear in concert as conductors with the appropriate departmental major ensemble. Either two one-half concert appearances or one whole concert appearance is required. In addition, conducting majors must present one full-length recital during the course of study for the degree.

A written dissertation representing research into some aspect of music performance, repertoire, or pedagogy is an important requirement of this degree. The D.M.A. Dissertation is under the immediate supervision of a member of the music theory or music history faculty, and secondarily under the supervision of the advisory committee. It must be acceptable in literary style and organization. Specifications for its preparation are available in the Music Department office. It is the student's responsibility to be certain that the dissertation conforms exactly to the specifications prescribed by the Music Department. The D.M.A. Dissertation receives no academic credit, although the fifteen credits of GRAD 6950 (required of students entering in Fall, 1998 or after) are associated with its preparation. It is intended that this document will uphold the highest standards of scholarship, identical to those required of Ph.D. dissertations.



The advisory committee will set a date for completion of the D.M.A. Dissertation, allowing time for each advisor to make suggestions for revisions, and then will set a date for the final examination, allowing time for the student to make those revisions. In some cases, further revision of the dissertation may be required by the advisory committee as a result of the final examination. Final approval of the dissertation following the examination is indicated by the original signatures of all members of the advisory committee on the dissertation's final approval page. This must be submitted to the Graduate School following the examination. Final approval pages must be received at the Graduate School by the conferral period deadline in August, December, or May. The technical specifications for the preparation of the D.M.A. Dissertation are identical to the specifications for the preparation of the Ph.D. dissertation (see "Candidacy and Dissertation Preparation").

No restrictions that limit or delay the accessibility, use, or distribution of the results of any student's research are acceptable, if such delays interfere with the timely completion of a student's academic program.

### Final Examination

The final examination is oral and under the jurisdiction of the advisory committee. It deals mainly with the subject matter of the D.M.A. Dissertation. It is held by the conferral period deadline in August, December, or May. Invitation to participate in the examination is issued by the advisory committee, although any member of the faculty may attend. Not fewer than five members of the faculty, including all members of the candidate's advisory committee, must participate in the final examination unless written approval for a lesser number has been secured in advance from the Dean of the Graduate School. The decision as to whether a candidate has passed or failed the examination rests solely with the advisory committee, which will take into account the opinions of any other participating faculty members. The vote of the advisory committee must be unanimous. Following the examination, the major advisor communicates the results to the student and verifies that the official report has been completed and signed for submission to the Graduate School.

## THE DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. is the highest degree offered by the University and is offered in more than 60 fields of study. The program leading to its attainment is intended to give persons of outstanding ability the opportunity to become creative contributors in a scholarly field. Award of the degree testifies to broad mastery of an established subject area, acquisition of acceptable research skills, and a concentration of knowledge in a specific field.

While certain minimum requirements are set by the Graduate School, it is important for students to realize that work toward this degree is not merely a matter of accumulating course credits or of satisfying other requirements. The degree will be conferred only after the advisory committee and the Graduate Faculty are convinced that the student has developed independence of judgment and mature scholarship in the chosen field. An individual may not earn more than one Ph.D. degree in a single field of study at this institution.

### Time Limits

The equivalent of at least three years of full-time study beyond the baccalaureate or two years beyond the master's degree (in the same or a closely-related field) is required. All work must be completed within a period of eight years of the beginning of the student's matriculation in the degree program, or, if the student entered with a master's degree in the same or a closely related field, the doctorate must be completed within seven years. The general examination must be passed within five years of the beginning of the student's matriculation in the degree program, or within four years if the student entered with a master's degree in the same or a closely-related field. Failure to complete the work within the periods specified or failure to maintain continuous registration (see "Continuous Registration") will require reevaluation of the student's entire program and may result in a notice of termination. A five-year time limit applies to the acceptability of foreign-language courses. (See "Foreign Language; Related or Supporting Area of Study.")

A one-time extension of the student's terminal date of no longer than two years is considered only when there is substantial evidence that the student has made regular and consistent progress toward completion of degree requirements. A detailed recommendation to extend the terminal date must be submitted in a timely manner to the Graduate School. Approval is granted by the Dean.

### Residence Requirement

The graduate student can fulfill the special demands of a doctoral program only by devoting a continuous period of time to concentrated study and patient research with a minimum of outside distraction or employment. During the second or subsequent years of graduate work in the field, at least two consecutive semesters must be completed in residence. Alternatively, this requirement may be met by combining one semester of residence plus a contiguous 12-week summer period made up of Summer Sessions I & II or Summer Session IV, if agreed upon by the advisory committee and the student. The residence period must be completed through registration for and completion of appropriate course loads or research at the Storrs campus or, if more appropriate, at one of the other sites of instruction and research within the University system. Students ordinarily must register for full-time student status during the residence period (see "Course Loads").

The essential criterion for full-time study as required for fulfillment of the doctoral residence

requirement is whether the student is in fact devoting essentially full-time effort to studies, without undue distraction caused by outside employment. It is left to the advisory committee to determine whether a student's outside employment is a distraction that prevents the student from devoting essentially full-time effort to the planned program. The advisory committee will record this determination on the plan of study, along with a description of the nature, extent, and period(s) of outside employment during the residence period.

### Plan of Study

The plan of study must be prepared, signed by the student and the members of the advisory committee, and submitted to the Graduate School for approval by the Executive Committee of the Graduate Faculty Council when the student has completed not more than twelve credits of course work to be applied to the degree. The student may not take the general examination before the plan of study has been fully approved. Failure to present the plan on time may prolong the period of study for the degree. Before formulating and signing the plan, the major advisor should review a set of transcripts of all undergraduate and graduate work the student has taken. The advisory committee may require that the student take an exploratory examination to guide it in formulating the plan of study.

Courses elected should be consistent with the student's objectives and related to the field in which the degree will be taken. Plans of study will consist largely of courses at the 5000's level or above. A limited number of credits at the 4000's level (ordinarily not more than six) may be accepted. While there are no specific course requirements for the doctorate, the Executive Committee expects the plan to include about twenty to twenty-four credits of course work – exclusive of any related or supporting area offered in lieu of a non-credit language requirement – beyond the master's degree or its equivalent in the same or a similar field. In other words, the work presented for the Ph.D. degree should equate to 44 to 48 credits beyond the baccalaureate or its equivalent. For students entering in Fall, 1998 or later, at least 15 credits of GRAD 6950 (Dissertation Research) must be included in the plan of study, representing the research effort the student devotes to the dissertation. The dissertation is regarded as an important part of the student's program and is considered to represent at least one year of full-time graduate study.

Special provisions apply to the Ph.D. degree in chemistry and in polymer science.

The plan shall designate any foreign language(s) in which the student is to be tested and any courses comprising a related or supporting area. Course credit by examination is not allowed as a means of accumulating credits to meet the requirements for advanced degrees at this institution. If an examination is permitted to be used to fulfill a related (or supporting) area requirement for the Ph.D. degree, course credit is not given.



Advanced course work taken on a non-degree basis at the University of Connecticut, ordinarily not more than 12 credits, may be included on a Ph.D. plan of study provided the following conditions are met: (1) the grades earned in such course work are *B* (not *B-*) or higher, (2) such course work is within the seven or eight year limit (whichever applies) for completion of Ph.D. degree requirements, and (3) such credits have not been applied toward any other degree here or elsewhere (already completed or to be completed in the future). In any event, inclusion of non-degree course work on the plan of study requires the consent of the advisory committee and is subject to the approval of the Executive Committee.

After approval of the plan by the Executive Committee, any request for change must be submitted to the Graduate School on an official form bearing the signatures of the members of the advisory committee and the student. Such requests are subject to approval by the Executive Committee. The successful completion of all work indicated on the approved plan of study is a fundamental prerequisite to the conferral of the degree.

Once the plan of study is approved, the student and the advisory committee should reevaluate it regularly and modify it, following the established procedure, if appropriate.

### Foreign Language; Related or Supporting Area of Study

Students are required to have a competent reading knowledge of at least one foreign language appropriate to the general area of study or at least six credits of advanced work in a related or supporting area (unless faculty in a particular field of study have voted to require neither). However, an advisory committee may require a competent reading knowledge of more than one foreign language. The committee also may require additional advanced work in one or more related or supporting areas, alone or in conjunction with a foreign language.

Fields of Study which require neither a related area nor demonstrated reading knowledge of a language other than English currently include: Biochemistry, Biomedical Engineering, Biomedical Science, Botany, Cell Biology, Chemistry, Computer Science and Engineering, Ecology, Entomology, Genetics and Genomics, Human Development and Family Studies, Linguistics, Materials Science, Materials Science and Engineering, Microbiology, Pathobiology, Philosophy, Physics, Structural Biology and Biophysics, and Zoology.

If a related or supporting area is required, the courses chosen must comprise a coherent unit of advanced (i.e., 4000's level or above) work outside the major field of study (or area of concentration, if appropriate). Ordinarily, such course work is taken outside the student's "home" department. The courses must be approved by the advisory committee as a part of the plan of study. With few exceptions, they must be taken at this institution. No course credits will be accepted in transfer toward the related or supporting area unless

approved by the Executive Committee before the courses are taken. With the approval of the advisory committee, however, the passing of an examination may be substituted for the course work. In the event of a non-language examination, one or more examiners shall be designated by the Executive Committee. With the consent of the advisory committee, a three-credit advanced course in mathematics or statistics passed satisfactorily at this institution may fulfill the otherwise six-credit-minimum requirement if the student's preparation contains a suitably advanced prerequisite course (i.e., equivalent to a 4000's level University of Connecticut course) passed satisfactorily at this or another institution (although no course credits will be accepted in transfer).

For a specific language to be considered appropriate, there must exist a significant body of literature written in that language in the student's field. Students should plan to meet any language requirement early in their graduate careers and usually well before they begin preparation for the general examination. One of five methods may be used to establish evidence of reading competence in an approved language. The advisory committee may designate which method shall be used or may leave the choice of method up to the student. For methods (1) through (3), below, courses and examinations will not be accepted if passed more than five years prior to submission of the plan of study for Executive Committee approval.

(1) The student may pass both semesters of an approved one-year reading or intermediate course in the language with grades equivalent to *C* (not *C-*) or higher. This requirement will be considered to be met if, in light of previous preparation, the student is permitted by the instructor to enter directly into the second semester of the one-year sequence and earns a grade of *C* (not *C-*) or higher. The courses may be taken by graduate students on a Satisfactory/Unsatisfactory basis, with a grade of Satisfactory denoting performance at the level of *C* (not *C-*) or higher. The Executive Committee designates courses that may be taken for this purpose. Currently they are French 1163-1164, German 1145-1146, and Spanish 1003-1004. Alternatively, the student may pass a course in a foreign language or literature at or above the 3000's level, provided that the reading for the course is required to be done in the language.

Language courses taken at other institutions are not accepted. However, the student may consider option (2).

(2) The student may pass an examination set by a member of the University faculty (or, if approved by the advisory committee and the Graduate School, a faculty member at another college or university) designated by the student's advisory committee and approved by the head of the department in which the major advisor holds an appointment. The examiner may be a member of the same department but may not be a member of the student's advisory committee. The examination will include, but need not be limited to, the translation of a passage approximately 400 words in length. The use of a dictionary may be permitted at the option of the examiner. The

translation is to be written in English unless permission is granted by the Executive Committee of the Graduate Faculty Council to write it in another language. Such permission is granted only if it is deemed in the best interest of the student and if an acceptable examiner is available. The examiner will choose the passage from among books or articles submitted by the major advisor. The passage may be the same for a group of students in the same field or may be selected individually for each student. The examination must be supervised and have a reasonable time limit. The result of the examination, whether passed or failed, must be reported to the Graduate School on the official form bearing the signature of the examiner.

(3) A doctoral reading examination passed at another graduate school of approved standing may be accepted in transfer (subject to the above five-year limitation) provided the examination was taken prior to the student's enrollment in this Graduate School.

(4) The student may establish evidence of competence in the language through an official transcript stating that the baccalaureate or a higher degree was earned with that language as the major.

(5) The student may establish evidence of competence in the language through documentation that it is the student's native language, learned in childhood and used primarily through at least secondary school.

### Transfer Credit

Transfer of credit for course work completed at other institutions is approved only after the student has demonstrated the ability to do acceptable graduate work at the University of Connecticut. Such ability must be demonstrated by successful completion of graduate-level, University of Connecticut course work. The equivalent of two years of graduate work completed at accredited institutions may be accepted, provided it is of at least *B* (not *B-*) quality and it contributes to the objectives of the proposed doctoral program. Such graduate work may be approved for transfer provided that the general examination is to be passed and all degree requirements are to be completed within the prescribed periods – respectively, four or five years and seven or eight years – from the beginning date of the earliest course, wherever taken, listed on the approved doctoral plan of study. (See "Time Limits.") Transfer credit is not granted for individual courses used toward a degree elsewhere (already completed or to be completed in the future). Instead, consideration is given to that degree program as an entity when the doctoral plan of study is being prepared.

### Evaluation of Performance

The advisory committee continually evaluates the student's performance. Any graduate student whose scholastic record does not meet the minimum requirements of the Graduate School may be subject to dismissal. However, the committee may insist on more than the minimum scholastic requirements and may take other factors

into consideration in deciding whether or not to recommend to the Dean that the student be permitted to continue in the degree program.

### General Examination

The general examination is taken near the end of the course program, but not later than eight months prior to the date of completion of all degree requirements. In any event, the examination must be passed within five years of the beginning of doctoral study or within four years if the student entered with a master's degree in the same or a closely related field. The beginning of doctoral study is defined as the beginning date of the earliest course, wherever taken, listed on the approved doctoral plan of study. Foreign language requirements should have been met and the related or supporting area courses completed well in advance. The student may not take the general examination before the plan of study has been approved by the Executive Committee.

The general examination is under the jurisdiction of the student's advisory committee unless the members of the Graduate Faculty in a student's field of study have voted to assign jurisdiction for all or part of the examination to a differently constituted examining committee. The examination may be written, oral, or both. All members of the advisory committee must be present during any oral examination. A student is examined in the several facets of his or her field of study, not merely in the particular area of concentration. Advisory or examining committees may give a series of cumulative examinations, to be taken at intervals over the student's period of study. For practical purposes, the final part of such a series shall be regarded as "the general examination," and its scope may be limited as the advisory or examining committee may judge appropriate.

The examining committee includes at least one faculty member representing each of the major areas addressed in the examination. Not fewer than five faculty members, including all members of the student's advisory committee, must participate in the examination. All examiners are invited to submit questions and to evaluate answers, but the final decision as to whether or not the student has passed the examination shall rest solely with the advisory committee unless the members of the Graduate Faculty in a student's field of study have voted to assign this authority to a differently constituted examining committee.

After the examination, the major advisor communicates the results to the candidate and immediately sends the official report, bearing the signature of each member of the advisory committee, to the Graduate School. Should the committee permit the student to take the examination in several sections, only the final result should be reported.

### Dissertation Proposal

Before dissertation research is undertaken, the student is required to prepare and submit for

advisory committee and external review a dissertation proposal addressing the intended research, following the guidelines contained on the special approval form obtainable at the Graduate School or from the Graduate School website. Failure to file the dissertation proposal early may result in wasted effort on a dissertation if changes are required in the project.

Ordinarily, it is expected that a Dissertation Proposal will be prepared and fully approved before preparation of the dissertation is well underway. If human and/or animal subjects are involved in the dissertation research, approval must be secured *before* the research is undertaken from the Institutional Review Board (IRB) and/or the Institutional Animal Care and Use Committee (IACUC) respectively. Approval of the Embryonic Stem Cell Research Oversight Committee (ESCRO) must be obtained in advance for any use of human stem cells in dissertation research.

When the dissertation proposal has been completed and signed by the student and also has been approved by the members of the advisory committee, the proposal then is submitted to the head of the department or program to which the student was admitted. The head appoints reviewers from outside the advisory committee to conduct a critical evaluation of the dissertation proposal. The use of at least one reviewer from outside the University is encouraged. Reviewers may be appointed to evaluate an individual student's proposal, or they may be appointed to a committee responsible for reviewing all proposals in a particular field of study or group of related fields of study.

Dissertation proposals are reviewed with the following questions in mind: (1) Is the proposal well written, well organized, and well argued? (2) Does the proposal describe a project of appropriate scope? (3) Does the student demonstrate a knowledge of the subject and an understanding of the proposed method of investigation? (4) Does the student show awareness of the relevant research by others? and (5) Does the student consider how the proposed investigation, if successful, will contribute to knowledge?

The department or program head's signature on the proposal when the review is completed confirms that the results of the review were favorable. The evaluation may take the form of a reading of the proposal or attendance at an oral presentation and discussion of the proposal. A copy of the signed approval form and dissertation proposal must be received by the Graduate School when the review process been completed. Receipt by the Graduate School of the approved Dissertation Proposal and any required IRB, IACUC, or ESCRO approval is a basic requirement for eligibility to schedule the oral defense of the dissertation and for conferral of the doctoral degree.

### Candidacy and Dissertation Preparation

Upon approval of the plan of study, passing the general examination, and having had the dissertation proposal fully approved by the Executive Committee of the Graduate Faculty Council, the student becomes a candidate for the degree of Doctor of Philosophy. Students are notified of their advancement to Candidacy.

A dissertation representing a significant contribution to ongoing research in the candidate's field is a primary requirement. The preparation of the dissertation is under the immediate and continuous supervision of the advisory committee and it must meet all standards prescribed by the committee and by the Graduate School. It must be acceptable in literary style and organization. Specifications for its preparation may be obtained at the Graduate School or from the Graduate School website. It is the student's responsibility to be certain that the dissertation conforms exactly to the specifications prescribed by the Graduate School.

No restrictions that limit or delay the accessibility, use, or distribution of the results of any student's research are acceptable, if such delays interfere with the timely completion of a student's academic program.

The dissertation is dated as of the calendar year in which all requirements for the degree are met. The advisory committee will set a date for completion of the dissertation, allowing time for each advisor to make suggestions for revision, and will set a date for the final examination, allowing time for the student to make revisions and to submit a complete preliminary or "working" copy of the abstract and dissertation at the Graduate School (or, if more appropriate, at a central office at the Health Center in Farmington) at least seven days before the dissertation defense. When submitted to the Graduate School (or to the Health Center), the complete preliminary or "working" copy of the abstract and dissertation must be accompanied by a tentative-approval form signed by all members of the advisory committee.

Following the examination, the student must submit the final, fully-revised copies of the dissertation to the Graduate School (also another copy if submitted to the Health Center). The final copies of the dissertation should be printed with a laser printer or they may be high quality photocopies. In any event, at least 25% cotton-content bond paper of at least 20-pound weight must be used for any copy of the dissertation submitted to the Graduate School (or to the Health Center). Only one side of the paper is to be used for printing.

In some cases, revision of the dissertation is required by the advisory committee as a result of the final examination. Final approval of the dissertation following the examination is indicated by the presence of original signatures of all members of the advisory committee on the final-approval page, which must be submitted to the Graduate School soon after the student has been

examined if no revisions are necessary. In any case, final-approval pages (and the revised dissertation, if changes are required) must be received at the Graduate School by the conferral period deadline in August, December, or May. After binding, two copies of the dissertation become the property of the Homer Babbidge Library. If a department or program requires extra copies, it is the student's responsibility to supply them directly to the department or program.

### **Abstract, Microfilming, and Other Completion Requirements**

At the time the dissertation is submitted, four copies of the abstract (five if the dissertation is submitted to the Health Center) must be submitted to the Graduate School (or with the dissertation at the Health Center). The body of the abstract may not exceed 350 words in length, and it is published in *Dissertation Abstracts*.

Microfilming of the dissertation by PQIL is required. Agreement forms for this process must be completed by doctoral candidates when submitting the dissertation to the Graduate School (or the Health Center). This form also may be used to arrange for optional copyrighting of the dissertation.

The student is required to pay a fee for the microfilming of the dissertation. There also is a fee for copyrighting the dissertation, if this is desired. There is no charge to the student, however, for the binding of the two final copies of the dissertation. Both final copies become the property of the Homer Babbidge Library.

All doctoral students are required to complete the "Survey of Earned Doctorates," a federal form available at the Graduate School.

### **Final Examination**

The final examination or dissertation defense deals mainly with the subject matter of the dissertation.

The examination is oral, it is under the jurisdiction of the advisory committee, and it is held at the appropriate campus of the University (Storrs, Avery Point, Health Center, or School of Social Work). The examination may not be held sooner than seven days after a working copy of the complete dissertation and tentative advisory committee approval have been submitted to the Graduate School (or the Health Center) and by the conferral period deadline in August, December, or May. Invitation to participate in the examination is issued by the advisory committee, although any member of the faculty may attend. Not fewer than five members of the faculty, including all members of the candidate's advisory committee, must participate in the final examination, unless written approval for a lesser number has been secured in advance from the Dean of the Graduate School.

It is required that notification of the time, date, and place of the examination be posted at least two weeks prior to the examination on the University's Web-based events calendar. Instructions for posting the announcement are available at <<http://www.grad.uconn.edu/announcing.html>>. In addition, the examination should be advertised widely in the candidate's department and elsewhere throughout the University, as appropriate.

The decision regarding whether a candidate has passed, conditionally passed, or failed the examination rests solely with the advisory committee, which will take into account the opinions of other participating faculty members and other experts. The vote of the advisory committee must be unanimous. Following the examination, the major advisor communicates the results to the student and verifies that the official report has been completed and signed for submission to the Graduate School.



## **CONFERRAL OF DEGREES**

### **Conferral**

Degree conferral requires that the student be in good academic standing and that all requirements for the degree have been completed satisfactorily on or before the last day of the conferral period. Degrees are conferred three times each year – in August, December, and May – although there is only one annual graduate Commencement ceremony at which graduate degrees are awarded (in May). Students who qualify for degree conferral receive their diplomas by mail, normally within three months following conferral.

### **Application for the Degree**

Formal application for a degree to be conferred must be filed on-line by the degree candidate using the PeopleSoft system. Information and instructions are available at this website: <[http://www.grad.uconn.edu/degree\\_completion.html](http://www.grad.uconn.edu/degree_completion.html)>. If filing is not timely, conferral is delayed to the next conferral period, even though all other degree requirements may have been completed on time.

### **Commencement**

The graduate Commencement ceremony is held once each year at the end of the spring semester. Individuals who have had degrees conferred at the end of the previous summer or the previous fall semester and candidates for degrees who complete degree requirements by the end of the spring semester may participate in the annual Commencement ceremony and are urged to do so. Academic regalia appropriate for the University of Connecticut degree being conferred is strictly required for all who participate in the ceremony. Information concerning the Commencement ceremony, including academic regalia and guest tickets, is made available by mid-February exclusively on the Graduate School's website: <<http://www.grad.uconn.edu/>>.

## FIELDS OF STUDY

Fields of study and areas of concentration officially recognized by the Graduate School are limited to those listed below. Graduate degrees are awarded in these fields of study. Each field of study is shown in conjunction with the degree or degrees that may be awarded. The final transcript also will record completion of the special requirements of one listed area of concentration, if appropriate. These requirements are determined by a student's advisory committee. The Graduate School does not require that a student select an area of concentration, although an advisory committee may require a student to do so.

Fields of Study Areas of Concentration	Degrees Offered
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Accounting .....	M.S.
Adult Learning .....	M.A., Ph.D.
Agricultural and Resource Economics .....	M.S., Ph.D.
Allied Health .....	M.S.
Animal Science .....	M.S., Ph.D.
Physiology of Reproduction	
Anthropology .....	M.A., Ph.D.
Social Science and Health Care <sup>5+</sup>	
Applied Financial Mathematics .....	M.S.
Applied Genomics .....	M.S.
Applied Microbial Systems Analysis .....	M.S.
Art .....	M.F.A.
ArtHistory .....	M.A.
Biochemistry .....	M.S., Ph.D.
Biodiversity and Conservation Biology .....	M.S.
Biomedical Engineering + .....	M.S., Ph.D.
Biomedical Science ++ .....	Ph.D.
Cell Biology	
Cellular and Molecular Pharmacology	
Genetics and Developmental Biology	
Immunology	
Molecular Biology and Biochemistry	
Neuroscience	
Skeletal, Craniofacial and Oral Biology	
Biotechnology @ .....	M.S.
Business Administration .....	M.B.A., Ph.D.
<b>Full - time M.B.A. program Areas of Concentration</b>	
Finance	
Health Care Management	
Information Technology	
Venture Consulting	
Marketing Intelligence	
<b>Part - time M.B.A. program Areas of Concentration</b>	
Accounting	
Finance	
General	
Health Care Management	
Human Resources @	
International Business	
Management	
Management of Technology	
Marketing	
Real Estate	
<b>Ph.D. program Areas of Concentration</b>	
Accounting	
Finance	
Management	
Marketing	
Operations and Information Management	

Fields of Study Areas of Concentration	Degrees Offered
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Cell Biology .....	M.S., Ph.D.
Cytology	
Developmental Biology	
Plant Cell and Molecular Biology +	
Plant Physiology +	
Chemical Engineering .....	M.S., Ph.D.
Chemistry .....	M.S., Ph.D.
Civil Engineering .....	M.S., Ph.D.
Applied Mechanics <sup>5+</sup>	
Environmental Engineering <sup>2+</sup>	
Fluid Dynamics <sup>5+</sup>	
Geotechnical Engineering	
Structural Engineering	
Transportation and Urban Engineering	
Clinical and Translational Research .....	M.S.
Communication Sciences .....	M.A., Au.D., Ph.D.
Audiology <sup>7</sup>	
Communication <sup>1</sup>	
Communication Processes and Marketing Communication <sup>5</sup>	
Speech, Language, and Hearing <sup>1 and 5</sup>	
Comparative Literary and Cultural Studies + .....	M.A., Ph.D.
Computer Science and Engineering .....	M.S., Ph.D.
Curriculum and Instruction .....	M.A., Ph.D.
Bi-lingual and Bi-cultural Education	
Elementary Education	
English Education	
Foreign Language Education	
History and Social Science Education	
Music Education	
Mathematics Education	
Reading Education	
Science Education	
Secondary Education	
Dental Science ++ .....	M.Dent.Sc.
Dramatic Arts .....	M.A., M.F.A.
Acting	
Design	
Directing @	
Performance/Production <sup>1@</sup>	
Puppetry	
Technical Direction	
Theater History and Criticism <sup>1@</sup>	
Ecology and Evolutionary Biology .....	M.S., Ph.D.
Economics .....	M.A., Ph.D.
Education .....	M.A.
Educational Administration .....	M.A., Ph.D. &
Educational Leadership .....	Ed.D.
Educational Psychology .....	M.A., Ph.D.
Cognition/Instruction	
Counselor Education and Counseling Psychology <sup>5</sup>	
Gifted and Talented Education	
Measurement, Evaluation, and Assessment	
School Counseling <sup>1</sup>	
School Psychology	
Educational Technology .....	M.A., Ph.D.

<sup>1</sup> M.A. degree program only      + Interdisciplinary program  
<sup>2</sup> M.S. degree program only      ++ Health Center program only  
<sup>5</sup> Ph.D. degree program only      @ **Not** accepting new students at this time  
<sup>7</sup> Au.D. program only              & **Not** accepting new students to the Ph.D. program at this time

Fields of Study Areas of Concentration	Degrees Offered
Electrical Engineering .....	M.S., Ph.D.
Electronics, Photonics, and Biophotonics	
Information, Communications, Decision, and Biosystems	
Engineering .....	M.Engr.
Civil and Environmental Engineering	
Chemical Engineering	
Computer Science and Engineering	
Electrical and Computer Engineering	
Materials Science and Engineering	
Mechanical Engineering	
English .....	M.A., Ph.D.
American Studies <sup>1</sup> +	
Environmental Engineering + .....	M.S., Ph.D.
French .....	M.A., Ph.D.
Genetics and Genomics .....	M.S., Ph.D.
Geography .....	M.A., Ph.D.
Geological Sciences .....	M.S., Ph.D.
Geology	
Geophysics	
German .....	M.A., Ph.D.
History .....	M.A., Ph.D.
American Studies <sup>1</sup> +	
Latin American <sup>5</sup>	
Medieval European <sup>5</sup>	
Modern European <sup>5</sup>	
United States <sup>5</sup>	
Homeland Security Leadership .....	M.P.S.
Human Development and Family Studies .....	M.A., Ph.D.
Human Resource Management .....	M.P.S.
Humanitarian Services Administration .....	M.P.S.
International Studies + .....	M.A.
European Studies	
Italian History and Culture	
Latin American Studies	
Italian .....	M.A., Ph.D.
Judaic Studies + .....	M.A.
Kinesiology .....	M.A., Ph.D.
Exercise Science	
Sport Management	
Linguistics .....	M.A., Ph.D.
Materials Science + .....	M.S., Ph.D.
Alloy Science	
Biomaterials	
Corrosion Science	
Crystal Science	
Dental Materials	
Metallurgy	
Polymer Science	
Materials Science and Engineering .....	M.S., Ph.D.
Mathematics .....	M.S., Ph.D.
Actuarial Science <sup>2</sup>	
Mechanical Engineering .....	M.S., Ph.D.
Applied Mechanics <sup>5</sup> +	
Design	
Dynamics and Control	
Energy and Thermal Sciences	
Fluid Dynamics <sup>5</sup> +	
Manufacturing	

Fields of Study Areas of Concentration	Degrees Offered
Medieval Studies + .....	M.A., Ph.D.
Microbiology .....	M.S., Ph.D.
Music .....	M.Mus., M.A., D.M.A., Ph.D.
Conducting <sup>3</sup> and <sup>4</sup>	
Historical Musicology <sup>1</sup>	
Music Education <sup>8</sup>	
Music Theory and History <sup>5</sup>	
Performance <sup>3</sup> and <sup>4</sup>	
Theory <sup>1</sup>	
Natural Resources: Land, Water, and Air .....	M.S., Ph.D.
Nursing .....	M.S., D.N.P., Ph.D.
Nutritional Science .....	M.S., Ph.D.
Occupational Safety and Health Management <sup>@</sup> .....	M.P.S.
Oceanography .....	M.S., Ph.D.
Pathobiology .....	M.S., Ph.D.
Bacteriology	
Pathology	
Virology	
Pharmaceutical Science .....	M.S., Ph.D.
Medicinal and Natural Products Chemistry	
Neurosciences +	
Pharmaceutics	
Pharmacology and Toxicology	
Philosophy .....	M.A., Ph.D.
Physical Therapy .....	M.S. <sup>6</sup> , D.P.T.
Physics .....	M.S., Ph.D.
Physiology and Neurobiology .....	M.S., Ph.D.
Comparative Physiology	
Endocrinology	
Neurobiology	
Neurosciences +	
Plant Science .....	M.S., Ph.D.
Agronomy	
Horticulture	
Landscape Architecture <sup>2</sup>	
Plant Breeding	
Plant Environment	
Soil Science	
Political Science .....	M.A., Ph.D.
American Studies <sup>1</sup> +	
Survey Research <sup>1</sup>	
Polymer Science + .....	M.S., Ph.D.
Professional Higher Education Administration .....	M.A.

<sup>1</sup> M.A. degree program only<sup>2</sup> M.S. degree program only<sup>3</sup> M.Mus. degree program only<sup>4</sup> D.M.A. degree program only<sup>5</sup> Ph.D. degree program only<sup>6</sup> No longer admitting master's students<sup>8</sup> See Curriculum and Instruction (previous page)<sup>+</sup> Interdisciplinary program<sup>@</sup> **Not** accepting new students at this time

Fields of Study Areas of Concentration	Degrees Offered
Psychology .....	M.A., Ph.D.
Behavioral Neuroscience	
Clinical	
Developmental	
Ecological Psychology	
Industrial/Organizational	
Language and Cognition	
Neurosciences +	
Personality <sup>@</sup>	
Social	
Public Administration .....	M.P.A.
Public Health .....	M.P.H.++, Ph.D.+
Occupational and Environmental Health Sciences <sup>5</sup>	
Social and Behavioral Health Sciences <sup>5</sup>	
Social Work .....	M.S.W., Ph.D.
Sociology .....	M.A., Ph.D.
Social Science and Health Care <sup>5+</sup>	
Survey Research <sup>1</sup>	
Spanish .....	M.A., Ph.D.
Special Education .....	M.A., Ph.D.
Statistics .....	M.S., Ph.D.
Industrial Statistics <sup>2</sup>	
Structural Biology and Biophysics .....	M.S., Ph.D.
Survey Research .....	M.A.



## HEALTH CENTER PROGRAMS

The following degree programs, also included in the preceding Field of Study list, are offered primarily at the University of Connecticut Health Center. Application to these programs should be made to the Graduate School Admissions Office, University of Connecticut Health Center, Farmington, Connecticut 06030-1827. In addition, some interdisciplinary fields of study and areas of concentration involve Health Center fields as participants (see below).

Biomedical Science .....	Ph.D.
Cell Biology	
Cellular and Molecular Pharmacology	
Genetics and Developmental Biology	
Immunology	
Molecular Biology and Biochemistry	
Neuroscience	
Skeletal, Craniofacial and Oral Biology	
Clinical and Translational Research .....	M.S.
Dental Science .....	M.Dent.Sc.
Public Health .....	M.P.H.++, Ph.D.+
Occupational and Environmental Health Sciences <sup>5</sup>	
Social and Behavioral Health Sciences <sup>5</sup>	



## GRADUATE CERTIFICATE PROGRAMS

Certificate programs currently approved for offering within the structure of the Graduate School include:

- Biomedical Science Research Experience
- Culture, Health, and Human Development
- Geographic Information Systems
- Global Governance Studies
- Health Promotion and Health Education
- Health Psychology
- Human Rights
- International Studies
- Music Performance
- Nonprofit Management
- Nursing Practice
- Occupational Health Psychology
- Public Financial Management
- Quantitative Research Methods
- Sixth-Year Certificate Programs in Education
  - Adult Learning
  - Bi-lingual and Bi-cultural Education
  - Cognition/Instruction
  - Counselor Education and Counseling Psychology
  - Educational Administration
  - Educational Technology
  - Gifted and Talented Education
  - Professional Education
  - Reading and Language Arts Consultant
  - Remedial Reading and Remedial Language arts Teacher
  - School Psychology
  - Special Education
- Women's Studies

<sup>1</sup> M.A. degree program only + Interdisciplinary program

<sup>2</sup> M.S. degree program only ++ Health Center program only

<sup>5</sup> Ph.D. degree program only <sup>@</sup> **Not** accepting new students at this time

## ■ INTERDISCIPLINARY PROGRAMS

An interdisciplinary program includes substantial course work in two or more existing fields of study. In some programs the degree is awarded in one of the fields of study involved while in other programs the degree is awarded in an interdisciplinary field of study. Where the degree is awarded in an interdisciplinary field of study, the Dean of the Graduate School may choose to appoint an advisory committee which represents the various fields of study involved in an interdisciplinary program. The following is a listing of approved interdisciplinary programs.

### Interdisciplinary Fields of Study

Programs	Fields of Study Participating	Degrees Offered
Biomedical Engineering .....	M.S., Ph.D. Dental Science (Health Center), Electrical Engineering, Materials Science, Mechanical Engineering, and Psychology	
Comparative Literary and Cultural Studies .....	M.A., Ph.D. English, French, German, Italian, and Spanish	
Environmental Engineering .....	M.S., Ph.D. Chemical, Civil, and Mechanical Engineering	
International Studies .....	M.A. Agricultural and Resource Economics, Anthropology, Comparative Literary and Cultural Studies, Economics, History, Philosophy, Political Science, and Sociology	
Judaic Studies .....	M.A. History, Modern and Classical Languages, Sociology	
Materials Science .....	M.S., Ph.D. Chemistry, Engineering, Physics, and others	
Medieval Studies .....	M.A., Ph.D. Art, Dramatic Arts, English, History, Modern and Classical Languages, Music, and Philosophy	
Polymer Science .....	M.S., Ph.D. Biochemistry, Biophysics, Chemical Engineering, Chemistry, and Physics	
Public Health .....	Ph.D.	
Survey Research .....	M.A. Political Science, Sociology	

## Interdisciplinary Areas of Concentration

Each interdisciplinary Area of Concentration listed below is offered in each of the participating Fields of Study indicated in the middle column.

Programs Offered	Fields of Study Participating	Degrees Of- fered
American Studies	Anthropology, English, History, Philosophy, and Political Science	M.A. in the specific field of study except Anthropology and Philosophy
Applied Mechanics	Civil Engineering and Mechanical Engineering	Ph.D. in the specific field of study
Fluid Dynamics	Civil and Mechanical Engineering	Ph.D. in the specific field of study
Neurosciences	Pharmaceutical Science, Physiology and Neurobiology, and Psychology	M.A. or M.S. and Ph.D. in the specific field of study
Plant Cell and Molecular Biology	Botany and Cell Biology	M.S. and Ph.D. in the specific field of study
Plant Physiology	Botany and Cell Biology	M.S. and Ph.D. in the specific field of study
Social Science and Health Care	Anthropology, Sociology, in conjunction with the Department of Community Medicine and Health Care (Health Center)	Ph.D. in the specific field of study
Survey Research	Political Science and Sociology	M.A. in the specific field of study

# PROGRAMS AND COURSE OFFERINGS

## Programs

All graduate degrees at the University of Connecticut except the M.D., D.M.D., Pharm.D., and J.D. are awarded through the Graduate School.

Only those Fields of Study and Areas of Concentration identified in the preceding list are recognized by the University and the Graduate School. Here, descriptions of degree programs appear under the titles of the approved fields of study, if possible. In some cases, it has been necessary to group the approved fields of study under a departmental or other title in order to facilitate location in the text. For many of the programs, special requirements (over and above those of the Graduate School) that are generally applied to all students in that program are outlined. However, each student's program is non-departmental in that the advisory committee alone, in supervising it, is directly responsible to the Dean of the Graduate School.

## Course Offerings

The following lists include most of the graduate courses that the University has approved for offering. However, not all courses listed are offered every semester or every year. For actual current offerings, students should consult the appropriate schedule of classes which can be accessed from the Graduate School's registration Web site. Part-time, evening, and summer session students may wish to consult class schedules published by the Office of Credit Programs, Center for Continuing Education. Descriptions of undergraduate courses are contained in the Undergraduate Catalog. The University reserves the right to change announced offerings.

## Course Numbering System

Undergraduate courses are numbered 1000-4999. Courses numbered 1000-1999 are primarily for freshmen, courses numbered 2000-2999 are primarily for sophomores, courses numbered 3000-3999 are primarily for juniors, and courses numbered 4000-4999 are primarily for seniors. A limited number of credits of course work completed at the 4000-level (usually not more than six) may be applied, with the approval of the student's advisory committee, toward a graduate degree program provided certain conditions are met (See "Standards and Degree Requirements.").

Graduate courses are numbered 5000-6999. This Catalog contains listings of graduate-level courses only. Courses numbered 5000-5999 are primarily for master's students, and courses numbered 6000-6999 are primarily for doctoral students.

The University of Connecticut changed its course numbering system from three-digit course numbers to four-digit course numbers following the 2007-2008 academic year. In this Catalog, the descriptions of courses which previously had a three-digit course number begin with that number in parentheses.

## Satisfactory/Unsatisfactory Grading

Throughout the text, courses approved by the Executive Committee of the Graduate Faculty Council for Satisfactory (S)/Unsatisfactory (U) grading (see "Standards and Degree Requirements") are designated by the dagger symbol (†).

## Course Semesters

Class schedules for each semester and session can be accessed from the University's PeopleSoft Web site. Not all courses are offered every semester or every year. Information concerning the availability of particular courses may be obtained also from departmental and program offices.

Courses carrying hyphenated numbers are full-year courses extending over two semesters. The first semester of such courses is always prerequisite to the second, but the student may receive credit for the first semester without continuing with the second.

## Course Meeting Times

Information about the specific time(s) that a course will meet may be obtained from the appropriate departmental office at the time of registration or from appropriate class schedules.

## Course Prerequisites

All course prerequisites must be met before a student is permitted to register for the particular course. If, however, the instructor of a course is convinced that the student has the equivalent of such a prerequisite, the instructor may admit the student by providing the student with a unique PeopleSoft permission number (which is valid only for that student to use in registering for the course in question).

## Course Instructor

Students should consult the schedule of classes contained in the PeopleSoft database or contact the departmental office at the time of registration to obtain information concerning course instructor(s).



# AGRICULTURAL AND RESOURCE ECONOMICS

*Department Head:* Professor Rigoberto A. Lopez  
*Professors:* Bravo-Ureta, Cotterill, Hanink, Langlois, L. Lee, T. Lee, Lopez, Pomeroy, Ray, and Segerson  
*Associate Professors:* Altobello, Minkler, Randolph, Shah, and Tripathi  
*Assistant Professors:* Huang and Matschke

M.S. and Ph.D. degrees in Agricultural and Resource Economics are offered. Study may be undertaken in three broad areas, namely Food Marketing and Industrial Organization, Environmental and Resource Economics, and International Agricultural and Economic Development. Examples of sub-areas of specialization include prices and market performance, production economics, applied econometrics and statistics, environmental economics, benefit-cost analysis, economics of recreation, natural resource economics, economics of fisheries and aquaculture, economic development, and agricultural and resource policies.

The graduate program includes courses designed to provide a foundation in theory, empirical methods, and policy. Ph. D. students take additional courses in their field of interest prior to carrying out dissertation research. For M.S. students, the opportunity of selecting a specialized study area is offered via a thesis (or a non-thesis research project and additional course work). Graduate students usually take courses from those listed below and, in addition, select complementary offerings from the Departments of Economics, Natural Resources Management and Engineering, and Statistics, as well as the School of Business. Further information regarding graduate program structures and course requirements is available in the Departmental Graduate Bulletin (which may be downloaded from the Agricultural and Resource Economics website).

**Admission Requirements.** The Department recommends that applicants for admission to the master's program have a background of basic courses in undergraduate level economics, mathematics, and statistics, although there are no fixed requirements. Applicants to the Ph.D. program are expected to have superior preparation in these subjects and are also required to submit scores from the GRE General Test.

**Special Facilities and Opportunities.** Graduate students have exclusive access to a computer lab with state-of-the-art equipment, software, and wireless internet. The Food Marketing Policy Center has extensive scanner data and a collection of all major food industry trade publications. Several faculty members are engaged in international research, teaching, and policy projects that present numerous opportunities for graduate student participation. Prospective students are encouraged to visit the Department website for a more detailed description of program offerings and faculty interests.



**COURSES OF STUDY****ARE 5201. Microeconomics I**

(ARE 325) 3 credits. Lecture.

Beginning graduate microeconomics covering consumer and producer theory, price determination, economic efficiency, and welfare analysis.

**ARE 5305. The Role of Agriculture and Natural Resources in Economic Development**

(ARE 305) 3 credits. Lecture.

The role of agriculture in the economic development of less developed economies. Microeconomic dimensions of agricultural development, economics of food consumption and nutrition, agricultural technology and productivity, agricultural supply, land tenure and agrarian reform, foreign assistance, trade agreements, and agricultural price policy.

**ARE 5311. Econometrics I**

(ARE 345) 3 credits. Lecture. Also offered as ECON 5311.

Construction, estimation, and interpretation of economic behavioral and technical equations using data that are passively generated by a system of simultaneous, dynamic and stochastic relations.

**ARE 5315. Mathematical Programming for Economists**

(ARE 335) 3 credits. Lecture.

Procedures for formulating and applying mathematical optimizing techniques. Emphasis is on the use of linear and nonlinear programming models for researching economic problems.

**ARE 5462. Environmental and Resource Economics**

(ARE 330) 3 credits. Lecture.

Natural resource use and environmental quality analysis using economic theory. Reviews of empirical research and relevant policy issues.

**ARE 5464. Benefit-Cost Analysis and Resource Management**

(ARE 307) 3 credits. Lecture

Theoretical foundations and applications of benefit-cost analysis in project appraisal and in evaluation of public policies regarding resource management and environmental protection.

**ARE 5474. Industrial Organization: Empirical Analysis**

(ARE 358) 3 credits. Lecture.

Analysis of the structure, conduct, and performance of industries with examples from the food sector and other industries. Explains the development of testable hypotheses from theory, empirical methods, evidence on the level and type of competition, economies of size, product differentiation, entry barriers, and the impact of alternative organizational forms including cooperatives on economic performance.

**ARE 5495. Special Topics**

(ARE 300) 1-3 credits. Lecture. May be repeated for credit with a change of topic.

Topics and credits to be published prior to the registration period preceding the semester offerings.

**ARE 5499. Independent Study in Agricultural and Resource Economics**

(ARE 309) 1-6 credits. Independent study.

This course provides the opportunity for graduate students to carry on independent reading or research in the field of the student's needs and interests.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**ARE 6466. Environmental Economics**

(ARE 354) 3 credits. Lecture. Prerequisite: ARE 5201 or ECON 5201. Also offered as ECON 6466.

Economic analysis of environmental problems and corrective policy instruments. Theory of externalities and public goods, role of uncertainty and imperfect information in policy design, benefit-cost analysis, and non-market valuation. Applications to environmental problems (such as air and water pollution, hazardous waste, and occupational health and safety).

**ARE 6468. Economics of Natural Resources**

(ARE 335) 3 credits. Lecture.

Economic concepts and issues related to the allocation of stock resources through time, the use and protection of flow resources, and the role of natural resources in economic growth.

**ARE 6472. Microeconomic Applications to Food Markets**

(ARE 360) 3 credits. Lecture Prerequisites: ARE 5201 or ECON 5201 and ARE 5311 or ECON 5311.

This course trains students in applied microeconomics, with particular emphasis on food markets and public policy. The course is divided into three broad areas: production economics, economics of consumer behavior, and market analysis. Particular emphasis is placed on quantitative tools using empirical models and welfare economics. Students design and undertake an individualized project in their area of interest.

**ARE 6474. Industrial Organization: Advanced Empirical Analysis**

(ARE 458) 3 credits. Lecture.

Empirical Industrial Organization models that use simultaneous equations, discrete choice, and/or nonlinear econometric methods to analyze conduct and performance of brands and firms in non competitive industries. Includes static and dynamic modeling of pricing and advertising in differentiated product oligopolies. Antitrust policy applications in the U.S. and E.U.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

# ALLIED HEALTH

*Department Head:* Professor Lawrence Silbart  
*Professors:* Duffy and Faghri  
*Associate Professors:* Coble and Kerstetter  
*Assistant Professors:* Brown, Copenhaver, and Fridell

*Adjunct Assistant Professors:* Samos and Santamaria

The Master of Science degree in Allied Health Sciences emphasizes an interdisciplinary and individualized approach to graduate study for the student with a baccalaureate degree in the life sciences or a health-related field. In accordance with Graduate School's requirements concerning advisory committees (as published in this *Catalog*), a student's plan of study is developed in collaboration with the members of his or her advisory committee (comprising the major advisor and at least two associate advisors) to meet the student's professional, educational, and scholarly goals.

**The Program of Study.** Master's degrees in the Graduate Program in Allied Health (GPAH) may be earned under either of two plans, as determined by the advisory committee. Plan A (Thesis track) emphasizes research and requires not fewer than 24 credits of advanced course work and completion of a Master's thesis. Plan B (Project and Practicum Track) requires a comprehensive understanding of the subject matter, not fewer than 26 credits of advanced course work, and completion of a project and a practicum. Students in both Plans must assemble a graduate advisory committee in conjunction with their major advisor to develop the Plan of Study and the research agenda culminating in the writing and oral defense of a thesis (Plan A) or in the project/practicum (Plan B). Students must satisfy the University standards and degree requirements, and pass a comprehensive examination administered under the auspices of the advisory committee.

Typical Plans of Study for the two master's tracks are shown below.

<b>Plan A – Thesis Track #</b>	<b>credits</b>
EPSY 5309 – Quantitative Methods in Research I	3
GPAH 6306 – Research Methods	3
Health Promotion and Allied Health Sciences	6
Electives	3
GRAD 5950 – Thesis Research	9
Total	24

<b>Plan B – Non-Thesis Track #</b>	<b>credits</b>
EPSY 5309 – Quantitative Methods in Research I	3
GPAH 6306 – Research Methods	3
Health Promotion and Allied Health Sciences	9
Electives	3
GPAH 5314 – Professional Development Project	3
GPAH 5317 – Professional Development Practicum	5
Total	26

# GPAH 6324, 6305, 5319, and 5309 are Core Health Promotion and Allied Health Sciences electives. Advisory committees may require more than the minimum number of credits and may make substitutions for the course requirements listed above.

**Admission.** The Graduate Program in Allied Health (GPAH) is open to students who hold a baccalaureate degree. Students ideally enter with a degree in a health related field and/or a strong life sciences background. All previous coursework must meet the general requirements of the University of Connecticut Graduate School. Information on the general requirements of the Graduate School can be found on the Graduate School link under information on Schools and Colleges on the main University website ([www.uconn.edu](http://www.uconn.edu)). Competitive Graduate Assistantships may be available which provide a stipend, tuition waiver, and health benefits.

Candidates seeking admission to the GPAH program who wish to receive further information are encouraged to contact the Department of Allied Health Sciences Director of the Graduate Program: Dr. Pouran Faghri, by mail (Department of Allied Health Sciences, University of Connecticut, 358 Mansfield Road, Unit 2101, Storrs, CT 06269-2101), by telephone (860-486-0018), or by email ([pouran.faghri@uconn.edu](mailto:pouran.faghri@uconn.edu)).

**Graduate Certificate in Health Promotion and Health Education.** The Graduate Program in Allied Health (GPAH) offers a Graduate Certificate Program in Health Promotion and Health Education. For more information, contact the Program Director, Professor Pouran Faghri or visit the GPAH Website at [http://www.alliedhealth.uconn.edu/gpah\\_program.php](http://www.alliedhealth.uconn.edu/gpah_program.php). The GPAH has a number of highly qualified professionals researching a wide range of topics in the allied health sciences. Students are encouraged to review faculty websites and meet with program faculty for more information regarding possible research topics.

## COURSES OF STUDY

### Health Promotion and Allied Health Sciences: (GPAH)

**GPAH 5094. Integrative Seminar in Allied Health Research**

(GPAH 310) 1 credit. Seminar. This course may be repeated to a maximum of three credits.

Examination of advanced topics in allied health research. Emphasis is on integrating and applying research concepts and methodology.

**GPAH 5095. Investigation of Special Topics** (GPAH 300) 1-6 credits. Independent study.

Advanced study for qualified students who present suitable projects for intensive, independent investigation in allied health.

**GPAH 5302. Health Care Policy**

(GPAH 303) 3 credits. Lecture.

Concepts of health policy with special emphasis on federal policy. Examination of current health policy models, agencies involved in policy development, and the impact of policy on providers and clients. Selected policy issues will be studied through case studies, readings, and discussions with policy makers and regulators.

**GPAH 5309. Health and Aging**

(GPAH 309) 3 credits. Lecture.

Examination of the theoretical and applied issues in optimizing health for older adults. Focus is on the bio-psycho-social aspects of health; application of current research, and leadership skill building for program development.

**GPAH 5314. Professional Development Project**

(GPAH 314) 3 credits. Independent study. Instructor consent required. Prerequisite: at least 9 credits in Allied Health; open only to non-thesis (Plan B) students.

Examines contemporary issues and problems relevant to allied health practice. Focus is on interdisciplinary exchange of ideas and the development of a project relative to the student's particular program emphasis.

**GPAH 5317. Professional Development Practicum**

(GPAH 317) 5 credits. Practicum. Instructor consent required. Prerequisite: GPAH 5314, which may be taken concurrently; open only to non-thesis (Plan B) students.

The implementation and/or application of theory in GPAH 5314. A minimum of 300 practicum hours required.

**GPAH 5319. Allied Health Education Science**

(GPAH 319) 3 credits. Lecture.

The study and application of current learning theories and principles needed by experienced health professionals to become effective instructors in didactic, clinical, and community settings.

**GPAH 5328. Cancer Intervention for Allied Health Professionals**

(GPAH 328) 3 credits. Lecture.

Introduction to cancer from the biologic, pathologic, Wellness Testing and Cancer Prevention, public education, professional education and policy issues perspectives. With this knowledge each student designs and implements a Cancer Intervention Program pertinent to their field of study. Development and use of media models is encouraged in each project emphasizing distant learning, teleconferences and video conferences as a means to present Cancer Intervention Programs.

**GPAH 5331. Nutrition for Healthy Communities**

(GPAH 331) 3 credits. Lecture

Development of knowledge and skills in public nutrition including community assessment, development of program policies, and program planning, implementation, and evaluation.

**GPAH 5360. Cross Cultural Health Care.**

(GPAH 360) 3 credits. Lecture

Exploration of the relationships between culture/ethnicity and health status, health care beliefs and

behaviors. Develops greater understanding of, and sensitivity toward the patient's way of life utilizing case examples from the United States and international settings.

**GPAH 5366. Environmental Health**  
(GPAH 366) 3 credits. Lecture.

Focuses on the environmental health consequences of exposure to toxic chemicals, food contaminants and radiation. Basic principles of environmental health are discussed, followed by lectures on specific topics such as: cancer and reproductive risks, occupational hazards, radiation, genetic biomonitoring, risk assessment techniques, risk/benefit analysis, social/legal aspects of regulating toxic chemicals, and other related topics.

**GPAH 5632. Vaccines: Mechanisms of Immune Protection**

(ANSC 306) 3 credits. Lecture. Also offered as PVS 5632.

The focus is on several different approaches to inducing prophylactic immunity in the host. Both traditional and modern molecular approaches to vaccine design will be discussed. In addition, the mechanisms employed by pathogenic microbes to avoid hosts' immune responses will be examined in the context of vaccine design. The students will gain an appreciation for the transition from basic research to practical applications.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**GPAH 6094. Health Promotion, Disease and Disability Prevention Research Seminar**  
(GPAH 403) 3 credits. Seminar.

Inquiry into the theory and nature of research in health promotion, disease and disability prevention. Students are encouraged to meet regularly with their major advisors.

**GPAH 6305. Program Evaluation for Health Professionals**  
(GPAH 305) 3 credits. Lecture.

A theoretical and practical introduction to program evaluation for health professionals who deliver health care services, manage departments and personnel, or provide training and continuing educational opportunities. Students apply the practical program evaluation framework for health-related intervention programs and document the impact of interventions within

health promotion and disease and disability prevention. Skill development is facilitated.

**GPAH 6306. Research Methods in Allied Health**

(GPAH 306) 3 credits. Lecture Prerequisite: EPSY 5605 or a course in basic statistics.

An inquiry into the nature of research with emphasis on the spirit, logic, and components of the scientific method. Health related research literature is used to aid the student in learning to read, understand, and critically analyze published materials. The preparation of research proposals and reports is emphasized.

**GPAH 6324. Critical Issues in Health Promotion, Disease and Disability Prevention**

(GPAH 324) 3 credits. Lecture.

An in-depth study of health promotion, disease and disability prevention policies, programs and strategies.

**GPAH 6405. Exercise Intervention for Health Promotion in Persons with Chronic Disease and Disability**

(GPAH 405) 3 credits. Lecture

This course provides in-depth information for determining functional capacity and developing appropriate exercise programming for optimizing functional capacity of persons with chronic disease and/or disabilities. Understanding the effects of exercise on the disease process as well as the effects of disease on the exercise responses in chronic disease and disability are explored.

**GPAH 6409. Geriatric Nutrition**

(GPAH 409) 3 credits. Lecture.

This course provides in-depth information on nutritional problems and requirements for the healthy and ill older adult. The focus is on design and critique of research methodology in the nutrition literature. Development and presentation of a major nutrition-related research proposal is required of all students.

**GPAH 6420 Clinical Management Models for Health Promotion**

(GPAH 420) 3 credits. Seminar.

Systematic design and analysis of the roles of health service managers and clinicians in the delivery of services for managed care are addressed. The course will analyze health care delivery from an integrated management-clinician perspective. Attention will focus on patient care and the use of clinical algorithms and critical pathways in health-care delivery.

**GPAH 6421. Design and Implementing Health Promotion Programs**

(GPAH 421) 3 credits. Lecture.

Designed to assist students with the skill development necessary to design and implement health promotion programs via a settings approach. Various program development models will be presented. Experts from the field will be integrated into the course from various programmatic settings.

**GPAH 6422. Writing Successful Grant Proposal**

(GPAH 422) 0 credits. Lecture.

Designed for the advanced graduate student in a health field to obtain experience writing a scientific research proposal. Students will be expected to enter the course with both a fairly well developed research topic and an actual Request for Proposal in hand. The final outcome from this class will be a grant proposal that is suitable for submission to a funding agency.

**GPAH 6423. Advanced Topics in Stress and Health Promotion**

(GPAH 423) 3 credits. Seminar.

Selected topics in assessing and treating stress related disorders in health care delivery are examined. Emphasis on diagnosis, treatment, and prevention interventions are examined. Current measures used in assessment along with self-management skills for patients are the focus of this course.

**GPAH 6424. Principles and Practices of Alternative/Complementary Medicine**

(GPAH 424) 3 credits. Lecture.

The course is designed to critically review the evolving modalities of alternative therapies and mind-body interventions. The major components of alternative medicine, providing a review of the scientific basis, physiology and psychoneuroimmunology of the disciplines of holistic mind-body therapies will be presented. The role of energetics and spirituality in human health promotion and disease prevention will be discussed.

## AMERICAN STUDIES

A graduate degree in American Studies is not offered. Students who wish to earn the master's-level area of concentration in American Studies must first be admitted to one of the participating fields of study: English, History, or Political Science. The student then informs his or her major advisor and the Director of American Studies of the intention to pursue the concentration.

The student must complete all of the degree requirements of the home field of study. During this process, the student would take two graduate-level courses outside of that field.

To earn the concentration, the student must write an interdisciplinary thesis on a topic approved by the major advisor and the Director of American Studies. The membership of the advisory committee must include one member from outside the home field of study. This committee advises the student during the writing of the thesis and approves it as acceptable for the American Studies concentration.

## ANIMAL SCIENCE

*Department Head:* Professor Daniel L. Fletcher  
*Professors:* Darre, Faustman, Hart, Hoagland, and Zinn  
*Associate Professors:* Andrew, Dinger, Kazmer, Nadeau, Milvae, Rasmussen, Tian, and Venkitanarayanan  
*Assistant Professors:* Carter, Govini, and Mancini

The Master of Science and Doctor of Philosophy degrees are offered in Animal Science with supportive instruction in biochemistry, environmental health, food science, physiology, biology, nutrition, statistics and related fields. All prospective students should have a strong academic background in the biological sciences. In addition to the credit requirements indicated below, M.S. and Ph.D. students must complete one credit of ANSC 5693 (Graduate Presentation Skills). In addition, M.S. students must complete one credit of ANSC 5694 (Animal Science Seminar), while Ph.D. students must complete two credits of ANSC 5694. M.S. (Plan B) students are exempt from the ANSC 5694 requirement. All graduate students receiving assistantship support are required to assist with the teaching of 1 course per year of enrollment.

The M.S. degree offers students the opportunity to emphasize study in animal behavior, food science, nutrition, growth, physiology of lactation, physiology of reproduction, or production management within Animal Science. Master of Science students are required to conduct thesis research (Plan A) or attain a comprehensive understanding in one of the above outlined areas (Plan B). Plan A programs of study must include a minimum of 15 credits of formal course work exclusive of research. Plan B programs of study must include a minimum of 24 credits of formal course work of which at least two, but not more than four credits, shall be a special research project. Additional specialization may be attained by focusing on dairy and beef cattle, sheep, swine, poultry, horses, companion or aquatic animals or their products.

**Admission.** In addition to the admission requirements of the Graduate School, all applicants are required to submit scores from the General Test of the Graduate Record Examinations, three letters of recommendation, and a Personal Statement. Prospective students are strongly encouraged to read the Department of Animal Science Web pages before applying.

**The Ph.D. Program.** The Doctor of Philosophy degree is offered in Animal Science with an area of concentration in Physiology of Reproduction. Dissertation research may also emphasize environmental health, immunobiology, animal behavior, animal breeding, food science, nutrition, growth, and physiology of lactation. The Ph.D. degree requires demonstrated capabilities for conducting independent research plus related scholarly attributes. Each Ph.D. plan of study must include 44 to 48 credits of course work beyond the baccalaureate degree, not including credits for foreign language or those substituted for foreign language requirements prescribed by the Graduate School.

**Special Facilities.** Modern and extensive laboratory capabilities exist for the support of graduate student research in animal science, reproductive physiology, and animal food products. Special laboratory facilities include eight modern

endocrinology, physiology, and molecular genetic laboratories; a modern abattoir; and numerous modern field laboratories.

### COURSES OF STUDY

#### ANSC 5601. Experimental Design in Animal Science

3 credits. Lecture.

This course will discuss the basic principles of design and analysis for experiments in animal and food science. Both theory and practical application of designing experiments will be included. Emphasis is placed on data analysis using SAS, highlighting determination of the most appropriate analysis for an experiment and interpretation of output.

#### ANSC 5611. Physiology of Lactation

(ANSC 322) 3 credits. Laboratory/Lecture.

Anatomical, endocrine and metabolic aspects of lactation, emphasizing lactation in dairy cattle. Mastitis prevention and therapy are discussed.

#### ANSC 5612. Advancements in Ruminant Nutrition

(ANSC 333) 2 credits. Lecture.

Critical review of current literature on digestive physiology, metabolism, feed processing and management related to ruminant animals.

#### ANSC 5613. Growth and Metabolism of Domestic Animals

(ANSC 344) 3 credits. Lecture/Discussion.

An assessment of animal growth and metabolism interrelated to nutrition, selection, environment, production and idiosyncrasies among species.

#### ANSC 5621. Frontiers in Animal Embryo Biotechnology

(ANSC 329) 3 credits. Lecture.

Focuses on the genetic aspects of embryology such as imprinting and X inactivation. Introduces the state of technology of numerous established and emerging embryo biotechnologies such as assisted reproductive technologies, transgenesis, cloning and gene targeting. Lab demonstrations of basic embryology techniques will be included.

#### ANSC 5623. Current Advances in Epigenetics

(ANSC 370) 1 credit. Seminar. This course can be repeated to a maximum of three credits. Also offered as MCB 5470.

Epigenetics is a field of modern biological research that is concerned with influences on gene expression, developmental biology, and disease that are mediated by mechanisms independent of DNA sequence. This course is a literature review course in which each student will present and critically analyze primary literature in epigenetics. All students will present and participate in detailed technical evaluations of selected papers, and develop a written proposal for future research based on the paper(s) that they present individually. Topics will include imprinting, X chromosome inactivation, chromatin dynamics, and cloning (nuclear transfer).

**ANSC 5641. Food Chemistry**

(ANSC 303) 3 credits. Lecture.

Chemical, physical and biological changes in foods and food macromolecules that occur during processing and storage that affect texture, color, flavor, stability and nutritive qualities. Field trips may be required.

**ANSC 5692. Research**

(ANSC 360) 1-6 credits. Independent study.

Independent research in animal science, livestock production, meats, dairy production, animal nutrition, growth, reproductive physiology, animal breeding, or environmental health.

**ANSC 5693. Graduate Presentation Skills**

(ANSC 390) 1 credit. Lecture.

A discussion-based class which prepares students to make oral presentations.

**ANSC 5694. Animal Science Seminar**

(ANSC 397) 1 credit. Seminar.

Students present a seminar on the topic of their thesis research.

**ANSC 5695. Special Topics**

(ANSC 300) 1-6 credits. Lecture. May be repeated for credit with a change of topic.

**ANSC 5699. Independent Study**

(ANSC 395) 1-3 credits. Independent study.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**ANSC 6622. Fundamentals of Proteomics**

(ANSC 350) 1 credit. Lecture.

Principles and practices of various methodologies of protein separation science will be covered. The course intends to serve as an introduction to methodologies such as 1-D and 2-D electrophoresis, mass spectrometry, peptide mass fingerprint, tandem MS, protein identification by MS/MS, post-translational modification characterization etc. A lab exercise on database search on the internet is included.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## ANTHROPOLOGY

*Interim Department Head:* Professor Sally O. McBrearty

*Professors:* Boster, Handwerker, Linnekin, Singer, and Wilson

*Associate Professors:* Dussart, Erickson, Libal, Martinez, McBride, and Sosis

*Assistant Professors:* Adler, Bruhac, Libal, Munro, and Smith

The Department of Anthropology offers programs leading to the M.A. and Ph.D. degrees in anthropology. Selected study areas at the Ph.D. level include: applied medical anthropology, ecology and evolution, globalization and transnational studies, New England ethnology and ethnohistory, Old World prehistoric archaeology, and psychological and cognitive anthropology. Area strengths include Africa, Caribbean, Latin America, and North America, including both North American and other U.S. ethnic minorities. Interdisciplinary study in related fields may be pursued in consultation with the major advisor.

**Admission Requirements.** Applicants must present results of the General Test of the Graduate Record Examinations and three letters of recommendation. These should be sent directly to the Graduate School, University of Connecticut, 438 Whitney Road Extension, Unit 1006, Storrs, CT 06269-1006. The application deadline is December 1st.

**The M.A. Program.** An undergraduate major in anthropology is not required for admission to the M.A. program. Qualified students who hold a baccalaureate in various fields may be admitted provided that they meet the requirements of the Graduate School and the department.

**The Ph.D. Program.** The department admits into the Ph.D. program only those students whose past work in anthropology on either the undergraduate or the graduate level shows promise of high scholastic ability and whose research interests are compatible with the areas of specialization represented among the faculty. Students are expected to define at the outset the study area which they wish to emphasize. A period of field research normally precedes the writing of the dissertation.

**Interdisciplinary Study.** The medical anthropology area of emphasis involves course work and research in public health at the Health Center in Farmington.

### COURSES OF STUDY

**ANTH 5305. Investigation of Special Topics**

(ANTH 305) 1-6 credits. Seminar. May be repeated to a maximum of 24 credits with a change of course content.

Special topic readings or investigations according to the needs of each student.

**ANTH 5306. Human Behavioral Ecology**

(ANTH 306) 3 credits. Seminar.

This seminar will apply the theory of natural

selection to the study of human behavior in an ecological setting, with particular focus on the adaptive features and biological design of human behavior.

**ANTH 5308. Human Evolutionary Theory**  
(ANTH 308) 3 credits. Lecture.

Evolutionary concepts applied to human body size and shape, diet, disease, group composition, and reproductive behavior.

**ANTH 5309. Violence, Stress, and Social Support**  
(ANTH 309) 3 credits. Seminar.

This seminar surveys theory and observations bearing on the nature, sources and consequences of traumatic stress, stressors, and social support in human populations.

**ANTH 5311. History of Anthropological Theory**  
(ANTH 311) 3 credits. Seminar. Instructor consent required.

Development of theory from the nineteenth century through the 1970s. Required for graduate students in Cultural and Historical Anthropology.

**ANTH 5312. Seminar: Contemporary Theory in Social and Cultural Anthropology**  
(ANTH 312) 3 credits. Seminar.

Selected current issues and debates in the discipline.

**ANTH 5315. Gender and Culture**  
(ANTH 315) 3 credits. Seminar.

Anthropological perspectives on the analysis of gender with special focus on dynamics of gender, culture, and power.

**ANTH 5321. Ethnographic Methods I**  
(ANTH 321) 1-3 credits. Seminar.

Theoretical foundations and basic tools used to conduct professional field studies in anthropology. Research design; moral and ethical dimensions of field work; designing and conducting informal, semi-structured and structured interviews (one-on-one and in groups); managing field notes, questionnaires, and data; computer data management; summary statistics and graphics; identifying and interpreting random variation; modeling and testing explanations.

**ANTH 5322. Ethnographic Methods II**  
(ANTH 322) 1-3 credits. Seminar.

Theoretical foundations and basic tools used to conduct professional field studies in anthropology. Research design; moral and ethical dimensions of field work; designing and conducting informal, semi-structured and structured interviews (one-on-one and in groups); managing field notes, questionnaires, and data; computer data management; summary statistics and graphics; identifying and interpreting random variation; modeling and testing explanations.

**ANTH 5332. Cognitive Anthropology**  
(ANTH 332) 3 credits. Seminar.

The study of how the content of thought or knowledge, is created, organized, and distributed in human communities. Topics include cultural models of the mind, emotions, personality, and relationships.

**ANTH 5334. Culture and Religion**  
(ANTH 334) 3 credits. Seminar.

Theories and problems in the analysis of non-western religious systems.

**ANTH 5335. Psychological Anthropology**  
(ANTH 335) 3 credits. Seminar.

The seminar explores theoretical and empirical relationships between the individual and sociocultural systems, and it seeks to identify worldwide principles of human behavior.

**ANTH 5336. Cultural Ecology**  
(ANTH 336) 3 credits. Seminar.

Interrelationships between population organization in contrasting preindustrial societies.

**ANTH 5337. Economic Anthropology**  
(ANTH 337) 3 credits. Seminar.

Issues of scope, method and epistemology. Economic organization and performance in preindustrial societies. Economic development and underdevelopment.

**ANTH 5339. Cultural Dynamics**  
(ANTH 339) 3 credits. Seminar.

An analysis and comparison of contemporary anthropological theories of sociocultural dynamics, with an investigation of selected problems in the study of change and persistence.

**ANTH 5341. Analysis of Rituals**  
(ANTH 341) 3 credits. Seminar. Prerequisite: Anthropology 311.

Examines various theoretical contributions to the anthropological study of ritual. Controversies and ambiguities surrounding the social and symbolic significance of the ritual act for both men's and women's experiences and participation are addressed.

**ANTH 5345. The Neanderthals**  
(ANTH 345) 3 credits. Seminar.

The biological, cultural, technological, and behavioral evolution of Neanderthals as understood through the fields of genetics, physical anthropology, palaeolithic archaeology, human behavioral ecology, hunter-gatherer ethnography, palaeoclimatology, chronometric dating, and geology. Neanderthal-Modern Human interactions and the Middle-Upper Palaeolithic transition are also considered.

**ANTH 5350. Physical Anthropology**  
(ANTH 350) 3 credits. Seminar.

Critical review of selected topics and current issues in the theory and practice of physical anthropology.

**ANTH 5352. Medical Anthropology**  
(ANTH 352) 3 credits. Seminar.

An overview of current theory and practice in medical anthropology.

**ANTH 5353. Applied Anthropology**  
(ANTH 353) 3 credits. Seminar.

An overview of various applications of anthropology to solve human problems both internationally and within the United States. Emphasis upon history of applied anthropology, ethical considerations, and specific roles of anthropologists in development.

**ANTH 5354. Contemporary Issues in Archaeology**  
(ANTH 354) 3 credits. Seminar.

A critical review of current trends and developments in archaeological method and theory.

**ANTH 5356. History of Archaeological Theory**  
(ANTH 356) 3 credits. Seminar.

A critical review of the development of archaeology, with particular emphasis on the theoretical innovations of the 1960s and 1970s.

**ANTH 5357. Settlement Systems**  
(ANTH 357) 3 credits. Seminar.

Approaches to human systems of settlement, including the applications of locational models and hierarchical analysis of settlement system data.

**ANTH 5358. Analytical Methods in Archaeology**  
(ANTH 358) 3 credits. Seminar.

The use of qualitative and quantitative techniques in the analysis of archaeological data. Topics covered include seriation, sampling, data screening, statistical testing and numerical taxonomy.

**ANTH 5359. Advanced Analysis in Archaeology**  
(ANTH 359) 3 credits. Seminar. Prerequisite: ANTH 5358.

An examination of recent developments in archaeological analysis, with particular emphasis on multivariate techniques, new methods of spatial analysis, chronological seriation, and microcomputer applications.

**ANTH 5361. The Ecology of Human Evolution**  
(ANTH 361) 3 credits. Seminar.

Early human ancestors as components of past ecosystems. Recovery of ecological information from fossil sites; reconstruction of ancient behavior; relevance of ethology and the study of contemporary foraging people for reconstruction of the past.

**ANTH 5363. Archaeological Site Formation Processes**  
(ANTH 363) 3 credits. Seminar.

The creation of archaeological sites by human behavior and geological forces. The characteristics of various formation processes and identification of them in the archaeological record.

**ANTH 5364. New England Prehistory**  
(ANTH 364) 3 credits. Seminar.

Topics in the prehistory of New England. Regional

chronology and cultural history, early Holocene adaptation, ecology of hunter-gatherers, coastal adaptations, development of horticulture, and the evolution of tribal societies.

**ANTH 5365. Northeast North American Ethnohistory**

(ANTH 365) 3 credits. Seminar.

Ethnohistory of northeastern North America from the Contact Period through the 20th century. Social and political organization, land use, subsistence, trade and exchange, mortuary ritual, native responses to Christianity and European trade and settlement. Contemporary issues of reburial and repatriation, federal recognition, and federal and state trust responsibilities for Indian tribes.

**ANTH 5369. Culture and Reproduction**

(ANTH 369) 3 credits. Seminar.

A cross-cultural overview of human reproduction. Biological, social, cultural, and behavioral factors; cultural patterning of fertility and perinatal behavior; fertility control; gender and power in reproduction.

**ANTH 5374. Culture, Power, and Social Relations**

(ANTH 374) 3 credits. Seminar.

Power, cultural evolution, and social change; law, global relations, identity and ethnicity, revolution and revitalization, the power of numbers, parents and children, women and men.

**ANTH 5375. Ethnographic Methods Laboratory**

(ANTH 375) 1-6 credits. Seminar.

Intensive study of selected tools for ethnographic data collection and analysis. Design and implementation of specialized ethnographic interviews; protocols, event histories, life histories, censuses, identity construction. OLS and logistic regression, demographic methods, triads tests, consensus analysis, ProFit analysis, multidimensional scaling, cluster and factor analysis, scale construction and validation, and text analysis.

**ANTH 5376. Ethnomedicine**

(ANTH 376) 3 credits. Seminar.

Medical systems in cultural context. Traditional healers, herbal medicine, culture bound systems, the meaning of illness, curing and disease. Impact of biomedicine on traditional and alternative medical systems.

**ANTH 5377. International Health**

(ANTH 377) 3 credits. Seminar.

The role of anthropology in international health, morbidity and mortality, population, maternal and child health, nutrition, infectious diseases and epidemiology, health care infrastructure and underdevelopment.

**ANTH 5381. Sex and Gender**

(ANTH 381) 3 credits. Seminar.

The historical, structural, and personal influences that shape the biocultural phenomena of sex and sexuality.

**ANTH 5389. Population Ecology**

(ANTH 389) 3 credits. Seminar.

This seminar surveys theory and observations bearing on the causes and consequences of changes in fertility and mortality rates, and in the configuration of causes of mortality and morbidity in human populations.

**ANTH 5390. Cultural Rights**

(ANTH 390) 3 credits. Seminar.

Politics of culture and cultural rights, minority rights, indigenous rights, multicultural policies, race, difference and law, cosmopolitanism, globalization and human rights.

**ANTH 5510. The Neanderthals**

3 credits. Seminar. Instructor consent required.

Interdisciplinary understanding of the biological, cultural, technological and behavioral evolution of Neanderthals and their societies.

**ANTH 5512. Modern Human Origins**

3 credits. Seminar. Instructor consent required.

The earliest modern people in Africa: their way of life seen from the archaeological, fossil, and genetic evidence.

**ANTH 5513 Modern Human Dispersals**

3 credits. Seminar. Instructor consent required.

Interdisciplinary understanding of the tempo and mode of modern human dispersals across Europe, Asia, Australia, and the Americas.

**ANTH 5517 Hunter-Gatherers Past and Present**

3 credits. Seminar. Instructor consent required.

Investigation of recent and prehistoric hunter-gatherer societies informed by human behavioral ecology, archaeology, and ethnoarchaeology.

**ANTH 5609 Quantitative Zooarchaeology**

3 credits. Seminar. Instructor consent required.

Archaeological problem solving using zooarchaeological and taphonomic data; the evolutionary ecology of human economies; evaluation and quantification of zooarchaeological data; formation of faunal assemblages.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## APPLIED MECHANICS

Courses and research opportunities leading toward the Ph.D. degree in the interdisciplinary area of applied mechanics are offered by the Applied Mechanics Committee of the School of Engineering. This Committee comprises faculty members from both the Civil and Environmental Engineering and the Mechanical Engineering Departments. Study areas include elasticity, plasticity, plates and shells, stability, dynamics, wave propagation, vibrations, and biomechanics.

The facilities of the departments are available and include Biomechanics, solid mechanics, vibrations, and photoelasticity laboratories. Close collaboration exists with the faculty and facilities of the Institute of Materials Science (IMS).

The major advisors authorized to supervise doctoral work in applied mechanics are M. Accorsi, D. Basu, R. Christenson, H. Epstein, L. Liu, J.-H. Kim, and R. Malla, and A. Zofka in the field of study of civil engineering; and E. Jordan, S. Kotha, G. Lykotraftis, K. Murphy, and W. Sun in the field of study of mechanical engineering.

## ART AND ART HISTORY

*Department Head:* Professor Judith Thorpe  
*Professors:* Givens, Mazzocca, Muirhead, Myers, Oguibe, and Talvacchia

*Associate Professors:* Bock, D'Alleva, Deibler, DiCapua, Greeley, Hagen, Hoyt, Machida, Noelker, Orwicz, Pritchard, Sloan, Yegir, and Zurolo

*Assistant Professors:* Dennis and Rosenberg

**The Master of Fine Arts.** The Master of Fine Arts degree, a terminal degree for studio artists, requires a minimum of two years study in residence. Graduate level studio work for the serious artist is desirable to enable intensive aesthetic experimentation assisted by the guidance of established professional artists. As a result of such experience, a student is expected to complete a body of art significant in content and of professional quality. Students develop a plan of study in consultation with a major advisor and advisory committee. While the program emphasizes individualized studies concentrating on and combining studio art areas such as ceramics, drawing, painting, performance art, photography, printmaking, and sculpture and video there also are courses which enable students to engage other resources of the Department of Art and Art History and the University community.

**Admission.** Students are admitted to begin study in the fall semester only. Applicants for the M.F.A. degree must first meet the admission requirements of the Graduate School as specified in this Catalog. Consideration for admission also requires submission of the following to the Department of Art and Art History: (1) examples of recent original art presented digitally; (2) three letters of recommendation; (3) a personal letter of application also submitted online; (4) official transcripts of all undergraduate and graduate level studies. The principal criterion for admitting applicants into the M.F.A. program is the quality of the art work submitted and the potential for graduate level development it suggests. Applicants are not required to take the Graduate Record Examinations or the Miller Analogies Test.

**Plan of Study.** Students establish their own direction and goals in consultation with a major advisor and an advisory committee. After such consultation, the plan of study is completed for the approval of the student's advisory committee. Candidates for the M.F.A. are required to complete a minimum of 60 credits of graduate course work. This total typically includes 39 credits of graduate studio art distributed as follows: 21 credits in an area of major emphasis, 12 credits outside the area of major emphasis, and six credits of M.F.A. project. An additional 15 credits are to be taken in non-studio graduate art courses and are distributed as follows: nine credits of graduate art seminar, three credits in modern and contemporary issues in art, and three credits of special topics in art history. The remaining six credits are graduate electives. When deemed appropriate by the advisory committee, additional credits in advanced studio or art history may be required of students whose undergraduate backgrounds are deficient in these areas.

**M.F.A. Project.** Reserved for the last semester of study after candidacy review, the M.F.A. project

requires accomplishment of a body of studio work culminating in a substantial exhibition for public viewing, supported by a written statement, public presentation, and a digital photographic portfolio. Each candidate presents to the advisory committee an oral defense of the completed body of studio work and the written statement. The exhibition emphasizes work resulting from the M.F.A. project and courses taken in the final year of study. A public presentation is required in conjunction with the exhibition. The digital photographic portfolio, which is to include each work in the exhibition, and the candidate's written statement should be prepared in duplicate for retention in the Department of Art and Art History and in the Art and Design Division of the Homer Babbidge Library.

**Scholastic Standards.** The advisory committee evaluates the student's program whenever a grade of C or lower is recorded for a graduate course. Progress in all courses is monitored by the advisory committee, particularly if a student's cumulative grade point average falls below 3.00 at any time during the course of study. The M.F.A. is not conferred unless the candidate maintains a cumulative grade point average of at least 3.00 in all course work.



**The Master of Arts in Art History.** The M.A. emphasizes the application of a range of investigative methods to historical and contemporary visual practices, exploring the ways they inform and organize our understanding of both Western and non-Western visual traditions. This interdisciplinary program provides students with a focused structure for advanced studies in the history, theory, and criticism of visual art. The program highlights the investigation of a range of theoretical and methodological approaches that engage art-making within its social, political and cultural contexts. The Master of Arts in Art History requires a minimum of two years study in residence.

**Admission.** Applicants for the M.A. degree must meet the admission requirements of the Graduate School as specified in this Catalog. Three letters of recommendation, preferably from members of the academic profession, along with a writing sample and personal statement from the applicant are required. Students are admitted to begin study in the fall semester only.

**Advisory Committee.** The advisory committee includes a major advisor and at least two associate advisors, one a member of the Art History faculty and one from outside the Department of Art and Art History. One associate advisor may be chosen from outside the University in accordance with Graduate School procedures.

**Plan of Study.** Candidates for the M.A. are required to complete a minimum of 30 credits of graduate course work including 18 credits of required work and twelve elective credits. A plan of study listing the courses to be taken must be prepared by the student, and approved by the advisory committee and the Graduate School. Other requirements including specifics regarding the language requirement, the M.A. Thesis, and the Final Examination are described in the pamphlet, *The Graduate Program in Art History*, which may be obtained from the Department of Art and Art History.

**Foreign Language Requirement.** A reading knowledge of one foreign language appropriate to scholarly research in art history is required. Mastery of



French, Italian, Spanish, or German are accepted for this requirement; others will be considered by formal petition. Proficiency may be demonstrated by passing a departmental language exam or by passing a graduate-level literature course at the University of Connecticut in one of the accepted languages with a grade of *B* or above. The language requirement must be completed before the student is eligible to take the M.A. Final Examination (Thesis Defense). Language proficiency is considered by the faculty in making graduate assistantship awards.

**M.A. Thesis.** The required M.A. thesis is a research paper of approximately 50 pages that is intended to demonstrate the candidate's mastery of independent scholarly study and a professional understanding of the discipline of art history.

**Final Examination.** The final examination or thesis defense is an oral examination under the jurisdiction of the advisory committee that deals primarily with the subject matter of the thesis. In addition to the final examination, the candidate publicly presents the research at a symposium organized by the Department.



**Special Facilities.** Since graduate students are required to work in the immediate University vicinity, individual or shared studio space is available for students in the M.F.A. program. Technical facilities are available in photography, video, printmaking, sculpture, and ceramics. Located on the main campus is the William Benton Museum of Art and within two hours of driving time from Storrs are the Wadsworth Atheneum, New Britain Museum of American Art, Boston Museum of Fine Arts, Worcester Art Museum, Yale Art Galleries, Lyman Allyn Museum, Slater Museum, and other notable museums and public collections. New York City is just under three hours travel time from the University campus.

## COURSES OF STUDY

### ART

**ART 5301. Graduate Studio Art (Ceramics)** (ART 301) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5303. Graduate Studio Art (Painting)** (ART 303) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5304. Graduate Studio Art (Photography)** (ART 304) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5305. Graduate Studio Art (Printmaking)** (ART 305) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5306 Graduate Studio Art (Sculpture)** (ART 306) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5307 Graduate Studio Art (Drawing)** (ART 307) 3-6 credits. Laboratory. Open to students in Studio Art, others with permission.

**ART 5308. Graduate Studio Art (Video)** 3-6 credits. Laboratory. Instructor consent required. Open to students in studio art, others with permission.

**ART 5309. Graduate Studio Art (Performance)** 3-6 credits. Laboratory. Instructor consent required. Open to students in studio art, others with permission.

**ART 5310. Graduate Art Seminar** (ART 310) 3 credits. Seminar. Open to students in Studio Art, others with permission.

Discussions, readings, and analyses relating current studio work to contemporary trends in art.

**ART 5320. Modern and Contemporary Issues in Art** (ART 320) 3 credits. Seminar. Instructor consent required. Open to students in studio art, others with permission.

Seminar investigating selected critical and theoretical issues of significance to the visual arts, involving a core of general reading and discussion on historical and contemporary topics in art from the 20th century to the present day. An individual research project culminating in an oral presentation and a final paper on the research are required.

**ART 5330. Interdisciplinary Study** (ART 330) 3-6 credits. Practicum. Open to students in Studio Art, others with permission.

Special course work that combines resources in art and/or areas outside of art.

**ART 5340. Studio Art Instruction and Curriculum Planning** (ART 340) 3 credits. Lecture. Must be taken in the first semester in the initial program year by all graduate students with teaching appointments.

Teaching methods, strategies, and curriculum planning in studio art instruction.

**ART 5383. Special Topics in Studio Art** (ART 383) 3 credits. Seminar. Instructor consent required. May be repeated to a maximum of 12 credits with change in course content.

Seminar focused on special, limited topic relating to practices in studio art. The content will vary from semester to semester.

**ART 5392. Independent Study** (ART 392) 3-6 credits. Independent Study. Open to students in Studio Art, others with permission.

**ART 5397. M.F.A. Project** (ART 397) 6 credits. Practicum. Open to students in Studio Art, others with permission.

Studio work culminating in required exhibition, supported by a written statement, public presentation and photographic color-transparency portfolio.

### ART HISTORY

**ARTH 5319. Theories of Visual Representation** (ARTH 319) 3 credits. Seminar.

Theoretical and interpretive practices that have shaped the field of art history, including: Marxism, psychoanalysis, semiology, and feminism.

**ARTH 5320. Historical and Contemporary Issues in Art Criticism** (ARTH 320) 3 credits. Seminar.

Seminar investigating selected issues of significance to the criticism of the visual arts, involving a core of general reading and discussion on the history of art criticism from the eighteenth century to the present day. An individual research project culminating in an oral presentation and a final paper on the research are required.

**ARTH 5321. Historiography of Art History** (ARTH 321) 3 credits. Seminar.

Philosophical, theoretical, cultural and historical issues that underwrite art historical methods

**ARTH 5322. Theory in Art History** (ARTH 322) 3 credits. Seminar. Prerequisites: ARTH 5319 and ARTH 5321. May be repeated to a maximum of 6 credits with a change in course content.

Selected topics in theory and/or methodology.

**ARTH 5340. Museum Practices.** (ARTH 340) 3 credits. Seminar. Prerequisites: ARTH 5321 and ARTH 5322.

Contemporary and theoretical issues in museum and exhibition practices directed toward their application in various internship contexts.

**ARTH 5370. Issues in Contemporary Art** 3 credits. Seminar. Instructor consent required. Open to students in Studio Art and Art History, others with permission.

Critical and theoretical issues in twentieth and twenty-first century art production and reception including: modernism, postmodernism, feminism, technology, and globalization.

**ARTH 5383. Special Topics in Art History** (ARTH 383) 3 credits. Lecture. Instructor consent required. May be repeated for credit with a change in course content. For M.F.A. students, consent of advisory committee and instructor required for enrollment beyond 3 credits.

Seminar focusing upon a special, limited topic in the history of art. The content will vary from semester to semester.

**ARTH 5392. Independent Study** (ARTH 392) 3 credits. Independent study. May be repeated to a maximum of 6 credits with a change in course content.

Independent study in Art History.

**ARTH 5397. Museum Studies Internship** (ARTH 397) 3 credits. Practicum. May be repeated to a maximum of 6 credits with a change in course content.

Internship practicum in museum, gallery, or other curatorial context.

## ALL SECTIONS

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

## BIOMEDICAL ENGINEERING

*Program Director:* Assistant Professor Donald R. Peterson

Biomedical Engineering (BME) is a profession involving engineering and the life sciences, physical sciences and medical science to understand problems in physiology and biology and improve human health. The BME Graduate Handbook at the website <http://www.bme.uconn.edu> further describes the program.

The goal of the biomedical engineering graduate program is to provide students the interdisciplinary training in biological and medical sciences, physical sciences, and engineering necessary to solve complex biomedical problems. Faculty members from engineering, biomedical sciences, materials sciences, chemistry, physics, medicine, and dental medicine form an interdisciplinary graduate degree program that spans the University of Connecticut campuses at Storrs and at the Health Center (UHC) in Farmington. Biomedical engineering can embrace the following diverse yet complementary research areas: biochemical engineering, bioinformatics, bioinstrumentation, biomaterials, biomechanics, biomedical imaging/biosignal processing, biosensors, biotechnology, cellular and tissue engineering, clinical engineering, ergonomics, medical informatics, physiological systems modeling, and rehabilitation engineering.

An entering student's primary undergraduate training may be in engineering, the physical sciences, medicine or biology. However, all students must demonstrate competence in mathematical analytical methods, certain basic and advanced skills in engineering and computer science, as well as knowledge of core fundamentals of biomedical engineering at the time of their graduation. Plans of study are developed in consultation with the student's advisory committee and are designed to meet individual needs and program requirements.

**Application Procedure.** Applicants are required to submit three letters of recommendation (preferably from members of the academic profession), a personal letter from the student describing their interest in biomedical engineering and the application to the Graduate School. The GRE and TOEFL (minimum score of 550) are required only for students with an undergraduate degree from a non-US institution.

**The M.S. Program.** Students whose primary training is in engineering can prepare themselves for entrance into one of the biomedical fields by completing a program leading to the master's degree in biomedical engineering. The program also offers the biology and chemistry student a means of achieving the mathematical, engineering, and instrumentation skills necessary for a career in biomedical engineering after completing remedial coursework.

Both a Plan A (thesis option) and Plan B MS degree are offered. For the Plan A, eight graduate courses (24 credits), nine credits of Master's Thesis Research (GRAD 5950), and the writing and oral defense of a thesis are required. For the Plan B, a total of ten (10) graduate courses (30 credit hours) is required. Once a student begins a Plan A M.S. degree program and receives a graduate research assistantship, he or she can switch to a Plan B only if approved by the BME

Graduate Program Director and Major Advisor. Courses required of all M.S. students may include: BME 5000, BME 5100, BME 5500 or BME 6500, and BME 5600. Other courses selected from the BME course offerings would be consistent with the student's background, interests, and career plans. Only Plan A Master's students are required to present and publish their M.S. research at a conference (or have their paper accepted before graduation). Exceptions to the specified MS course requirements must be approved by the BME Graduate Program Director.

**The Ph.D. Program.** Applicants to the Ph.D. program are expected to demonstrate outstanding ability and to show, based on their record of previous scholarship and experience, that they are likely to do superior creative work in their respective fields. Holding a master's degree from this or any other institution does not render the applicant automatically admissible to a doctoral program. In general, doctoral applicants must meet all admission requirements for the BME M.S. degree and must present evidence that they are capable of doing independent work of distinction. Exceptional students with a B.S. degree may be directly admitted into the BME Ph.D. program. It is recommended, however, to first earn a BME MS degree before starting Ph.D. studies.

Beyond the M.S., a minimum of 24 credit hours of BME course work is required for the Ph.D. Additionally, 15 credits of Doctoral Dissertation Research (GRAD 6950) are required. There is no language requirement for a Ph.D. in BME.

If a doctoral student has not taken the five suggested MS courses or their equivalents (see "The MS Program"), these courses may be required in addition to the course work and research credits otherwise required for the Ph.D. The BME Graduate Program Director must approve any exceptions to the course requirements.

The BME Ph.D. program requires the passing of two tests, the Qualifying Exam and the General Exam. Admitted Ph.D. students must pass the BME Qualifying Exam within their first year of study. The exam is given once a year in May. The objective of this exam is to determine the student's suitability to advance to candidacy for Ph.D. studies in Biomedical Engineering. This examination seeks to evaluate a candidate's competency in basic skills and knowledge essential to conducting research in Biomedical Engineering by examining the student's grasp of material covered in the BME core curriculum. The Ph.D. Qualifying Exam is a written test given by the BME program with several parts that are based on the candidate's in-depth grasp of the material in core areas that may include: BME 5000, BME 5500 or BME 6500, BME 5100, BME 5600, BME 5800 and BME 6420. Students who have passed any of these courses at the University of Connecticut with a grade of B or better may automatically pass the portion of the Qualifying exam related to that course, and therefore may not need to take that part of the exam.

All Ph.D. Candidates must take the BME General Exam no later than nine months before defending their dissertation at a time arranged between the Ph.D. Candidate and Advisory Committee. The objective of the General Exam is to evaluate a PhD candidate's competency in developing and formulating a research project and the student's ability to approach a new problem in ways appropriate for an independent scientist. The exam will consist of a research proposal based on the student's research project. At least two weeks prior to the exam, the student will submit a written research proposal (approximately 40 pages) to the advising

committee. The general exam is mainly an oral defense of this research proposal by the student. The committee tries to evaluate the candidate's competency in developing and formulating the research project, as well as the scientific merits of the project, research hypothesis, research methods, potential findings, implications and limitations. The General Exam must be conducted by at least five faculty (including the Ph.D. Candidate's Advisory Committee) in the fields related to the student's project. There are no exemptions from the General Exam.

Research required for the doctoral degree in biomedical engineering involves the use of advanced engineering techniques for the solution of a biological or medical problem. Ph.D. candidates must submit at least two journal papers to a leading BME journal before graduation, with at least one of them having gone through the review process favorably. Note that the journal submissions must be full papers, with two short papers the equivalent of a full paper.

**Clinical Engineering Internship.** This is a hospital-based, two-year program supported by the clinical engineering departments of various hospitals including Hartford Hospital, The John Dempsey Hospital (UHC), Baystate Medical Center, St. Francis Hospital, UMass Medical Center, Rhode Island Hospital, Middlesex Memorial Hospital, Providence V.A. Hospital, and West Haven V.A. Hospital. Applications should be received by January 1 for full consideration. As part of the selection process, applicants are invited to the hospital and campus in February and March for interviews. The interview is required to secure a graduate assistantship (paid internship). Final selections are made in April for Fall admission. Each intern is expected to spend 20 hours per week in a hospital's clinical engineering department. The primary objectives are to: (1) provide exposure to hospital organization and administrative structure; (2) provide an opportunity to apply engineering techniques to patient care and hospital-based research; and (3) provide substantial hands-on experience working with health care technology and hospital personnel, including administrators, nurses, technicians and medical staff. Clinical engineering trainees are supported by stipends contributed by the participating hospitals. Students accepted for the internship earn either a Plan A or Plan B Master's degree.

The following courses are required of all Clinical Engineering interns: BME 5000, BME 5500 or BME 6500, BME 5020, BME 5030, and BME 5050. The remaining courses are taken only from the BME course offerings, and should be related to the student's background, interests and future career plans. The BME Graduate Program Director must approve any exceptions to the course requirements.

**Industrial Engineering Internship.** The industrial internship offers an in-depth, vigorous, industrial experience that complements the engineering expertise gained in the classroom. Students in the industrial internship can earn an MS and Ph.D degree. Companies located throughout New England participate in the program. The primary objectives of this industrial internship program are to provide: exposure to the industrial workplace; the opportunity to apply engineering knowledge and expertise to a variety of industrial projects; and the opportunity to interact with a variety of industrial work groups, including administrators, engineers, and technicians.

Additional details are contained in the BME Graduate Handbook.

**Research Facilities.** Because of the interdisciplinary nature of the Biomedical Engineering field of study, graduate research facilities in biomedical engineering are diverse, and can be found in the various academic departments of the biomedical engineering major advisors on the Storrs campus and at the University of Connecticut Health Center in Farmington.

**Graduate Advisors in Biomedical Engineering.** The following faculty serve as graduate major advisors in the biomedical engineering research areas listed below:

*Biochemical Engineering:* P. Campagnola, L. Loew, W. Mohler, R. Srivastava, and Y. Wang

*Bioinformatics:* I. Greenshields, I. Mandoiu, M. Sarfarazi, D. Shin, R. Simon, and C. Wolgemuth

*Biomaterials:* P. Campagnola, J. Goldberg, Y. Khan, D. Kreutzer, L. Kuhn, S. Kumbar, C. Laurencin, W. Mohler, L. Nair, and M. Wei

*Biomechanics, Rehabilitation Engineering, and Ergonomics:* D. Adams, M. Cherniack, J. Enderle, P. Faghri, G. Huber, K. Kazerounian, S. Kotha, J. Lieberman, R.M. Menghini, M. L. Newport, N. Olgac, D. Peterson, W. Sun, and N. Warren

*Biosensors and Bioinstrumentation:* M. Escabi, M. Fox, F. Jain, B. Javidi, D. Kreutzer, and Q. Zhu

*Biotechnology:* P. Campagnola, T. Chen, D. Kreutzer, L. Loew, W. Mohler, and Y. Wang

*Cellular and Tissue Engineering:* P. Campagnola, Y. Khan, D. Kreutzer, L. Kuhn, S. Kumbar, L. Loew, C. Laurencin, W. Mohler, L. Nair, M. Sarfarazi, R. Srivastava, R. Simon, and Y. Wang

*Clinical Engineering:* J. Enderle

*Imaging and Biosignal Processing:* P. Campagnola, J. Enderle, M. Escabi, M. Fox, B. Javidi, L. Liu, L. Loew, D. Kim, W. Mohler, D. Oliver, R. Simon, and Q. Zhu

*Neural Systems Engineering:* J. Enderle, M. Escabi, D. Kim, D. Oliver, D. Waitzman, and C. Wolgemuth

*Physiological and Biomedical Modeling:* L. Bernstein, P. Campagnola, W. Chapple, D. Das, J. Enderle, M. Escabi, D. Kim, D. Kreutzer, J. Ligas, L. Loew, W. Mohler, A. Moiseff, D. Oliver, C. Pilbeam, H. Read, and D. Waitzman

*Adjunct Professors:* Eisenfeld, Noyes, and Painter

*Adjunct Associate Professors:* Jensen and McIsaac

*Adjunct Assistant Professors:* Bronke, Crofts, Stankiewicz, and Subhan

**Program Director.** For further information, contact the Program Director and Graduate Admissions Chair of the Biomedical Engineering graduate field of study, Dr. Donald R. Peterson, Biomedical Engineering, University of Connecticut, 260 Glenbrook Road, Unit 2247, Storrs, CT 06269-2247. Phone: (860) 486-5838. FAX: (860) 486-2500. E-mail: peterson@uconn.edu

## COURSES OF STUDY

**BME 5000. Physiological Systems I** (BME 310) 3 credits. Lecture. Recommended preparation: BME 3100 (or equivalent).

Eleven major human organ systems are covered in this course, including: integumentary, endocrine, lymphatic, digestive, urinary, reproductive, circulatory, respiratory, nervous, skeletal, and muscular.

### BME 5010. Research Methods in Biomedical Engineering

(BME 314) 3 credits. Lecture. Also offered as GPAH 6306.

An inquiry into the nature of research with emphasis on the spirit, logic, and components of the scientific methods. Health related research literature is used to aid the student in learning to read, understand, and critically analyze published materials. The preparation of research proposals and reports is emphasized.

### BME 5020. Clinical Engineering Fundamentals

(BME 350) 3 credits. Lecture.

Provides the fundamental concepts involved in managing medical technology, establishing and operating a clinical engineering department, and the role of the clinical engineering designing facilities used in patient care. Topics covered include managing safety programs, technology assessment, technology acquisition, the design of clinical facilities, personnel management, budgeting and ethical issues of concern to the clinical engineer.

### BME 5030. Human Error and Medical Device Accidents

(BME 352) 3 credits. Lecture.

This course teaches the basic principles needed to analyze medical devices, medical device users, medical device environments and medical device accidents. It particularly focuses on human factors engineering as an important step to minimizing human error. The role of medical device manufacturers, medical device regulators and medical device owners will be examined to identify their role in reducing medical device use errors and medical device accidents. The nature and types of human error as well as a taxonomy of medical device accidents will also be presented. Investigative techniques involving root cause analysis and failure modes and effects analysis will be taught and applied to industrial and medical device accidents. Operating room fires, electrosurgical and laser burns, anesthesia injuries, infusion device accidents, catheters and electrode failures and tissue injury in the medical environment will be discussed in detail. A semester project will require the student to employ these tools and techniques to analyze a medical device accident.

### BME 5040. Medical Instrumentation in the Hospital

(BME 356) 3 credits. Lecture.

This course will examine 10-12 current major technologies in use by healthcare practitioners. It will review the physiological principles behind each technology, the principles of operation, major features, methods for testing and evaluating each technology and will highlight available versions of the devices on the market today. Technologies to be covered will be selected from anesthesia equipment, surgical and ophthalmic lasers, cardiac assist devices, surgical & endoscopic video systems, radiographic and fluoroscopic devices, CT, MRI, ultrasound imaging equipment, radiation therapy, nuclear medicine, clinical chemistry analyzers, spectrophotometers and

hematology analyzers. The course will be based on one text, selected manufacturers training documents as well as journal articles from current medical publications. Grading will be based on exams, quizzes, a semester project and class participation. Several classes will take place on site in Hartford area hospitals in order to observe and examine the equipment being discussed.

**BME 5050. Engineering Problems in the Hospital**

(BME 351) 3 credits. Lecture.

This course will cover engineering solutions to problems that are found in the healthcare environment. This includes a wide variety of topics such as electrical power quality of and the reliable operation of high tech medical equipment; electrical safety in the patient care environment; electromagnetic compatibility of various medical devices and electromagnetic interference; radiation shielding and radiation protection; medical gas systems, medical ventilation systems and indoor air quality; fire protection systems required in the hospital; networking medical devices, patient information systems, digital imaging and image storage systems; telemedicine and medical image transmission; and finally, hospital architecture and the design of patient care facilities.

**BME 5099. Independent Study**

(BME 320) 1-3 credits. Independent study.

Individual exploration of special topics as arranged by the student with an instructor of his or her choice.

**BME 5100. Physiological Modeling**

(BME 315) 3 credits. Lecture. Recommended preparation: BME 3100 and BME 3400 (or equivalent).

Unified study of engineering techniques and basic principles in modeling physiological systems. Focuses on membrane biophysics, biological modeling, and systems control theory. Significant engineering and software design is incorporated in homework assignments using MATLAB and SIMULINK.

**BME 5302. Biochemical Engineering for Biomedical Engineers**

(BME 322) 3 credits. Lecture.

Introduction to chemical reaction kinetics; enzyme and fermentation technology; microbiology, biochemistry, and cellular concepts; biomass production; organ analysis; viral dynamics.

**BME 5329. Advanced Ultrasonic Imaging Techniques**

(BME 359) 3 credits. Lecture. Prerequisite: ECE 6302.

Introduction to advanced techniques of ultrasonic image formation for biomedical applications. Introduction to acoustic wave propagation. A, B, C, M and Doppler ultrasonic imaging modes. Interaction of ultrasound with biological tissue. Acoustical holography. Ultrasonic transducer design and calibration. Transducer arrays. Ultrasound detection modes. Laboratory demonstrations will include Schieren visualization of ultrasound fields and transducer calibration techniques. Assumes a background in linear systems.

**BME 5339. Introductory Ergonomics for Biomedical Scientists and Engineers**

(BME 366) 3 credits. Lecture. Prerequisite: BME 5600 or consent of the instructor.

This problem-based course begins with a work-related overview of the design strengths and limitations of human anatomy and physiology (molecular, tissue and systems levels) and the contribution of work/worker mis-matches to the development of disease. Measurement of the response of these biological tissues and systems to work-related stressors is examined, to define the mechanism and presentation of musculoskeletal disorders. The course addresses physiological and anatomical damage due to biomechanical, psychosocial and work organization stressors and explores the range of possible control strategies of interest to the engineer and public health practitioner. To measure presence and levels of risk factors, students will be introduced to the use of laboratory techniques (e.g., EMG, digital motion capture, force cells) as well as field methods used in ergonomic work-site assessment, ranging from simple check-lists (geared towards worker-based interventions), through detailed time/motion studies, self-report effort scales, epidemiological instruments, and psychosocial and organizational measurement tools. A research project is required.

**BME 5341. Exposure Assessment in Ergonomics**

(BME 367) 3 credits. Lecture. Prerequisite: BME 5339 or consent of the instructor.

The goal of the course is to develop a broad understanding of ergonomic risk factors, knowledge of the measurement modalities available for characterizing workplace risk, and an appreciation of the advantages and disadvantages of each modality. Students will be introduced to the use of laboratory techniques (EMG, videotaping and digitization, digital motion capture, force cells, accelerometry and exercise physiology). They will also be instructed in methods used in ergonomic work-site assessment, ranging from simple check-lists (geared towards worker-based interventions), through detailed time/motion studies, self-report effort scales, epidemiological instruments, and psychosocial and organizational measurement tools. The grade will depend on completion of a laboratory-based, field or epidemiological project.

**BME 5500. Clinical Instrumentation Systems**

(BME 311) 3 credits. Lecture. Recommended preparation: ECE 2001W, BME 3400, and BME 3500 (or equivalent).

Analysis and design of transducers and signal processors; measurements of physical, chemical, biological, and physiological variables; special purpose medical instruments, systems design, storage and display, grounding, noise, and electrical safety. These concepts are considered in developing devices used in a clinical or biological environment.

**BME 5600. Human Biomechanics**

(BME 312) 3 credits. Lecture. Instructor consent

required. Recommended preparation: BME 3600W (or equivalent).

Applies principles of engineering mechanics in the examination of human physiological subsystems such as the musculoskeletal system and the cardiovascular system. Topics drawn from biosolid mechanics, biofluids, and biodynamics, the viscoelastic modeling of muscle and bone, non-Newtonian fluid rheology, blood flow dynamics, respiratory mechanics, biomechanics of normal and impaired gait, and sport biomechanics.

**BME 5700. Biomaterials and Tissue Engineering**

3 credits. Lecture. Instructor consent required.

Recommended preparation: BME 3700 (or equivalent). Also offered as MEDS 5313.

A broad introduction to the field of biomaterials and tissue engineering. Presents basic principles of biological, medical, and material science as applied to implantable medical devices, drug delivery systems and artificial organs.

**BME 5800. Bioinformatics**

(BME 380) 3 credits. Lecture. Recommended preparation: BME 4800 (or equivalent).

Advanced mathematical models and computational techniques in bioinformatics. Topics covered include genome mapping and sequencing, sequence alignment, database search, gene prediction, genome rearrangements, phylogenetic trees, and computational proteomics.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**BME 6020. Physiological Systems II**

(BME 318) 3 credits. Lecture. Prerequisite: BME 5000 or consent of the instructor. Enrollment limited to BME students in the Ph.D. program. Also offered as MEDS 6472.

A problem based learning course that focuses on in-depth coverage of four human organ systems with an engineering perspective. An extensive literature review is required for each topic which culminates in a major report that highlights the engineering standpoint unified mathematically. Case studies are used to develop each topic. Format: didactic session followed by group problem solving.

**BME 6086. Special Topics in Biomedical Engineering**

(BME 300) 1-6 credits. Lecture.

Classroom and/or laboratory courses in special topics as announced in advance for each semester.

**BME 6110. Computational Neuroscience**  
(BME 316) 3 credits. Lecture.

Explores the function of single neurons and neural systems by the use of simulations on a computer. Combines lectures and classroom discussions with conducting computer simulations. The simulations include exercises and a term project.

**BME 6120. Neuronal Information Processing and Sensory Coding**

(BME 357) 3 credits. Lecture. Prerequisite: BME 5100 or consent of the instructor. This course and ECE 6311 may not both be taken for credit.

Processing, transmission, and storage of information in the central and peripheral nervous systems. Mechanisms of signal generation, transmission and coding by neurons and dendrites. Analysis of invertebrate and vertebrate visual and auditory systems, including: mechanisms of neurosensory transduction, coding, and signal-to-noise ratio enhancement. Neural spatio-temporal filters for feature extraction and pattern recognition. Information theoretic analysis of signal encoding and transmission in the nervous system. This course assumes a background in linear systems and feedback control systems.

**BME 6130. Systems Identification of Physiological Systems**

(BME 361) 3 credits. Lecture. Prerequisite: BME 5100 or consent of the instructor.

Overview of linear and nonlinear methods for determining the input-output relationship of sensory and other physiological systems. Topics include: white noise analysis using the Volterra and Wiener expansion of non-linear system, moving average and autoregressive models, transfer function method, parametric identification using least-squares method, multi-input systems, spectrotemporal and spatiotemporal reverse correlation, spectral estimation methods using coherence. Examples from a host of neuronal systems will be provided, including the mammalian and amphibian visual and auditory systems.

**BME 6140. Cellular Systems Modeling**

(BME 365) 3 credits. Lecture. Prerequisite: BME 5600.

Cellular response to drugs and toxins, as well as normal cell processes such as proliferation, growth and motility often involve receptor-ligand binding and subsequent intracellular processes. Focuses on mathematical formulation of equations for key cellular events including binding of ligands with receptors on the cell surface, trafficking of the receptor-ligand complex within the cell and cell signaling by second messengers. Background material in molecular biology, cell physiology, estimation of parameters needed for the model equations from published literature and solution of the equations using available computer programs are included. Examples from the current literature of cell processes such as response to drugs and proliferation will be simulated with the model equations.

**BME 6150. Computational Cell Biology for Biomedical Engineers**

(BME 381) 3 credits. Lecture.

In the last decade, interdisciplinary science has established itself as a leading area of scientific investigation. The use of physics and mathematics to help understand biological systems hints at being one of the major scientific frontiers of this coming century. This course looks at biology at three separate length scales: molecular, cellular, and organismal/population. We will find that the math/physics of elasticity, hydrodynamics, statistical mechanics and reaction/diffusion can explain a broad range of phenomena throughout these size ranges. This course stresses the physical intuition of how to apply quantitative methods to the study of biology through the use of dimensional analysis, analytic calculation and computer modeling.

**BME 6160. Computational Genomics**

(BME 382) 3 credits. Lecture. Prerequisite: CSE 5800 or BME 5800 or consent of the instructor. Cross listed as CSE 6800.

Advanced computational methods for genomic data analysis. Topics covered include motif finding, gene expression analysis, regulatory network inference, comparative genomics, genomic sequence variation and linkage analysis.

**BME 6400. Biomedical Imaging**

(BME 358) 3 credits. Lecture. Recommended preparation: BME 3400 or ECE 3111 (or equivalent).

Fundamentals of detection, processing and display associated with imaging in medicine and biology. Topics include conventional and Fourier optics, optical and acoustic holography, thermography, isotope scans, and radiology. Laboratory demonstrations will include holography and optical image processing. Assumes a background in linear systems.

**BME 6420. Medical Imaging Systems**

(BME 360) 3 credits. Lecture. Prerequisite: BME 5500 or BME 6500 or consent of the instructor.

This course covers imaging principles and systems of x-ray, ultrasound, optical tomography, magnetic resonance imaging, positron emission tomography.

**BME 6450. Optical Microscopy and Bio-imaging**

(BME 341) 3 credits. Lecture. Also offered as MEDS 6450.

The course presents the current state of the art of optical imaging techniques and their applications in biomedical research. The course materials cover both traditional microscopies (DIC, fluorescence etc.) that have been an integrated part of biologists' tool-box, as well as more advance topics, such as single-molecule imaging and laser tweezers. Four lab sessions are incorporated in the classes to help students to gain some hand-on experiences. Strong emphasis will be given on current research and experimental design.

**BME 6460. Advanced Optical Microscopy and Bio-imaging**

(BME 342) 3 credits. Lecture/Laboratory. Prerequisite: BME 6450 or MEDS 6450. Also offered as MEDS 6460.

This course will cover several aspects of state of the art biological and biophysical imaging. We will focus on advanced techniques including nonlinear optical processes (multi-photon excitation, second harmonic generation, and stimulated Raman processes), as well as optical coherence tomography. 3 lab projects will supplement the lectures, providing hands-on experience with nonlinear optical methods. Special emphasis will be given to current imaging literature and experimental design.

**BME 6500. Biomedical Instrumentation I**

(BME 354) 3 credits. Lecture. Prerequisite: BME 5500. Instructor consent required.

Origins of bioelectric signals; analysis and design of electrodes and low noise preamplifiers used in their measurement. Statistical techniques applied to the detection and processing of biological signals in noise, including the treatment of nerve impulse sequences as stochastic point processes. Methods of identifying the dynamic proper ties of biosystems. Assumes a background in linear systems and electronics.

**BME 6510. Biomedical Instrumentation Laboratory**

(BME 353) 3 credits. Lecture.

Experimental investigation of electrodes, transducers, electronic circuits and instrumentation systems used in biomedical research and clinical medicine.

**BME 6520. Biosensors**

(BME 355) 3 credits. Lecture. Prerequisite: BME 5500 or consent of the instructor

Principles and design of acoustic imaging transducers, and force, pressure and hearing sensors. Covers also optical biosensors including oxygen monitoring sensors, glucose sensors and optical sensors used in imaging.

**BME 6610. Biofluid Mechanics**

(BME 331) 3 credits. Lecture. Prerequisite: BME 5600.

Provides a foundation for continued studies of biofluid mechanical subjects. Topics covered include kinematic principles, the Navier-Stokes equations, the vorticity equation, unsteady fluid flows of physiologic relevance, turbulence and interfacial phenomena. Emphasis is placed on physical analysis of the cardiovascular and pulmonary systems, as well as of other biologic systems of interest.

**BME 6620. Biosolid Mechanics**

(BME 362) 3 credits. Lecture. Prerequisite: BME 5600 or consent of the instructor. Recommended preparation: BME 3600W, CE 3110, and BME 5600 (or equivalent).

Mechanical behavior of biological solids. Applications of the theories of elasticity, viscoelasticity, and poroelasticity to bones, ligaments and tendons, skeletal muscle, and articular cartilage. Axial, bending, shearing and torsional loadings. Bone morphology and growth. Biphasic theory. Failure theories. Research paper. Topics may be modified slightly to accommodate student interests.

### **BME 6630. Biodynamics**

(BME 363) 3 credits. Lecture. Prerequisite: BME 5600 or consent of the instructor.

Dynamic modeling of biological systems using three-dimensional rigid body dynamics with a review of kinematics and kinetics and three-dimensional vector calculus. Applications of Newton's Laws and Lagrangian Equations presented. A critical review of various biodynamic assessment techniques and the principles of their operation will also be discussed. Biodynamic data analysis techniques will be shown along with fundamental model construction.

### †GRAD 6930. Full-Time Directed Studies (Doctoral Level)

(GRAD 497) 3 credits.

### †GRAD 6950. Doctoral Dissertation Research

(GRAD 495) 1 - 9 credits.

### †GRAD 6960. Full-Time Doctoral Research

(GRAD 496) 3 credits.

### GRAD 6998. Special Readings (Doctoral)

(GRAD 498) Non-credit.

### GRAD 6999. Dissertation Preparation

(GRAD 499) Non-credit.

## **BIOMEDICAL SCIENCE**

*Field of Study Coordinator:* Assistant Professor Matthew Rasband

The following programs leading to the Ph.D. degree in various areas of the biomedical sciences are offered at the University of Connecticut Health Center at Farmington. Further information about these programs may be obtained from the Biomedical Science Graduate Admissions Committee, University of Connecticut Health Center, Farmington, Connecticut 06030-3906.

### **Cell Biology**

*Program Director:* Associate Professor Kevin Claffey

*Professors:* A. Arnold, Carmichael, A. Fein, Feinstein, Hansen, Hla, Jaffe, Koppel, Liang, Loew, Pachter, Pappano, Peluso, Pilbeam, Ressler, Rosenberg, Rowe, Schenkman, Watkins, White, C. Wu, and G. Wu

*Associate Professors:* Bansal, Claffey, R. Clark, Epstein, Furneaux, Graveley, Han, Hurley, S. King, Lambrecht, Levine, Maulik, Rodionov, Smilowitz, Terasaki, and Watras

*Assistant Professors:* Aeschilmann, Amerik, Brocke, Campagnola, Caron, Cowan, Delany, Dodge-Kafka, Dorsky, Fong, Huber, Jansson, Mehlmann, Menoret, Mohler, Nyholm, Rivera, Tirnauer, Wolgemuth, and Yue

The Cell Biology graduate program offers a program of study for the Ph.D. degree with comprehensive training in the modern molecular and cellular research. The program is composed of Health Center faculty from basic as well as clinical departments, all of whom are conducting state-of-the-art research. The fundamental philosophy of the Cell Biology program is to advance knowledge in basic and clinical problems from the cellular and molecular perspective.

The program is particularly strong in these research areas: angiogenesis, bioinformatics, biophotonics, cancer biology, computational cell biology, cytoskeleton and molecular motors, gene expression, molecular medicine, molecular modeling, optical methods, reproductive biology, sensory transduction, signal transduction, tumor immunology, and vascular biology.

### **Genetics and Developmental Biology**

*Program Director:* Associate Professor William Mohler

*Associate Program Director:* Assistant Professor James Li

*Assistant Program Director:* Associate Professor Arthur Gunzl

*Professors:* Arnold, Carmichael, Das, King, Hansen, Hla, Jaffe, Kosher, Kranzler, Kream, LaLande, Maxwell, Mina, Morest, Peluso, Radolf, Rossomando, Rowe, Sarfarazi, Upholt, White, and Wikel

*Associate Professors:* Clark, Covault, Dealy, Epstein, Graveley, Gunzl, Kuchel, Lichtler, Mayer, Mohler, Reenan, Rosenberg, and Xu

*Assistant Professors:* Aguila, Ben Mamoun, Blinov, Claffey, Fang, Fong, Kresch, Li, Nyholm, Rogina, and Yu

The Ph.D. program in the area of concentration of Genetics and Developmental Biology provides qualified students with fundamental interdisciplinary training in modern molecular genetics and developmental biology, emphasizing cellular and molecular aspects as well as tissue interactions. Primary emphasis is placed upon regulation of gene expression and molecular events in development. Areas of emphasis include the mapping and cloning of human genes responsible for disease, RNA processing (including RNA editing, alternative splicing, antisense regulation, and RNA interference), the molecular mechanisms of aging, signal transduction pathways, microbial pathogenesis, developmental neurobiology, cell differentiation, musculoskeletal development, morphogenesis and pattern formation, reproductive biology and endocrinology. Faculty members are from several basic science and clinical departments and study a wide range of organisms including yeast, worms, fruit flies, mice, and humans.

### **Immunology**

*Program Director:* Associate Professor Anthony Vella

*Professors:* Cone, Goldschneider, Lefrançois, Lorenzo, Mukherji, J. O'Rourke, Radolf, Rajan, Srivastava, and Thrall

*Associate Professors:* Adler, Clark, Huang, Li, Puddington, Vella, and Zeff

*Assistant Professors:* Aguila, Cauley, and C. Wu

The Ph.D. program in the area of concentration of Immunology is focused on the cellular and molecular aspects of immune system structure and function in animal models and in humans. Areas of emphasis include: (1) Innate and adaptive immune responses to infectious agents including viruses, bacteria, or parasites; (2) Anti-tumor immunity and immunotherapy; (3) Hematopoiesis and development of cells of the adaptive (lymphocytes - T or B cells) or the innate immune system (NK cells, dendritic cells, osteoclasts); (4) Organ-specific inflammatory diseases of the respiratory (asthma) or gastrointestinal tracts (inflammatory bowel disease); and (5) Autoimmunity including pathogenesis and prevention (tolerance and immunoregulation).

### **Molecular Biology and Biochemistry**

*Program Director:* Associate Professor Henry Furneaux

*Professors:* Carmichael, Carson, Das, Eipper, Eisenberg, Hla, S. King, Klobutcher, Koppel, Osborn, Ozols, Rothfield, Setlow, Weller, and White

*Associate Professors:* Brewer, Cowan, Furneaux, Gunzl, Hoch, and Zou

*Assistant Professors:* Ben Mamoun, Dodge, Everson, Gryk, Heinen, Maciejewski, Schiller, Tirnauer, and Ton-That

The Ph.D. program in the area of concentration of Molecular Biology and Biochemistry explores biological phenomena at the molecular level with special emphasis on the genetic and biochemical mechanisms controlling biosynthesis, structure and function of macromolecules and their assembly into organized cellular structures. There are five major study areas: (1) relation of the structure of macromolecules to their function, with special emphasis on the structural base for the activity of

enzymes and the interactions of macromolecules in biological systems; (2) biosynthesis of macromolecules, including nucleic acids, proteins, and polysaccharides; (3) control of gene expression in bacteria, viruses and eucaryotic cells; (4) assembly of macromolecules into complex cellular structures during the processes of cellular development and differentiation; and (5) genetic and molecular basis of complex cellular processes, such as cell division and cellular development and differentiation.

## Neuroscience

*Program Director:* Assistant Professor James Hewett

*Professors:* Barbarese, Bernstein, Carson, Eipper, Frank, Kim, Kuwada, Loew, Mains, Maxwell, Morest, Oliver, Pachter, Pappano, and Potashner

*Associate Professors:* Bansal, S. Hewett, Levine, Shoemaker, Smilowitz, Waitzman, and Zecevic

*Assistant Professors:* Antic, Conti, Crocker, J. Hewett, Li, Ma, McCullough, Schiller, Wang, and Zecevic

The Neuroscience Graduate Program at the University of Connecticut Health Center is an interdisciplinary and interdepartmental Ph.D. program. The goal of research in this program is to understand the development, function, and dysfunction of the nervous system at the molecular, cellular, systems, and whole animal levels. Molecular, electrophysiological, behavioral, confocal imaging, and stem or virtual cell approaches are employed, as well as cellular, animal, transgenic, and mathematical models. The breadth of this program is depicted in a survey of the numerous topics covered by faculty research, which include: stem and precursor cell biology as it pertains to gliogenesis and neurogenesis in the developing nervous system; biochemistry and regulation of gene expression, signal transduction, and intracellular trafficking in neurons and glia; structure and function of voltage-sensitive ion channels; synthesis, storage and secretion of neuropeptides; neurotransmission and plasticity; synaptic organization and stimulus coding; sensory perception, behavioral neuroscience, and human psychophysics; and neuroinflammation, autoimmunity, and neurodegeneration. Research pertaining to specific diseases or disorders include: substance abuse; stroke; epilepsy; multiple sclerosis; and deafness. (For additional information, see <http://neuroscience.uhc.edu/>).

## Skeletal, Craniofacial and Oral Biology

*Program Director:* Professor William Upholt

*Professors:* Arnold, Frank, Goldberg, Gronowicz, Hand, Hansen, Hurley, Kosher, Kream, Lalande, Lefrançois, Lurie, Mina, Pilbeam, Rossomando, Rowe, and Upholt

*Associate Professors:* Dongari-Bagotoglou, P. Epstein, Dealy, Drissi, Harrison, and Lichtler

*Assistant Professors:* Delany, Kalajzik, Kuhn, Mallya, Maye, Reichenberger, Rogina, Wadhwa, and Y.H. Wang

This program provides students with interdisciplinary research training in the areas of

skeletal, craniofacial, and oral biology, emphasizing contemporary research technologies in cell, molecular, and developmental biology, genetics, and biochemistry. Trainees may enter a Ph.D. Program, a dual D.M.D./Ph.D or M.D./Ph.D, or a combined Dental Residency/Ph.D. Program. The Program prepares trainees for academic or industrial careers in the basic biomedical sciences, or for academic careers in Medicine or Dental Medicine. Areas of research include regulation of the formation, outgrowth, and patterning of the developing limb; control of cartilage differentiation, endochondral ossification, osteogenesis, and joint formation; human embryonic stem cell differentiation into mesodermal and musculoskeletal lineages; molecular regulation of gene expression in bone; homeobox gene regulation of osteoblast differentiation; gene therapy of bone diseases; hormonal and cytokine regulation of bone growth, formation, and remodeling; control of craniofacial skeletogenesis and tooth development; biochemistry, function, and regulation of the extracellular matrix; signal transduction and intracellular signaling pathways; cellular and molecular aspects of the pathogenesis of inflammatory disease; microbiology, pathogenesis, and immunology of caries and periodontal disease; neural structure and function in the gustatory system; biomaterial development for tissue engineering; bone cell/implant interactions; and, analysis of oral and mucosal function and disease.

## M.S. in Clinical and Translational Research.

An M.S. degree program is offered in the field of Clinical and Translation Research (*see pp. 79-80*).

**Dual M.D./Ph.D. Degree Program.** The dual degree program provides students with an integrated educational experience leading to completion of both the M.D. and Ph.D. degrees. The goal of the program is to prepare individuals of outstanding potential for productive careers as physician-scientists. Students spend the first two years completing the preclinical medical school curriculum together with selected graduate school coursework and two laboratory rotations. During the graduate phase, students complete additional coursework and pursue thesis research. Students then return to medical school to complete two years of clinical training. The program is usually completed within seven to eight years including summers. The program is administered by the M.D./Ph.D. Steering Committee under the jurisdiction of the Graduate Programs Committee at the University of Connecticut Health Center. Students apply to the program through the American Medical College Application Program (AMCAS). The Steering Committee reviews applications and, in conjunction with the medical school admissions committee, accepts students into the program. Assistantship support is provided to students in the program.

## COURSES OF STUDY

**Medical School Courses.** These courses are offered by the Schools of Medicine and Dental

Medicine and are open to qualified graduate students only. Permission from the Course Directors and the Dean for Academic Affairs (Dr. Bruce Koeppen) is required in writing in order to register. The syllabus will not be distributed to any student who does not have written permission. Forms are available in the Graduate School Office, Room LM035.

## MEDS 5306. Physiological Digital Imaging (MEDS 306) 3 credits. Lecture.

A combination lecture/seminar/project course in "Foundations of Imaging Science." It covers the principal mechanisms of physiological imaging in digital applications and focuses on critical analysis of the performance of modern imaging sensors, modeling and measuring of visual perception parameters for image information and optimizing of digital imaging for the life sciences, pathology and radiology, including teleradiology. The course is intended for anyone who works with or will use digital images.

## MEDS 5307. Critical Analysis of the Biological Literature (MEDS 307) 2 credits. Seminar.

This course is intended to develop and improve each student's capacity for critical analysis of research articles, with special emphasis on the logic used to frame hypotheses and justify conclusions. An understanding of experimental methods will also be emphasized. Each week one or two papers, across a wide spectrum of modern biomedical research, will be discussed in depth in a small group format.

## MEDS 5308. The Nature of Evidence in Scientific Research (MEDS 308) 2 credits. Discussion.

This course will examine the aspects of the scientific process that are common to all levels of biomedical investigations: from biophysics in cell-free systems to molecular biology in cells, to physiology in whole organisms, to epidemiology and clinical investigation in humans. These features begin with enunciation of the question to be asked, and include: (1) Identification of a system to address the question, (2) Specification of the systems and their manipulation, (3) Assessment of outcomes, and (4) Drawing inferences on the basis of results. The course will be designed as a discussion of seminal, published works on the topics. Two to three key papers will be distributed to participants at least one week before the scheduled discussions. There will be no examination for the course. Students are expected to actively participate in critical evaluation and discussion during each of the weekly two-hour sessions. Evaluation of performances will be based solely on such participation.

## MEDS 5309. Molecular Basis of Disease (MEDS 309) 2 credits. Discussion.

This is a seminar and discussion based course that reviews the molecular understanding of human disease.

## †MEDS. 5310. Responsible Conduct in Research (MEDS 310) 1 credit. Discussion.



This course introduces the student to ethical and legal issues associated with the practice and reporting of science. The course uses a case study approach and requires in-class student participation.

**MEDS 5313. Biomaterials and Tissue Engineering**

(MEDS 313) 3 credits. Lecture. Instructor consent required. Recommended preparation: BME 3700 (or equivalent).

A broad introduction to the field of biomaterials and tissue engineering. Presents basic principles of biological, medical, and material science as applied to implantable medical devices, drug delivery systems and artificial organs.

**MEDS 5322. Developmental Biology**

(MEDS 322) 2 credits. Lecture.

This course covers history, concepts, and experimental strategies in both classical and modern developmental biology. Topics ranging from early fertilization, to early embryonic development, to the formation of adult structures are considered and compared in a range of model organisms. Class format includes one hour of lecture by instructors and one hour of literature analysis and discussion by students each week. Course grade will combine results of class participation and a final exam.

**MEDS 5323. Genetics and Developmental Biology Journal Club**

(MEDS 323) 1 credit. Seminar.

Reading and discussion of current research in the fields of genetics and developmental biology with emphasis on molecular aspects. Periodic presentation of research papers and active discussion will be expected of all participants.

**MEDS 5325. Practical Applications of Sequence Analysis**

(MEDS 325) 2 credits. Lecture.

Provides an understanding of how to analyze genetic sequence information by computer. Includes basic analyses such as restriction mapping and detection of coding sequences, to more advanced analyses such as sequence similarity searching, sequence comparisons and multi-sequence alignment, prediction of functional motifs from primary sequence information, and current tools for mapping, assembly, and analysis of genomic sequence information. The course emphasizes NCBI and other Web-based tools currently available for use. Students will be exposed to the Genetic Computer Group (GCG) series of sequence analysis programs, but these are not emphasized. Students are required to complete a series of computer-based exercises to demonstrate proficiency in the application and use of the various computer programs presented in class.

**MEDS 5327. The Logic of Modern Biology**

(MEDS 327) 4 credits. Discussion.

This course covers the fundamental biochemical and genetic principles that underlie all areas of modern biology. The biochemistry and genetics of both prokaryotes and eukaryotes are addressed. Reading and discussion of papers in the literature are important elements of the course.

**MEDS 5329. Immunobiology I**

(MEDS 329) 2 credits. Lecture.

An overview of basic concepts in immunology including antibody structure, function and production, molecular genetics of the immune system and cellular regulation of immunity.

**MEDS 5330. Immunobiology II**

(MEDS 330) 2 credits. Lecture. Prerequisite: MEDS 5329.

This continuation of MEDS 5329 will consider effect or mechanisms of the immune system in inflammation, hypersensitivity, transplantation and autoimmunity as well as regulation of the immune system by cells, cellular products and chemical or physical agents.

**MEDS 5333. Immunobiology of Transplantation**

(MEDS 333) 2 credits. Lecture.

Immunogenetics of transplantation, alloantigen reaction lymphocytes, afferent recognition phase of transplantation immunity, cellular effector mechanisms and antibody participation in transplant immunity.

**MEDS 5335. Advanced Molecular and Cellular Immunology I**

(MEDS 335) 4 credits. Lecture. Prerequisite: MEDS 5329 and 5330.

Major areas covered include: (1) Development of the immune system with respect to lymphoid organs and lymphocyte subsets; (2) Mechanisms of antigen processing and presentation; (3) Lymphocyte activation including the role of costimulatory molecules and (4) Regulation of the immune response including tolerance induction, cytokine interactions and signal transduction.

**MEDS 5336. Advanced Molecular and Cellular Immunology II.**

(MEDS 336) 4 credits. Lecture. Prerequisite: MEDS 5329 and 5330.

Major areas covered include: (1) Immunoglobulin genetics and structure; (2) T cell receptor genetics and structure; (3) Molecular nature of antigen recognition by T cell receptor; (4) Structure, function and molecular genetics of lymphocyte accessory molecules; (5) Mechanisms of cytotoxicity and (6) Complement and complement receptors.

**MEDS 5337. Immunopathology**

(MEDS 337) 3 credits. Lecture.

The immediate-type hypersensitivities will be considered, with special emphasis on anaphylactic-type responses, pathologic responses, pathologic responses to immunologic complexes, immunohematologic diseases and models such as virus immunopathology, and rheumatoid arthritis and systemic lupus erythematosus.

**MEDS 5338. Techniques in Structural Biology**

(MEDS 338) 2 credits. Lecture. Also offered as MCB 5038.

A short course to introduce graduate students and selected undergraduates to modern techniques in

structural biology. Each course offering covers a specific technique: NMR, computational and graphical analysis of biomolecules, X-ray crystallography, analytical ultracentrifugation, spectroscopy, calorimetry, and others.

**MEDS 5341. Molecular Neurobiology of Excitable Membranes**

(MEDS 341) 3 credits. Lecture.

Emphasizes the relation between structure and function of biological interfaces that comprise electrically excitable and chemically excitable (synaptic) membranes. Models of electrically-and chemically-induced regulation of ion movement via channels and transporters are examined. Genetic manipulation of channel composition is evaluated with attention to altered function and inferences about their structure.

**MEDS 5349. Principles of Pharmacology**

(MEDS 349) 1-3 credits. Lecture.

An introductory course covering the basic principles of Pharmacology. Introduces the student to the concept that drugs and chemicals act on the body by binding to receptors. The physico-chemical properties of ligand-binding to macromolecules is examined, followed by an examination of the nature of receptors and the mechanisms whereby they exert their physiological responses to pharmacological agents. The uptake and fate of xenobiotics (compounds foreign to the body) in the body is discussed. The responses to chemicals, as therapeutic agents, i.e., the desired correction of diseased conditions, as well as toxins, carcinogens and teratogens. The mechanisms governing these different responses are examined in detail.

**MEDS 5350. Biochemistry I**

(MEDS 350) 4 credits. Lecture.

Introductory biochemistry of protein structure, function and synthesis, enzymology, structure and replication of nucleic acids, membrane structure and function.

**MEDS 5351. Biochemistry II**

(MEDS 351) 3 credits. Lecture.

This course covers fundamentals of biomolecular interactions and protein structure. Additionally, the course covers the structure/function of select proteins and enzymes essential to the following: metabolic pathways, DNA/RNA transactions, gene expression, cell cycle and signal transduction, and the cytoskeleton.

**MEDS 5365. Genetics**

(MEDS 365) 3 credits. Lecture.

Introduction to the principles and practices of molecular genetics of prokaryotes and eukaryotes. Topics include gene structure and function; gene transfer and recombination; gene regulation; molecular genetics of eukaryotic viruses, yeast, *Drosophila*, somatic cells and humans.

**†MEDS 5367. Introduction to Molecular Biology and Biochemistry**

(MEDS 367) 1 credit. Lecture. Open only to students



enrolled in the Biomedical Science doctoral program.

This course involves reading and discussing classic papers in Molecular Biology and Biochemistry in order to introduce first year students to the field and to develop critical skills. Topics will vary from year to year but may include nature of the gene, basic principles of transcription, translation, DNA replication, and membrane structure.

†**MEDS 5368. Topics in Biochemistry and Molecular Biology**

(MEDS 368) 1 credit. Lecture. May be repeated to a maximum of 3 credits with a change in course content.

To be offered every semester by a different faculty member on a rotating basis. Topic to be determined by individual faculty member. The purpose of the course will be to discuss and critically evaluate relevant literature in each topic. The topics will include viral replication strategies, membrane molecular biology, growth factors and second messengers, molecular biology of microbial development, membrane receptors, extracellular matrix-cell interactions, and peptide hormones.

**MEDS 5369. Advanced Genetics and Molecular Biology**

(MEDS 369) 3 credits. Lecture.

An advanced course emphasizing approaches to the genetic analysis of eukaryotic systems including yeast, fungi, *Drosophila*, mice, and humans. Topics include genome organization, DNA replication, regulation of gene expression, development, and differentiation.

**MEDS 5370. Introductory Neuroscience**

(MEDS 370) 1 credit. Lecture.

This course will provide an introduction to neuroscience as a discipline and the important concepts and problems that make the nervous system unique. The nervous system consists of the brain, spinal cord, and peripheral nervous structures. Our scientific understanding of sensation, movement, emotional behavior, homeostatic systems, and cognition each require knowledge and understanding of the nervous system. This course will provide the student with an introduction to the neurobiological bases of these behaviors and the experimental approaches that underlie modern neurobiological research. The course will also introduce the student to the unique cell and molecular biology of the nervous system. Neuroscience, as a discipline, incorporates data from many other scientific fields to address fundamental problems. Therefore, one goal of the course is to show how our understanding of the nervous system requires the integration of data from disciplines like endocrinology, genetics, computation biology, engineering, and biophysics. In addition, this course will introduce common diseases of the nervous system. Diseases are instructional since dysfunction may help explain normal function. More important though is that the cure of diseases, such as stroke, Alzheimers disease, and multiple sclerosis, provide a strong motivation for research in the nervous system.

**MEDS 5371. Systems Neuroscience.**

(MEDS 371) 2 credits. Lecture. Prerequisite: MEDS 5370.

Part of the core series in the Neuroscience graduate program. This course will address the functional organization of neural systems underlying sensation, movement, language, learning/plasticity, and emotion/arousal. Sensory systems will include the somatosensory, auditory, visual, vestibular, and chemosensory systems. Motor systems will include the spinal cord, brain stem, cerebellum, vestibular system, oculometer system, basal ganglia and cerebral cortex.

**MEDS 5372. Neuroscience: Cellular and Molecular Neuroscience**

(MEDS 372) 4 credits. Lecture.

Part of a core series in the Neuroscience Program, this course provides an introduction to basic concepts in the study of cell biology, neuroanatomy, neurophysiology, neurochemistry, and molecular biology of the nervous system.

**MEDS 5374. Neuroscience: Structure, Function, and Development of the Nervous System**

(MEDS 374) 1-6 credits. Lecture. Prerequisite: MEDS 5372.

Provides systematic coverage of neuroanatomy, neurophysiology, neuropathology, neurochemistry and developmental neurobiology (including embryology and neural plasticity). Introduction to neuroendocrinology, degeneration and regeneration, communicative sciences (speech, hearing, chemical senses, and psychophysics), and research methods.

**MEDS 5375. Neuroscience: Current Research Topics/Methods**

(MEDS 375) 1 credit. Seminar.

The goal of this course is to familiarize students early in their education (first or second year) with various key methodologies to which they will be exposed in courses, journal club presentations, and seminars. After a brief overview of basic concepts, applications, controls, and permutations of the method in the classroom, students will observe and participate in a demonstration of important technical aspects of the method in the laboratory setting. The course is targeted especially toward students with an interest in neuroscience or neuroimmunology.

**MEDS 5376. Developmental Neurobiology**

(MEDS 376) 2 credits. Lecture. Prerequisite: MEDS 5350.

Emphasis on the cellular and molecular mechanisms which underlie the development of the nervous system. Reading and discussion of research papers in the literature is stressed.

**MEDS 5377. Neurobiology of Hearing**

(MEDS 377) 3 credits. Lecture.

Provides in-depth analysis (using the Auditory System as a model system) with application of interdisciplinary approaches of cell and molecular biology, developmental neurobiology, neuroanatomy,

neurophysiology/biophysics, neurochemistry, neural modeling, psychophysics, and plasticity, with state-of-the-art methods used in neuroscience research today. The team of faculty members contribute a variety of complementary fields of study.

**MEDS 5378. Computational Neuroscience**

(MEDS 378) 3 credits. Lecture.

Students study the function of single neurons and neural systems by the use of simulations on a computer. The course will combine lectures and classroom discussions with conducting computer simulations. The simulations will include exercises and a term project. Each student will complete a term project of neural simulation to be developed during the second half of the semester. The topic of the term project should be approved by the instructors by the middle of the semester. The grade will be based on the exercises and the term project. Course includes: analysis of electrical circuits modeling neuronal cell membrane and the related differential equations; the Hodgkin-Huxley model of voltage- and time-dependent sodium and potassium conductances in the squid axon; voltage-clamp and current-clamp; the relationship between two rate constants versus the steady-state value and time constant underlying each conductance; neuronal response properties that are related to voltage-dependent and calcium-dependent ion channels; single- and multi-compartment models with ionic conductances simulating specific neuronal response properties described in the literature; excitatory and inhibitory postsynaptic currents and underlying ligand-gated ion channels; dendritic electrotonus and synaptic integration; temporal and spatial interactions of synaptic inputs to the dendritic tree and the cell body; action potential propagation in axons; neural circuits.

**MEDS 5380. Cell Biology**

(MEDS 380) 4 credits. Lecture. Prerequisite: MEDS 5350.

Basic eucaryotic cell biology. Major topics include: Methods in Cell Biology; Cell Growth and Proliferation; Cytoskeleton; Transport; Hormone Response; Cytoplasmic Organelles and Membrane Structure, Function, Biogenesis, Transport and Sorting; Cell Motility; Chromatin Structure and Organization; and Extracellular Matrix and Cell Adhesion.

**MEDS 5381. Cell Biology and Physiology II**

(MEDS 381) 4 credits. Lecture. Prerequisite: MEDS 5380.

Part I: Lecture format on membrane biophysics (membrane structure and permeability, electrical properties and gated channels, concentration gradients, volume and shape control, energy transduction, membrane dynamics). Part II: Lecture/Seminar format. Topics in receptors and channels, cell biology of the senses, cell junctions in the nervous system, growth factors and cell activation, cell cytoskeleton and matrix. Emphasis on in-depth discussions of specific cell systems through current literature. Final paper required in the form of research proposal.

**MEDS 5382. Advanced Cell Biology: From Microscope to Model--Quantitative Approaches to Cell Biology**  
(MEDS 382) 2 credits. Lecture.

Intracellular signaling is one of the most rapidly advancing fields in cell biology. The objective of this course is to introduce to the students the most recent achievements in the field of intracellular signaling and regulation. Each of the participating faculty members will give an introductory lecture to provide an overview of signaling events in their field of expertise and discuss the most important recent papers.

**MEDS 5383. Neurobiology of Disease**  
2 credits. Lecture.

The intent of the course is to introduce "neurobiology of disease" to graduate students receiving basic neuroscience training. The course will span a breadth of diseases and disorders affecting the nervous system, emphasizing links and common themes across diseases/disorders, and addressing both the pathology of these diseases/disorders and their basic science underpinnings.

**MEDS 5384. Mammalian Neuroanatomy**  
(MEDS 384) 2 credits. Lecture. Prerequisites: MEDS 5370 and MEDS 5371.

The Mammalian Neuroanatomy course offers the opportunity to learn the mammalian spinal cord and brain and to explore the relationship of structure and function in the nervous system. It is intended to complement courses that cover integrative, functional systems, and cognitive neuroscience. Using an informal, small-group, laboratory-based format, students will undertake an extensive analysis of histological cross sections of the central nervous system to learn to correlate brain and neuron structure with the function of neural systems. Students will explore the entire central nervous system in the human and the rat. Readings and discussions will address how structural information is obtained from the intact nervous system at sub-cellular, cellular, or tissue levels, and the students will learn how this information is applied to the analysis of neural systems. Additional activities will include dissection of the spinal cord and brain and the analysis of the human brain in magnetic resonance images (MRI) and computerized axial tomography (CAT) scans.

**MEDS 5385. Advanced Molecular Neuroendocrinology**  
(MEDS 385) 3 credits. Lecture.

This course is a special topics discussion in current "hot topics" in cell and molecular endocrinology and neuroscience. The underlying theme is that the underlying biochemical and molecular events in many endocrine and neurobiological processes are unfolding, often raising more interesting new avenues of research as one area becomes clarified. The course will include studies of lower vertebrates and invertebrates, genetic approaches, a wide variety of molecular and biochemical techniques, as well as some electrophysiology and anatomical mapping as appropriate.

**MEDS 5388. Principles and Techniques of Biological Electron Microscopy**  
(MEDS 338) 1-4 credits. Lecture.

A lecture/laboratory course on the theory and practice of transmission and scanning electron microscopy as applied in the biological sciences. Topics include instrument design and operation, electron optics, specimen preparation, photography, microscopic image interpretation and special techniques. Laboratory students learn and carry out commonly used preparative techniques, observe and photograph specimens in the electron microscope, and complete an independent project.

**MEDS 5391. Enzymes of Xenobiotic Biotransformation**  
(MEDS 391) 2 credits. Lecture.

Lectures and student presentations of journal articles relevant to the lectures plus one laboratory. Topics include an overview of metabolic routes of drugs and chemicals in the body with an emphasis on the hepatic cytochrome P450 monooxygenases. Other topics include conjugative xenobiotic metabolizing enzymes.

**MEDS 5395. Independent Study**  
(MEDS 395) 1-6 credits. Independent Study.

**MEDS 5415. Contemporary Topics in Oral Biology I**  
(MEDS 415) 2 credits. Lecture.

A combination lecture/seminar course which focuses on current investigation in the areas of dentomaxillofacial growth and development, oral microbiology and immunology, oromaxillofacial mineralized tissues, and salivary glands and saliva. Subject matter covered in this course and MEDS 5416 will rotate over a two to three year schedule.

**MEDS 5416. Contemporary Topics in Oral Biology II**  
(MEDS 416) 2 credits. Lecture.

A combination-lecture/seminar course which focuses on current investigation in the areas of dentomaxillofacial growth and development, oral microbiology and immunology, oromaxillofacial mineralized tissues, and salivary glands and saliva. Subject matter covered in this course and DENT 5415 will rotate over a two to three year schedule.

**MEDS 6400. Human Biology**  
(MEDS 400) 1-9 credits. Lecture.

Introduces the histology of the major types of tissues and cellular ultrastructure. Following this introductory material, the students will dissect the limbs, and study epithelia, connective tissue, and skin including the extracellular matrix and body fluid compartments. The course will also cover muscle, bone, peripheral nerves, the neuromuscular junction, blood vessels, and other elements essential to understanding the function of the limbs. For all tissues considered, there will be an integrated presentation of structure, biochemistry, and physiology. Also, presents the general principles of biochemistry and molecular biology. Fundamental processes involved in

cellular growth and division are included as well as an overview of metabolism and energy production. This is followed by consideration of cellular differentiation. Finally, there will be a survey of the general principles of immunology and the lymphoid tissues including the function of blood cells and coagulation.

**MEDS 6401. Organ Systems I**  
(MEDS 401) 1-9 credits. Lecture

Presents, in an integrated fashion, the anatomy, histology, biochemistry, and physiology of the central nervous system. Concurrently, the students dissect the head and the neck.

**MEDS 6402. Organ Systems II**  
(MEDS 402) 1-9 credits. Lecture.

Presents, in an integrated fashion, the anatomy, histology, biochemistry, and physiology of the cardiovascular, respiratory and renal-urinary systems. The emphasis is placed on how these organ systems interact and work together to maintain homeostasis. Concurrently, the students dissect the thorax. Introductory biostatistics and epidemiology are also presented at this time.

**MEDS 6403. Organ Systems III**  
(MEDS 403) 1-9 credits. Lecture.

Presents, in an integrated fashion, the anatomy, histology, biochemistry and physiology of the gastrointestinal, endocrine and reproductive systems. Also presented is material related to principles of human genetics. At the same time, students dissect the abdomen and pelvis.

**†MEDS 6404. Correlated Medical Problem Solving - Part A**  
(MEDS 404) 2 credits. Lecture.

This course serves to expand upon and integrate basic science concepts introduced in the Human Systems.

**†MEDS 6405. Correlated Medical Problem Solving - Part B**  
(MEDS 405) 2 credits. Lecture.

Expands upon and integrates basic science concepts introduced in the Human Systems course.

**MEDS 6406. Human Development and Health**  
(MEDS 406) 1-9 credits. Lecture.

This 170-hour course comprises (a) a multidisciplinary scientific survey of biological, psychological, and social development from conception to death; (b) an investigation of the behavioral and social dimensions of health and illness; (c) an introduction to principles of medical law and ethics applied to doctor-patient relationships and health care problems; and (d) an overview of the structure, function, and services of the American health care system and the political and economic forces shaping its evolution.

**MEDS 6407. Mechanisms of Disease: Part A**  
(MEDS 407) 1-9 credits. Lecture.

General pathology, pharmacology and infectious disease.

**MEDS 6408. Mechanisms of Disease: Part B** (MEDS 408) 1-9 credits. Lecture.  
Diseases affecting homeostatis.

**MEDS 6409. Mechanisms of Disease: Part C** (MEDS 409) 1-9 credits. Lecture.  
Medicine. Oncology, metabolism, endocrinology, and the nervous system.

**MEDS 6410. Mechanisms of Disease: Part D** (MEDS 410) 1-9 credits. Lecture.  
Reproduction, immunology, and connective tissue.

†**MEDS 6411. Clinical Practicum** (MEDS 411) 12 credits. Practicum.  
Clinical experience in the major disciplines including: Medicine, Surgery, Obstetrics & Gynecology, Psychiatry, Family Medicine, and Pediatrics.

†**MEDS 6412 Advanced Clinical Practicum** (MEDS 412) 11 credits. Practicum.  
Advanced clinical work with opportunities in the major clinical disciplines.

**MEDS 6413. Cancer Biology** (MEDS 413) 2 credits. Lecture. Prerequisite: MEDS 5350 and MEDS 5380.

This is a survey course to explore the genetics and pathobiology of cancer by focusing on a variety of current research topics. Understanding the disease process requires studying normal mechanisms of growth control. Emphasis will be on topics such as differentiation, apoptosis, growth factors, oncogenes, tumor suppressor genes, viruses and signal transduction.

†**MEDS 6414. Advanced Correlated Medical Problem Solving - Part A** (MEDS 414) 2 credits. Lecture.  
Expands upon and integrates basic science concepts introduced in Human Development and Health and Mechanisms of Disease.

†**MEDS 6417. Advanced Correlated Medical Problem Solving - Part B** (MEDS 417) 2 credits. Lecture.  
Expands upon and integrates basic science concepts introduced in Human Development and Health and Mechanisms of Disease.

†**MEDS 6418. Classic Papers in Molecular Biology and Biochemistry** (MEDS 418) 1 credit. Lecture.  
Students are required to read and critically analyze one or two papers selected by the instructor each week.

†**MEDS 6419. Classic Papers in Neuroscience and Immunology** (MEDS 419) 1 credit. Lecture.  
Students are required to read and critically analyze one or two papers selected by the instructor each week.

†**MEDS 6421. Classic Papers in Cell Biology and Developmental Biology** (MEDS 421) 1-6 credits. Lecture.

Students are required to read and critically analyze one or two papers selected by the instructor each week.

†**MEDS 6422. Classic Papers in Cellular and Molecular Pharmacology** (MEDS 422) 1 credit. Lecture.  
Students are required to read and critically analyze one or two papers selected by the instructor each week.

**MEDS 6423. Cellular and Molecular Biology of the Vascular System** (MEDS 423) 2 credits. Lecture.  
Systematic survey of classic and current literature in vascular biology, emphasizing the molecular and cellular basis of the development, function, and malfunction of the vascular system.

**MEDS 6424. Neuropharmacology** (MEDS 424) 2 credits. Lecture.  
Highlights the different neurotransmitter and neuromodulator systems and the pharmacological agents that affect them. Emphasis is placed on the mechanisms of drug action in the treatment of nervous system and mental disease, serving to complement other courses in neuroscience, pharmacology, immunology, and pharmaceutical science.

**MEDS 6425. Neuroimmune Interactions** (MEDS 425) 2 credits. Lecture.  
Addresses the chemical and physical relationships between the immune system and the nervous system and emphasizes the coordinate operations of the two systems.

**MEDS 6430. Molecular and Medical Parasitology** (MEDS 430) 2 credits. Lecture.  
Provides students with an in-depth knowledge of classical and modern parasitology. The course will focus on the molecular and cellular bases of parasite development, differentiation, parthenogenesis and host-pathogen interactions. The course also will address the most recent advances in genomics, proteomics, bioinformatics and large-scale functional analyses and their contributions to treatment and prophylaxis of parasitic infections.

**MEDS 6444. Molecular Microbiology** (MEDS 444) 3 credits. Lecture.  
Provides first and second year graduate students with a broad understanding of contemporary topics in bacteriology and virology. Although the course centers primarily around the more basic aspects of these two disciplines, the outline also includes sessions intended to relate this basic material to important issues in pathogenesis of bacterial and viral diseases.

**MEDS 6445. Skeletal Biology** (MEDS 445) 3 credits. Lecture.  
A comprehensive survey of the cellular and molecular mechanisms that regulate the development, growth, differentiation, remodeling, and repair of the skeletal system.

**MEDS 6447. Presentation of Scientific Data** (MEDS 447) 1 credit. Lecture.

Through a series of lectures and workshops, this course is designed to improve the ability of students to present scientific data in written and oral format. These skills are essential, not only as a graduate student, but in future careers as scientist. The curriculum covers basic elements and logical order of presentations. Reviewer's perspectives, grant writing resources, workshops, and evaluation of recent seminars help students to design and evaluate research projects.

**MEDS 6450. Optical Microscopy and Bio-imaging** (MEDS 301) 3 credits. Lecture. Also offered as BME 6450.

The course presents the current state of the art of optical imaging techniques and their applications in biomedical research. The course materials cover both traditional microscopies (DIC, fluorescence etc.) that have been an integrated part of biologists' tool-box, as well as more advance topics, such as single-molecule imaging and laser tweezers. Four lab sessions are incorporated in the classes to help students to gain some hand-on experiences. Strong emphasis will be given on current research and experimental design.

**MEDS 6460. Advanced Optical Microscopy and Bio-imaging** (MEDS 302) 3 credits. Lecture/Laboratory.  
Prerequisite: BME 6450 or MEDS 6450. Also offered as BME 6460.

This course will cover several aspects of state of the art biological and biophysical imaging. We will focus on advanced techniques including nonlinear optical processes (multi-photon excitation, second harmonic generation, and stimulated Raman processes), as well as optical coherence tomography. 3 lab projects will supplement the lectures, providing hands-on experience with nonlinear optical methods. Special emphasis will be given to current imaging literature and experimental design.

**MEDS 6461. Clinical Radiation Sciences: Physics and Biology (Part A)** (MEDS 451) 2 credits. Lecture.

A continuous pair (i.e., MEDS 6461 and 6462) of semester lecture/seminar courses which examines the physical and biological principles underlying the uses of radiation and allied radiation sciences in clinical diagnosis and therapy. Characteristics of imaging systems, Nuclear Medicine, Radiation Therapy, biological effects of ionizing radiation, radiation measurement and dosimetry, and quality assurance will be covered through critical readings in texts and the literature. This course is available to individuals enrolled in residency programs of medical radiology, oral and maxillofacial radiology, and other specialties engaged in patient imaging. Some of these students will be enrolled in a concurrent degree program, either Master of Dental Science or Ph.D. in Biomedical Sciences. The course is also available to individuals in master's or Ph.D. level graduate studies who desire an in-depth study of radiation sciences, and how they apply to patient care.

**MEDS 6462. Clinical Radiation Sciences: Physics and Biology (Part B)**  
(MEDS 452) 2 credits. Lecture.

A continuous pair (i.e., MEDS 6461 and 6462) of semester lecture/seminar courses which examines the physical and biological principles underlying the uses of radiation and allied radiation sciences in clinical diagnosis and therapy. Characteristics of imaging systems, Nuclear Medicine, Radiation Therapy, biological effects of ionizing radiation, radiation measurement and dosimetry, and quality assurance will be covered through critical readings in texts and the literature. This course is available to individuals enrolled in residency programs of medical radiology, oral and maxillofacial radiology, and other specialties engaged in patient imaging. Some of these students will be enrolled in a concurrent degree program, either Master of Dental Science or Ph.D. in Biomedical Sciences. The course is also available to individuals in master's or Ph.D. level graduate studies who desire an in-depth study of radiation sciences, and how they apply to patient care.

**MEDS 6471. Physiological Systems I**  
(MEDS 471) 3 credits. Lecture. Also offered as BME 5000.

Designed for engineers or other graduate students without a life sciences background. Contents: introduction to cell structure and function; the cardiovascular, respiratory, and renal/urinary systems; the basics of hematology, and the interactions between these organ systems to transport oxygen and eliminate wastes. Format: didactic session followed by group problem-solving. Course grade will be determined by level of participation in the problem-solving session and by two take-home problem-solving exams. This course is available to all students involved in the BEACON (Biomedical Engineering Alliance for Central Connecticut) program.

**MEDS 6472. Physiological Systems II**  
(MEDS 472) 3 credits. Lecture. Prerequisite: MEDS 6471 or BME 5000 or consent of instructor. Also offered as BME 6020.

A problem based learning course that focuses on in-depth coverage of four human organ systems with an engineering perspective. An extensive literature review is required for each topic which culminates in a major report that highlights the engineering standpoint unified mathematically. Case studies are used to develop each topic. Format: didactic session followed by group problem solving.

**MEDS 6479. Chemistry and Biology of Drugs of Abuse**  
(MEDS 479) 5 credits. Lecture.

An in-depth interdisciplinary approach to the neurobiology of drug abuse, integrating basic and clinical sciences. Lectures, student presentations of original research reports, and laboratory exercises dealing with methods to measure neurotransmitter transport, ligand binding to receptors and transmitter action on ligand-activated channels.

**MEDS 6495. Independent Study**  
(MEDS 495) 1-6 credits. Independent study.

A reading course for those wishing to pursue special topics in the biomedical sciences under faculty supervision.

**MEDS 6496. Laboratory Rotation**  
(MEDS 496) 1-6 credits. Laboratory.

**MEDS 6497. Graduate Seminar**  
(MEDS 497) 1-6 credits. Seminar. May be repeated for credit with a change of content.

Reading and discussion of recent research developments in various areas of biomedical science.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1 - 9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## BUSINESS ADMINISTRATION

*Dean:* Christopher Earley

*Associate Deans:* Linda Klein and Shantaram Hegde

*Director, Storrs M.B.A. Program:* Michael J. Deotte

*Director, Hartford M.B.A. Program:* Afshin Ghiaei

*Director, Stamford M.B.A. Program:* Jud Savikas

*Director, Waterbury M.B.A. Program:* Glen Richardson

*Director, Executive M.B.A. Program:* Afshin Ghiaei

*Director, M.S. in Accounting Program:* Andrew J. Rosman

*Director, Ph.D. Program:* Gary Powell

*Professors:* Biggs, Carrafiello, J. Clapp, Coulter, K.

Fox, Garfinkel, Ghosh, Giaccotto, Gopal,

Harding, Hegde, Hussein, S. Jain, Klein, Lubatkin,

Marsden, Mathieu, Mosakowski, Nair, O'Brien,

Powell, Punj, Santerre, Sewall, Sirmans, Veiga,

and Willenborg.

*Associate Professors:* Ba, Bhattacharjee, Dechant,

Diaby, Dino, Dolde, Dunbar, Gilson, Goes, Golec,

Goodman, Hoskin, Hurley, N. Moore, Phillips,

Plesko, Rosman, Salorio, Seow, Simsek, Spiggle,

Srinivasan, Stallaert, Thakur, and Tung

*Assistant Professors:* Bird, Cao, Cruz, Day, Dimov,

Gramling, Knopf, Liu, Madjar-Nanovska, Nunez,

Pancras, Reilly, Sankaranarayanan, Souder, Yin, and

Zhang

The School of Business offers course work and research leading to the degrees of Master of Business Administration (M.B.A.), Master of Science in the field of Accounting, and to the Ph.D. in Business Administration. Detailed descriptions of these programs (as well as the Executive M.B.A.) can be found in brochures available from the School of Business.

### The Ph.D. Program

The Ph.D. Program prepares students to conduct state-of-the-art research and to take faculty positions in business schools at leading universities. Students select an area of concentration from the following: accounting, finance, management, marketing or operations and information management. The program emphasizes: (1) student/faculty interaction; (2) flexibility in designing a program to meet individual needs; and (3) timely completion of the degree.

**Degree Requirements.** The Ph.D. program has four major components: Course work, qualifying research paper, written general qualifying examination, and dissertation. While specific course work will vary depending upon the student's area of concentration (students should confer with their major advisors to obtain specific information), all students must complete a minimum of 37 credits (53 credits for the Accounting concentration and 45 credits for the Finance concentration). All courses must be at the graduate level and the twelve credits in the major area typically are Ph.D. level seminars. Interdisciplinary courses are encouraged in the supporting electives. Completion of the qualifying research paper is required by the end of the second year. The general qualifying examination is administered by the faculty in the

student's area of concentration. The dissertation is the final requirement.

**Admission.** Admission to the Ph.D. program is based upon the applicant's potential to conduct research and commitment to a rigorous program of study. Applicants to the Operations and Information Management concentration may submit a GRE or GMAT score. All other applicants must submit a GMAT score, regardless of their background. Students who have not previously acquired knowledge of the subject matter of the Common Body of Knowledge courses of the AACSB are expected to acquire that knowledge as part of their program. In addition, applicants should have satisfactorily completed one year of calculus. Letters of recommendation also are considered in the admission decision and a campus interview is desirable. International applicants must submit scores on the Test of English as a Foreign Language.

## The M.S. Program in Accounting

The Master of Science Program in the field of Accounting is an online degree which will provide students with the skill set critical to a successful professional career in public and private accounting. A dynamic online community has been created that supports and nurtures student-centered learning and information literacy, also known as "learning to learn". Information literacy is the process of identifying a problem and information sources, evaluating information to make a judgment, and then communicating that judgment. Student-centered learning shifts the focus for learning from the instructor to the student, with the instructor facilitating and guiding the learning experience. Both information literacy and student-centered learning produce individuals who can succeed in challenging work environments.

The online community allows students to readily access other students in the online class as well as pertinent faculty members. Completion of this program, combined with an undergraduate degree with at least 30 credit hours in business or economics other than accounting, will fulfill the 150-hour educational requirements in preparation for the CPA exam in most U.S. states.

Students can complete the 30-credit degree program in eight months on a full-time basis or within 16 months on a part-time basis. The part-time program provides a wide range of summer course offerings minimizing the coursework taken during the fall semester.

**Admission.** Admission is highly selective. General targets for admission are: a GMAT score of 550 (with a reasonable balance between verbal and quantitative scores), and an undergraduate grade point average of 3.2 on a 4.0 scale. In addition, applicants must have completed at least 24 semester hours of accounting courses and received a baccalaureate degree at a college or university accredited by a regional accounting commission subscribing to established national policies and procedures or of equivalent accreditation as determined by the Connecticut State Board of Accountancy. Students with fewer than 24 credits in accounting should contact the program director or manager to discuss acquiring the necessary background courses.

Applicants with significant work experience and applicants who add to the cultural and geographic diversity of the student body are encouraged to apply even if they do not possess typical GMAT scores or undergraduate grade-point averages.

Students enter the program in May of each year. Applications and all accompanying materials should be received as early as possible, since admissions decisions are made on a rolling basis until the entering class is filled. The deadline for submitting the application and all materials is March 1.

## The M.B.A. Program

The M.B.A. Program emphasizes the role of experiential learning across all functional disciplines. The curriculum requires a total of 19 courses (57 credits) to earn the degree. This typically takes two academic years to complete.

The M.B.A. Program requires a laptop computer as a tool of the trade, and the laptop's use is completely integrated into the curriculum.

The first-year M.B.A. curriculum during the fall semester consists of core introductory courses in economics, managerial statistics, financial accounting and reporting, managing organizations, and management information systems. The spring semester consists of core introductory courses in financial management, operations management, cost analysis and control, and market-driven management.

As part of the first-year curriculum, students are grouped into functional teams. These teams undertake a comprehensive Integration Project which solves business problems faced by a partner company. As the term "integration" implies, students synthesize knowledge and skills from all first-year courses and past professional experiences to develop solutions. Recent projects include experiential learning with such firms as Aetna, The Hartford, Pratt & Whitney, Xerox, Engineering Systems, General Electric, Hamilton Sundstrand, and ING.

In the second year, students complete courses toward their chosen concentrations. Concentrations enable M.B.A. candidates to explore areas of business in greater depth to prepare for specific careers. By March of their second year, full-time M.B.A. students are required to choose a primary concentration (in which the M.B.A. degree is to be awarded). This concentration is to be chosen from the six that have been designated for the full-time M.B.A. Program: Finance, Health Care Management, Marketing Intelligence, Venture Consulting, Operations and Information Management, and Real Estate. Students are required to take four specific courses in their primary concentration and three graduate electives round out the M.B.A. plan of study.

Second-year students also benefit from partnerships with the General Electric *edgelab*, the SS&C Technologies Financial Accelerator and the Innovation Accelerator. M.B.A. students participate in real-time company-sponsored projects, mentored by faculty and by business executives. By "pushing the envelope" of cooperative research and analysis, by employing student teams on substantive "live" projects, and by providing a creative, collaborative environment, *edgelab*, the Financial Accelerator, and the Innovation Accelerator are redefining the partnership between business and education at UConn.

**Admission.** All applicants must take the Graduate Management Admission Test (GMAT) and must meet the general requirements for admission to the Graduate School. Interviews may be requested by the M.B.A. admissions committee. Non-degree students are permitted, in exceptional cases, to register for a total of not more than 15 credits. They also are required to take the GMAT before enrolling in courses.

**Scholastic Standards.** Ordinarily, a student will not be permitted to continue in the M.B.A. program if he or she: receives two or more grades of *B-* or below with a cumulative average below 3.0 after completing four courses in the program, accumulates four grades of *B-* or below at any point in the program with a cumulative average below 3.0, or receives an *F* at any point in the program.

Under no circumstances will the M.B.A. degree be conferred if the student has a mark of Incomplete (*I*) or Absent (*X*) on his or her record even though the course may not be listed on the plan of study.

## The Executive M.B.A. Program

The objective of the Executive M.B.A. program is to provide experienced managers with the opportunity to broaden and update their managerial knowledge and skills. The program is designed for individuals with significant managerial experience. By using a Friday/Saturday format for classes, managers are able to retain their positions in their companies while pursuing graduate studies. Completion time is approximately 20 months. Class size is limited to provide a highly interactive classroom environment.

The program leads to the degree of Master of Business Administration. The School of Business at the University of Connecticut is accredited by the AACSB - The American Assembly of Collegiate Schools of Business. Admission takes place only once per year. Classes are held at the Graduate Business Learning Center in Hartford.

**Admission.** All applicants must take the Graduate Management Admission Test (GMAT) and must meet the general requirements for admission to the Graduate School. Interviews may be requested by the Executive M.B.A. Admissions Committee.

## Curricular Program for the Full-Time M.B.A. Degree

Students are required to complete the following general curricular program unless they enter the specialized M.B.A. program in health care management.

### 57 Credit General Program

Candidates for the general M.B.A. degree are required to complete 57 credits of graduate study: 39 credits prescribed and 18 elective/breadth credits as follows:

Required Courses -

ACCT 5121 - Financial Accounting and Reporting  
 ACCT 5123 - Cost Analysis and Control  
 BLAW 5175 - Business, Law, and Ethics in Modern Society  
 FNCE 5101 - Financial Management  
 FNCE 5151 - Economic Analysis for Business  
 MGMT 5138 - Managing Organizations  
 MGMT 5800 - Strategy, Policy, and Planning

MKTG 5115 – Market-Driven Management  
 OPIM 5103 – Managerial Statistics  
 OPIM 5110 – Operations Management  
 OPIM 5165 – Management Information Systems  
 BADM 5895 – Integration Project

In their second year, full-time M.B.A. students choose a primary concentration (in which the M.B.A. degree is to be awarded). Concentrations include: Finance, Marketing Intelligence, Operations and Information Management, Real Estate, Venture Consulting, and Health Care Management. The primary concentration consists of four courses. Three graduate electives round out the M.B.A. plan of study.

Based upon prior preparation, substitution of up to 6 credits of required courses, other than MGMT 5800, may be possible. Each student in the 57 credit general program is required to establish an area of emphasis consisting of at least six credits of course work beyond the required courses.

A college-level calculus course covering limits, functions, integration, and differentiation must have been completed at or prior to the time of admission to the M.B.A. program. Each student who transfers from another institution must earn a minimum of 42 credits of graduate work at the University of Connecticut.

**Dual M.B.A. and J.D. Degree Program.** This program offers the student the opportunity to combine academic training in the fields of Business Administration and Law by combining into four years of study the three-year J.D. program offered by the School of Law and the two-year M.B.A. program offered by the Graduate School. Fifteen credits from the J.D. program are used to meet the M.B.A. requirements. Twelve credits from the M.B.A. program are used to satisfy the J.D. requirements. To be admitted to the joint M.B.A./J.D. program, a student must meet the admission requirements of both schools. For additional information, interested students should review the materials of the regular programs contained in the catalogs of the respective schools.

**Dual M.B.A. and M.D. Degree Program.** Rapid changes in the health care industry as well as the increasing size and complexity of health care organizations have created a demand for physicians who also are effective managers. The Doctor of Medicine program is offered at the University of Connecticut Health Center. Usually, students complete the first two years of study in the School of Medicine, enroll in the full-time M.B.A. program in Storrs for the third year, and then return to the Health Center to take electives in both the School of Medicine and the M.B.A. program in Hartford. M.D./M.B.A. students are required to complete 42 credits in the M.B.A. program. For more information, contact the Director of the Storrs M.B.A. program or the Office of Admissions, School of Medicine.

**Dual M.B.A. and M.S.W. Degree Program.** This program is designed for students who anticipate careers in the management and administration of social work services in either governmental or private agencies. Application to each school is made independently. Nine credits in the M.B.A. program are used to meet the M.S.W. requirements. Fifteen credits in the M.S.W. program are used to meet the M.B.A. degree requirements. Additional details are

available from the Storrs M.B.A. Director and the School of Social Work.

**Dual M.B.A. and M.A. in International Studies Degree Program.** This program is designed for students interested in the management of international organizations in African, Latin American and Caribbean, and European areas. Fifteen credits of course work in area studies in the School of Liberal Arts and Sciences are used to meet both M.B.A. and M.A. degree requirements. More details are available from the Directors of the Storrs M.B.A. Program, the Center for Contemporary African Studies, the Center for Latin American and Caribbean Studies or the Center for European Studies.

**Dual M.B.A. and M.S. in Nursing.** This dual degree program is available for students in the administrative track in the Nursing Program. The M.S. in Nursing usually includes a minimum of 39 credits. Fifteen credits of course work in the Nursing Program are used to meet both M.B.A. and M.S. degree requirements.

**Dual M.B.A. and M.I.M. Degree Program.** A two-year program, with one year in the University of Connecticut Graduate School and one year in France, permits the student to earn the University of Connecticut M.B.A. and the Master's In Management from the Ecole Supérieure de Commerce (ESC) de Lyon. Classes at ESC Lyon are taught in French.

**Dual M.B.A. and Pharm.D. Degree Program.** This program permits the pursuit of dual M.B.A. and Pharm.D. degrees.

**Continuous Registration for Degree Students.** All continuing M.B.A. students not registered for credit courses during the fall or spring semesters must register for **GRAD 5998 Special Readings (Master's)**.

## COURSES OF STUDY

Well qualified non-degree students are admitted into M.B.A. courses only in very special cases and only if they have taken the GMAT.

### Accounting

#### ACCT 5121. Financial Accounting and Reporting

(ACCT 321) 3 credits. Lecture. Open to MBA students, others with permission.

Accounting is an information system. This course is designed to introduce students to accounting concepts essential to the preparation and interpretation of financial statements issued to management and to external users such as stockholders and creditors. While appropriate consideration is given to procedural aspects of accounting, more emphasis is placed on understanding the conceptual bases of generally accepted accounting principles and the effects of using alternative accounting methods on financial statements.

#### ACCT 5123. Cost Analysis and Control

(ACCT 323) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: ACCT 5121.

Internally, managers need timely information in order to plan and control operations. This course

focuses on managerial uses of accounting information for decision-making within the business enterprise. Decisions considered include product pricing, transfer pricing, make or buy, and capital budgeting. Formation of budgets establishing an internal control structure, performance evaluation, and cost control techniques are also discussed.

#### ACCT 5327. Financial Statement Analysis and Business Valuation

(ACCT 327) 3 credits. Lecture. Prerequisite: ACCT 5121.

Addresses the use of financial statements to analyze and value firms. Topics include advanced issues in accounting, earnings quality, performance measurement, cash flows, and accounting-based valuation and trading strategies.

#### ACCT 5505. Understanding the Responsibilities of an Accounting Professional

(ACCT 305) 3 credits. Seminar. Open to students in the Accounting M.S. program.

The groundwork for three fundamental issues that are embedded throughout the curriculum in the MS in Accounting Program will be set. First, students will explore the foundations of the accounting professional ethics and ethical ideals in the conduct of a professional, the importance of an auditor in serving the public interest, the cultural significance of accounting, and the regulatory environment governing the accounting profession. Second, students will be exposed to the use of technology within the profession and learning environments. Third, they will apply the concept of information literacy to help ensure continued professional development throughout their careers as they develop the skill set to identify an information need, efficiently select information resources relevant to that need, effectively retrieve pertinent information from those relevant resources, astutely synthesize that information into a form that responds to their initial information need, and lastly, articulate the fit of that response as they seek to become critical users of a variety of information sources within the profession.

#### ACCT 5520. Financial Planning for Accounting Professionals

(ACCT 380) 3 credits. Lecture. Prerequisite: ACCT 5571. ACCT 5572 preferred but not required.

Designed for the accounting professional in the role of financial planner, this course covers all facets of a professional in financial planning practice. Topics include personal income tax planning, debt management, investment and retirement planning, risk management and insurance, and estate planning.

#### ACCT 5531. Contemporary Financial Accounting Issues

(ACCT 331) 3 credits. Lecture.

Study of major financial accounting issues, including the conceptual framework of accounting, the standard-setting process, asset valuation, and income determination. Concentrates on developing theories of the usefulness of accounting information in financial markets. This theoretical perspective is used to evaluate the conceptual framework, specific

accounting standards, and issues related to international harmonization of accounting standards.

**ACCT 5533. Contemporary Managerial Accounting Issues**

(ACCT 333) 3 credits. Lecture.

Study of major managerial accounting issues. Overall focus is on the use of internally generated accounting data to support business strategy and maintain competitive advantages. Current research in the constantly evolving area of managerial accounting is emphasized.

**ACCT 5535. Global Financial Reporting and Analysis**

(ACCT 335) 3 credits. Lecture.

Develops skills in analyzing and interpreting accounting information about multinational enterprises from both a preparer and user perspective. Special attention is given to the impact of examining accounting information on (1) culture and differences in measurement and disclosure practices across countries, (2) type of industry, (3) stage or maturity of business life cycle, and (4) form of business activity, such as joint ventures and strategic alliances.

**ACCT 5539. Financial Services Reporting and Analysis in the Financial Services Industry**

(ACCT 339) 3 credits. Lecture.

Introduces the nature of and accounting for financial services firms. The major emphasis is on insurance and banking. In each section of the course the student will learn about the nature of the business and the basic transactions in which the business engages. The unique accounting aspects of the businesses are discussed, including any special regulatory accounting rules. The analysis of firms in the industry will be covered.

**ACCT 5543. Advanced Assurance Services**

(ACCT 343) 3 credits. Lecture.

Advanced treatment of significant assurance services issues. Intended for students with previous coursework in assurance services and/or auditing. Emphasis is placed on: (1) planning and performing audits of financial information systems, (2) computer applications of auditing and assurance services, (3) statistical applications in auditing and assurance services, and (4) contemporary ethical and legal issues confronting the professional accounting environment.

**ACCT 5545. Business Law, Business Ethics, and Public Accounting**

(ACCT 345) 3 credits. Lecture. This course may not be taken by M.B.A. students, who should instead take BLAW 5175.

This course covers the major legal and ethical issues in business and their significance for the accounting profession and related stakeholders. Included among the topics are the tension between profit and the public interest, corporate responsibility to society, environmental concerns, consumer and employee relations, confidentiality, whistle blowing, advertising and hiring practices.

**ACCT 5546. Forensic Accounting and Securities Fraud**

(ACCT 346) 3 credits. Lecture

This course investigates the fraudulent behavior, accounting controls, regulatory issues and ramifications of fraudulent financial statements within the corporate financial environment. Students will learn how to detect fraudulent activity and how to recognize signs of misleading financial statements. The course will provide a framework for initiating internal control measures designed to deter and prevent fraudulent financial reporting.

**ACCT 5549. Accounting and Disclosure for Not for Profit Entities**

(ACCT 349) 3 credits. Lecture

Accounting for not-for-profit organizations (NFPs), including educational institutions, hospitals and other healthcare entities, and civic and cultural organizations, is substantially different than for-profit entities. This course will examine issues relating to preparing and using financial statements for NFPs, including accounting, audit, and disclosure requirements relating to government grants awarded to NFPs.

**ACCT 5553. Evaluating Internal Controls**

(ACCT 353) 3 credits. Lecture.

This course examines frameworks for evaluating the control practices that an organization relies on to help ensure the integrity of information provided by its accounting systems. Students will learn how to: (1) analyze an organization's control environment and processes to assess information integrity risks that can be managed with control procedures; (2) design, implement, and monitor internal controls for both manual processing procedures and information-technology-intensive accounting systems; and (3) test the effectiveness of controls in order to evaluate the extent to which deficiencies threaten the reliability of accounting information.

**ACCT 5571. Taxation of Business Entities**

(ACCT 371) 3 credits. Lecture.

Application of basic tax concepts to business entities, with particular emphasis on C corporations, partnerships, and S corporations. At the end of the course, students should be able to identify and address the tax and non-tax issues faced when choosing operating, and liquidating a business entity.

**ACCT 5572. Research in Taxation**

(ACCT 372) 3 credits. Lecture.

Application-oriented tax research, which has the objective of determining the defensibly correct tax treatment of a transaction based on the existing law. Tax research is a process of two basic activities: (1) the conceptualizing process to decide what research is needed and then to evaluate any information located through tax research, and (2) the search process, which requires the ability to use the massive quantity of tax authority available in electronic format. Students further develop their communication skills, both oral and written.

**ACCT 5573. Advanced Corporate Taxation**

(ACCT 373) 3 credits. Lecture. Prerequisite: ACCT

5571. ACCT 5572 preferred but not required.

Focus is on topics relating to the taxation of corporations: taxable sales and acquisition of going concerns; tax-free reorganizations; multistate taxation; and international taxation of U.S. multinational corporations. The objective is to familiarize the student with the applicable tax rules. Students learn to identify applicable tax planning strategies and tax issues present in business decisions such as those involving the sale or acquisition of a going business, the location or expansion of operations, the repatriation of foreign earnings, and the setting of transfer prices for goods and services provided to related parties.

**ACCT 5574. Advanced Individual Taxation**

(ACCT 374) 3 credits. Lecture. Prerequisite: ACCT

5571. ACCT 5572 preferred but not required. Focus is on topics relating to taxation of individuals: estate and gift taxation; income taxation of estates and trusts; estate planning; compensation planning including, but not limited to, equity-based compensation; income taxation of and planning for high-income taxpayers, including taxation of investments and charitable planning. Students learn tax rules and tax planning strategies necessary for individuals to create, preserve, and transfer wealth to future generations.

**ACCT 5582. Research for Accounting Professionals**

(ACCT 382) 3 credits. Lecture.

This course provides students with the skills required of an accounting professional to research, analyze, and communicate findings relating to complex financial reporting, auditing, internal control, and tax issues. Students will learn how to identify the appropriate resources to meet information needs and then how to use resources including databases that cover the authoritative literature.

**ACCT 5583. Financial Reporting and Auditing Implications Relating to Income**

(ACCT 383) 3 credits. Lecture.

This course focuses on the financial reporting and auditing provisions related to federal, foreign, and state income taxes. Students will learn how to: calculate income tax amounts reported on the income statement, balance sheet, and statement of cash flows; prepare the income tax footnote and related disclosures; audit income tax balances and disclosures; identify the important processes that allow firms to accurately report income tax-related amounts and disclosures; and evaluate management's assessment of internal controls relating to income taxes.

**ACCT 5603. Advanced Accounting**

(ACCT 303) 3 credits. Lecture. Prerequisite: ACCT 5622. Not open to students who have passed ACCT 4203.

An in-depth study of accounting for business combinations. Coverage also is given to accounting for nonprofit entities and contemporary issues in financial accounting.



**ACCT 5604. Assurance Services**  
(ACCT 304) 3 credits. Lecture. Not open to students who have passed ACCT 4243.

Issues relevant to the public accounting profession, such as legal liability and ethics, audit risk analysis, planning of audit engagements, audit reports, and other assurance services and reports. Students learn to think critically about issues facing the audit profession, primarily by analyzing cases and completing a number of individual and research group projects.

**ACCT 5622. Financial Accounting**  
(ACCT 322) 3 credits. Lecture. Prerequisite: ACCT 5121.

Study of the financial accounting principles which determine financial statements and the uses of the financial statements. The course adopts a broad perspective to understanding major accounting concepts contained in the intermediate accounting curriculum. Emphasis is placed on financial statement presentation and the meaning of resulting balance sheet and income statement amounts.

**ACCT 5625. The Federal Income Tax and Business Decisions**  
(ACCT 325) 3 credits. Lecture. Prerequisite: ACCT 5121.

Designed for the business manager who wants an awareness of tax considerations involved in business decisions. It involves a symptom/recognition level of learning rather than a detailed analysis of each section of the law. The course involves an examination of the definition of income, evaluation of different business entities, methods of reporting income and deferral transactions. Students examine how slight changes in a transaction can materially alter the tax consequences. The course includes discussion of the social, economic, and political aspects of taxation as well as an opportunity to familiarize the student with tax research techniques.

**ACCT 5894. Special Topics in Accounting**  
(ACCT 300) 1-3 credits. Seminar. Prerequisite: ACCT 5121.

Investigation and discussion of special topics in accounting.

**ACCT 5895. Independent Study in Accounting**  
(ACCT 396) 1-6 credits. Independent study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of accounting. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

**ACCT 6200 Investigation of Special Topics**  
(ACCT 400) 1-3 credits. Lecture.

**ACCT 6201. Introduction to Accounting Research**  
(ACCT 401) 3 credits. Seminar.

This seminar introduces students to three major elements of accounting research. First, students are

introduced to philosophy of science and how that translates into the major research paradigms in accounting. Second, students are introduced to basic research design issues and how those issues are illustrated in the accounting literature. Finally, students are introduced to the major research paradigms in accounting.

**ACCT 6202. Seminar in Accounting Research II: Organizational Behavior**  
(ACCT 402) 3 credits. Seminar.

Continuation of study in current research topics in accounting.

**ACCT 6203. Accounting and Capital Markets**  
(ACCT 403) 3 credits. Seminar.

This seminar provides a broad survey of capital markets research in accounting and related fields. Students are introduced to major theoretical and methodological issues in this line of research. The seminar focuses on theoretical and intuitive constructs that frame accounting research questions and the methods that are used to address those research questions.

**ACCT 6204. Judgment and Decision Making in Accounting**  
(ACCT 404) 3 credits. Seminar.

The seminar examines theories and empirical research related to individual judgment and decision making in accounting. Students are introduced to the major theoretical and methodological issues involved in this line of research, and develop the background for reading the literature and for further study.

**ACCT 6211. Seminar in Special Research Topics**  
(ACCT 411) 1 credit. Seminar.

Students are exposed to a broad range of accounting research through reading and critiquing research papers presented at the Accounting Department Research Workshop (papers are presented by local scholars as well as scholars from other institutions). The seminar also focuses on how to present effective written and oral criticisms of research papers.

## Business Administration

**BADM 5894. Special Topics**  
(BADM 300) 1-9 credits. Lecture. Open to MBA students, others with permission.

**BADM 6201. Introduction to Research and Teaching**  
(BADM 401) 1 credit. Lecture. Open only to PhD students in the School of Business.

This course introduces students to important dimensions of an academic career. The role and importance of research and teaching is stressed with emphasis on philosophy of science, as well as appreciation of research in other business administration areas of concentration. Teaching methods and

values in higher education are covered. Guest speakers discuss research in their areas. Practical aids such as how to write a research proposal and how to manage a dissertation are covered.

## Business Law

**BLAW 5175. Business, Law, and Ethics in Modern Society**  
(BLAW 375) 3 credits. Lecture. Open to MBA students, others with permission.

In order to survive, business must meet the legal and ethical standards being imposed by a changing society. This course emphasizes that the business enterprise is not an island and that business decision-making must be undertaken in light of current legal and ethical demands. Such demands may take the form of globalization of business enterprise, reactions to hostile takeovers, concerns with market concentration and efficiency, changes in legal philosophy and corporate ethics and developments in international law and administrative regulation. By examining the philosophical, legal, social, historical, and political/economic regulatory environments, this course places business decision-making in the legal and ethical perspective so critical in today's markets.

**BLAW 5676. Law for the Manager**  
(BLAW 376) 3 credits. Lecture.

All business activity must be conducted with a sensitivity toward both the requirements of the law and the legal ramifications that flow from discretionary action. Whether such activity involves the formation of a contract, the choice of a business organization, the use of an agent, the purchase or sale of securities, or the institution of a lawsuit, legal considerations are pervasive. This course exposes students to some of the basic tenets of business law including the judicial process, contracts, partnerships, corporations, securities regulation, labor law, torts, and the principal-agent relationship.

**BLAW 5894. Seminar**  
(BLAW 300) 1-3 credits. Seminar.

Investigation and discussion of special topics in law.

**BLAW 5895. Special Topics in Business Law**  
(BLAW 396) 1-6 credits. Independent study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of law. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

## Finance

**FNCE 5101. Financial Management**  
(FNCE 301) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisites: ACCT 5121 and OPIM 5103.



All major business decisions have financial implications, and therefore, the financial manager's contribution to directing the operations of the firm has become increasingly critical in the last decade. This course provides an overview of techniques for effectively studying financial decisions and their impact on the company. The course covers the basic concepts and tools necessary to understand the financial decision-making process. The fundamental issues of timing and uncertainty are integrated into the problem of asset valuation. Financial analysis models for determining appropriate sources of capital and effective use of long term and short term assets are discussed.

**FNCE 5151. Introduction to Economic Markets**

(FNCE 317) 3 credits. Lecture. Open to MBA students, others with permission.

Provides a foundation in the economics of markets, with particular application to financial markets and the role of information. Specific topics include the following: (1) the basic principles of supply, demand, profit maximization, price determination, international trade, and exchange rates; (2) the basic structure of modern, global financial markets, as an application of the basic economic principles; (3) the use of information and information technology in financial markets, including use of the internet, Bloomberg, Dow Jones and other computerized sources of information; and (4) a review of the "efficient market hypothesis.

**FNCE 5202. Investment and Security Analysis**

(FNCE 302) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: FNCE 5101.

A rigorous foundation in risk/return analysis, asset valuation, the use of derivatives, and financial engineering techniques in risk management and overall portfolio management. Information technology is applied, including computerized financial modeling and asset management software.

**FNCE 5205. Global Financial Management**

(FNCE 305) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: FNCE 5101.

An exploration of global finance topics such as 1) international trade, 2) balance of payments, 3) exchange rate determination, 4) currency exposure, and 5) the cost of capital in global financial markets. Information technology is applied.

**FNCE 5206. Financial Institutions: Management and Capital Markets**

(FNCE 306) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: FNCE 5101.

Investigation of the structure financial services companies (banks, insurance companies, securities firms, and so forth). Emphasis is on the tools used by these firms to compete to provide basic financial services like pooling resources, managing risk,

transferring economic resources, pricing information and clearing and settling payments. Financial services product development and the role of information technology in financial services, including software and data.

**FNCE 5209. Corporate Finance**

(FNCE 303) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: FNCE 5101.

A markets-oriented approach to corporate finance issues, especially capital structure and dividend policy. Modern concepts of agency theory and asymmetric information are integrated.

**FNCE 5504. Options and Futures**

(FNCE 304) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

Analysis and valuation of speculative securities including options and futures with emphasis on their use for hedging and speculative motives. Major valuation models are discussed and applications of contingent claim valuation framework to corporate finance problems are also explored.

**FNCE 5507. Working Capital Management**

(FNCE 307) 3 credits. Lecture. Prerequisite: FNCE 5101.

Working capital management is critical in determining whether a firm is competitive and profitable. Each component of working capital cash, marketable securities, receivables, inventories, and payables is studied and is related to the firm's operations. The course concentrates on applications and includes lectures by working capital managers from major corporations.

**FNCE 5508. Asset Allocation and Capital Market Theory**

(FNCE 308) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

Provides an integrative overview of issues in financial theory. Contemporary theoretical developments in corporate finance and financial markets are addressed. Major topics include agency theory, option theory, term structure theory, CAPM, APT, market efficiency, capital structure, and dividend policies under full and asymmetric information.

**FNCE 5512. Fixed Income Instruments and Markets**

(FNCE 312) 3 credits. Lecture. Open to MBA students, others with permission. Prerequisite: FNCE 5101.

This course examines contemporary portfolio management of fixed income institutional investors, issuers, and broker-dealers. It assesses current practice and presents a theoretical framework for anticipating change. Coverage includes pricing, assessment of return and risk, and the development of overall strategies, for these markets: government, corporate, municipal, and international bonds; mortgage-related and other asset-backed securities; and derivative securities including futures, options, swaps, and other interest rate contracts.

**FNCE 5513. Advanced Corporate Finance: Capital Investment Finance**

(FNCE 313) 3 credits. Lecture. Prerequisite: FNCE 5101.

This course in dynamic capital budgeting applies corporate finance theory to the real-world problems that financial analysts face every day, integrating theory and practice, facilitated through the use of simulation analysis. These tools include both an understanding of the theoretical underpinnings of sound capital budgeting techniques and a mastery of the technology necessary to practically implement this knowledge in a real-world setting.

**FNCE 5521. Risk and Insurance**

(FNCE 321) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

A study of the recognition, analysis, and treatment of pure risk from the viewpoint of the enterprise. This course considers various methods of risk management but emphasizes the role of insurance.

**FNCE 5532. Real Estate Investment and Portfolio Management**

(FNCE 333) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

This course provides an overview of real estate investment decision-making. Topics include: risk-return analysis of alternative types of real estate investments; leases, operating costs, and tax consequences; valuation techniques, including discounted cash flow and option pricing; real estate portfolio management; and alternative forms of equity securitization such as real estate investment trusts.

**FNCE 5533. Real Estate Capital Markets**

(FNCE 332) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

This course covers the structure and operation of the mortgage market. Topics include the identification, measurement and management of risk from the perspective of borrower, lender, and investor. The course stresses the integration of the real estate debt markets with the global capital market, and considers the role and impact of mortgage-backed securities for residential and commercial real estate lending.

**FNCE 5534. The Internet and Information Systems Applied to Real Estate**

(FNCE 331) 3 credits. Lecture.

Specialized information technology is now available for all segments of the real estate industry. For example, investment firms are particularly interested in information technology that helps them monitor, understand, and manage risks associated with mortgage-backed securities. Database management systems and geographic information systems (GIS) give the decision-maker unprecedented power to manage data and analyze risks. The Internet opens up vast new sources of timely information. This course stresses the use of GIS and of the Internet. Students will gain hands-on experience with these tools through projects that are organized around business problems.

**FNCE 5610. Personal Financial Planning** (FNCE 310) 3 credits. Lecture. Prerequisite: FNCE 5101 or permission of instructor.

This course is for the professional working in the area of financial services as well as for one's personal planning. It is the application of finance theory to the individual and family. This integrated approach covers lifetime cash flows, asset accumulation and allocation, debt management, retirement planning, and risk management.

**FNCE 5611. Financial Modeling** (FNCE 311) 3 credits. Lecture. Prerequisite: FNCE 5101.

This course is a "hands-on" use of computerized decision aids to analyze a variety of financial problems. Applications will be drawn from corporate financial planning, modern portfolio theory, options pricing, dynamic trading, and so forth. No computer experience is required; this course will help students develop the necessary programming skills to build fairly sophisticated models.

**FNCE 5630. Real Estate: A Personal Investment Perspective** (FNCE 330) 3 credits. Lecture

Real estate is a major component of household wealth. Important household real estate decisions include, for example, where to buy a house; renting versus owning a home; choosing between alternative mortgage instruments; understanding the house purchase transaction; and the risks and returns of real estate investing. This course surveys the fundamentals of real estate from a personal investment perspective.

**FNCE 5894. Seminar** (FNCE 300) 1-3 credits. Seminar. Prerequisite: FNCE 5101.

Investigation and discussion of special topics in finance, risk and insurance and/or real estate and urban economic studies.

**FNCE 5895. Special Topics in Finance** (FNCE 396) 1-3 credits. Independent study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of finance, risk and insurance, and/or real estate and urban economic studies. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

**FNCE 6200. Investigation of Special Topics** (FNCE 400) 1-2 credits. Seminar. Prerequisite: FNCE 5508.

**FNCE 6201. Introduction to Finance Theory and Evidence** (FNCE 401) 3 credits. Lecture.

Topics include: efficient market hypothesis, utility theory, portfolio theory, CAPM, arbitrage pricing theory, option pricing, capital structure / tax theory, capital budgeting under uncertainty, current empirical studies.

**FNCE 6202. Corporate and Institutional Finance** (FNCE 402) 3 credits. Lecture. Prerequisite: FNCE 5508.

Topics include: information asymmetry, agency, internal capital markets, governance, market microstructure, moral hazard / adverse selection. Concepts are applied in both corporate and financial institution settings.

**FNCE 6203. Theory of Financial Markets and Valuation** (FNCE 403) 3 credits. Lecture.

Topics include: fundamental pricing theorems, state preference theory, martingale pricing, dominance, spanning and arbitrage restrictions, consumption models, and continuous-time approaches to asset pricing, interest rate models, and derivatives pricing.

**FNCE 6204. Empirical Methods in Finance Research** (FNCE 404) 3 credits. Lecture. Prerequisite: FNCE 5508.

Topics include: predictability of asset prices, time series models of market microstructure, event study methodology, tests of asset pricing models and derivative pricing models, market efficiency, volatility of asset returns, and term structure interest rates.

## Health Systems Management

**HSMG 5240. Health Care Organization and Management** (HSMG 380) 3 credits. Lecture.

This course examines the nation's healthcare delivery system with overviews provided for each major sector of the health economy. The basic tools of economics and finance are employed to gain critical insights into the structure, conduct and performance of each of these sectors. This course is designed to accommodate both health care professionals and individuals from other business areas interested in learning more about the health care industry.

**HSMG 5243. Health Care Economics** (HSMG 383) 3 credits. Lecture. Prerequisites: FNCE 5101 and HSMG 5240.

This course demonstrates how various economic theories can be used to think about health care issues and takes a macro or industry perspective of various health care problems and policy questions. Students are provided with a set of economic tools to evaluate a theoretical or empirical argument relating to health or medical care. The course culminates with an in-depth analysis of the structure, conduct, and performance of the markets for medical insurance, physician services, hospital services, pharmaceutical products, and long-term care. Health care reform is also discussed.

**HSMG 5544. Competitive Strategies for Health Care Organizations** (HSMG 384) 3 credits. Lecture. Prerequisite: HSMG 5243 or consent of the instructor.

This course focuses on the microeconomic organization of healthcare business units and analyzes various issues central to the individual firm's short-term and long-term competitive success. Competitive strategies pertaining to various types of healthcare organizations such as physician practices, hospitals, health maintenance organizations, and pharmaceutical companies are explored using a wide variety of business tools and methods. Efficient market theory, industry analysis, the boundaries of the firm, principal and agent problems, incentive mechanisms, mergers and acquisitions, the development and sustainability of competitive advantage, and competitive pricing are some of the general topics discussed in the context of the health care sector.

**HSMG 5545. Management of Long-Term Health Care Organizations** (HSMG 385) 3 credits. Lecture. Prerequisite: HSMG 5240.

This course examines administrative processes within the long-term health care facility including issues related to organizational effectiveness, financial management, the regulatory structure, operational procedures, policies and practices.

**HSMG 5548. Health Care Law and Policy** (HSMG 381) 3 credits. Lecture. Prerequisite: HSMG 5240. May be substituted for BLAW 5175.

This course examines legal, regulatory and ethical considerations in health care management, and the formation of public policy in the health care setting. Emphasis is on understanding legal principles and issues including administrative and regulatory law; institutional and individual liability in the health care sector; employment law; and torts. Special attention is paid to ethics in health care management and its interrelation to law and public policy.

**HSMG 5549. Management of Long-Term Health Care Organizations** (HSMG 391) 3 credits. Lecture. Not open to M.B.A. degree students.

This course examines administrative processes within the long-term health care facility including issues related to organizational effectiveness, financial management, the regulatory structure, operational procedures, policies and practices.

**HSMG 5632. Internship in Health Care Management** (HSMG 392) 1-9 credits. Practicum. Not open to M.B.A. degree students.

Under the guidance of a qualified preceptor, the student participates in the administrative process in the long-term health care organizational structure. A project is required.

**HSMG 5642. Decision Analysis in Health Care** (HSMG 382) 3 credits. Lecture. Prerequisite: FNCE 5101 and HSMG 5243 or consent of the instructor.

The course covers methods used by health care managers in making strategic and operating decisions, including (but are not limited to) sales forecasting,

product valuation, and cost effectiveness and cost/benefit analyses. Example of potential applications include estimating the value of new drugs under development, the payoff profile from strategic alliances and limited partnerships in different health care industries, the valuation of healthcare mergers and acquisitions, the profitability of different HMO benefit plans, and other ventures pertaining to health care organizations.

**HSMG 5686. Health Insurance and Risk Management**

(HSMG 386) 3 credits. Lecture. Prerequisites: FNCE 5101 and FNCE 5151.

This course examines health insurance choices from the perspective of individuals, employers, and insurers. A portfolio perspective for individuals; choices is taken. Other topics include: health insurance loss and contingency distributions; health insurance loss reserving; pricing (rate-setting) for health insurance products; LTC insurance; health insurer risk management; health reinsurance structures; health insurance derivatives.

**HSMG 5891. Health Care Internship**

(HSMG 389) 1-3 credits. Practicum.

Under the guidance of a qualified preceptor, students are provided opportunities to study and analyze an organization's characteristics, functions, goals, strategies, and decision-making processes. Managerial skill is developed through the performance of administrative tasks and through participation in problem-solving processes. A research paper is required.

**HSMG 5894. Seminar**

(HSMG 300) 1-3 credits. Seminar.

Investigation and discussion of special topics in health care management.

**HSMG 5895. Special Topics in Health Care Management**

(HSMG 396) 1-6 credits. Independent study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of health care management. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

## Management

**MGMT 5138. Managing Organizations**

(MGMT 338) 3 credits. Lecture. Open to MBA students, others with permission.

Today's business climate demands that organizations and their managers be innovative, flexible, adaptive, and capable of maximizing the contributions of all their members. In addition, today's manager must possess the leadership and team skills necessary to manage the increasingly diverse work force. Knowing how to reap maximum benefit from an organization's human capital is essential for today's manager. This course examines topics such as leadership, motivation, team dynamics, organization

structure, design and culture, conflict, power and politics.

**MGMT 5222. Management Consulting**

(MGMT 382) 3 credits. Lecture. Open to MBA students, others with permission.

This course introduces students to the roles individual consultants and consulting firms play in enhancing the effectiveness of their clients. The course draws on a wide range of management theory and practice to help students develop the interpersonal, analytical, and technical skills required in consulting interventions. The course will provide an overview of the consulting industry and address such topics as relationship and client management, intervention frameworks and their application, project management, ethical issues in consulting, and implementation issues.

**MGMT 5223. Managing Innovation and Change**

(MGMT 383) 3 credits. Lecture. Open to MBA students, others with permission. Instructor consent required.

Students will learn both the theory and practice underlying successful organizational change, thereby providing them with the understanding necessary to become effective change agents. The course addresses such topics as assessing organizational effectiveness/performance, fundamental organizational development techniques, change methodologies, individual, group, and organizational change processes, applied research methods for analysis of change problems, process interventions, the power and politics of change, and strategic change.

**MGMT 5224. Venture Consulting Practicum**

(MGMT 384) 3 credits. Practicum. Open only to MBA students. Instructor consent required.

The primary goal of the venture consulting practicum is to give students the opportunity to work directly with clients (in teams, with faculty mentors) in real-time and gain additional hands-on experience. Students will be required to prepare a consulting proposal for the client (scope of work, timeline, etc.), negotiate an end-product with the client, perform the proposed intervention, and prepare a final report and present findings with recommendations to the client for evaluation and critique. (Student participation in a project at the Innovation Accelerator can be substituted for this course.)

**MGMT 5260. Management of Technology and Innovation**

(MGMT 360) 3 credits. Lecture. Open to MBA students, others with permission.

In today's dynamic organizations, management of research, technology and change are generic processes which constitute irresistible and critical elements of the overall environment of business. Awareness of these processes can be a powerful force for an organization's management of its future. This course introduces the student to the management of innovation in several contexts, dealing with products and services, tangible and intangible outputs.

**MGMT 5335. Venture Planning, Management, and Growth**

(MGMT 335) 3 credits. Laboratory. Instructor consent required.

The primary goal of the venture consulting practicum is to give students the opportunity to work directly with clients (in teams, with faculty mentors) in real-time and gain additional hands-on experience. Students will be required to prepare a consulting proposal for the client (scope of work, timeline, etc.), negotiate an end-product with the client, perform the proposed intervention, and prepare a final report and present findings with recommendations to the client for evaluation and critique. (Student participation in a project at the Innovation Accelerator can be substituted for this course.)

**MGMT 5377. Human Resource Information Systems**

(MGMT 377) 3 credits. Lecture.

Nearly every aspect of human resource management and labor relations is or will be undergoing significant improvements via information technology. Increasingly human resource professionals are called upon to be part of a team in the design of information systems. Indeed their role is critical in insuring that the system truly supports and integrates HR needs. HR professionals must also query databases, create reports and contribute to departmental web sites. This course will prepare students for these challenges. The course will focus on future systems as well as seek to understand current configurations. It will explore the implications that systems design has for flexibility, efficiency, and effectiveness over the longer run.

**MGMT 5621. Business and Managerial Ethics**

(MGMT 381) 3 credits. Lecture.

Recent observers of the business scene have questioned whether today's modern executive has lost his/her "moral compass." Clearly all businesses and their managers must be held accountable to ethical standards. At issue then is what is ethical behavior and what problems are created in trying to exercise such behavior. This course examines in detail the processes of policy formulation and implementation as they relate to ethical problems. Alternative responses to expressed and anticipated social needs, expectations and demands that arise in the daily conduct of business are considered.

**MGMT 5629. Formal Corporate Planning Systems**

(MGMT 389) 3 credits. Lecture.

Planning is a corporate, group, and business function whose character has changed markedly and whose importance is universally recognized. Special attention is given to particular topics: environmental forecasting, corporate vs. business planning, staff vs. line functions, cycling/rolling systems, planning's impact on results, and others. In order to emphasize the essential nature of creating a managerial system which is efficient and effective through tailoring it to the specific requirements of the organizational setting, the work of the course centers on case analyses, but it

employs also, as appropriate, lectures, discussions, and field projects and reports.

**MGMT 5634. Opportunity Generation, Assessment, and Promotion**

(MGMT 334) 3 credits. Lecture. Instructor consent required.

This course provides a hands-on experience in opportunity development, exposing students to three distinct modules. The first, creativity and innovation, stimulates the flow of ideas. The second, feasibility analysis, runs these ideas through an comprehensive assessment framework. The third module, getting the first customer, focuses on the initial sales and marketing process needed to get the idea off the ground. At the end of the course, students will be able to: Identify, evaluate, and shape new business opportunities; Effectively present and sell their ideas to critical constituencies; Manage the resource constraints associated with launching new ventures.

**MGMT 5637. Organization Behavior**

(MGMT 337) 3 credits. Lecture.

The course is divided into two major components: micro and macro organization behavior. The first component focuses on individual and group-level problems and the second focuses on organizational-level problems, as they relate to improving organizational performance. This course introduces some of the central topics in management theory, research, and practice and provides the basis for understanding and evaluating organizations and their management.

**MGMT 5639. Gender and Diversity in the Workplace.**

(MGMT 339) 3 credits. Lecture.

The demographic composition of the international labor force is changing. In the United States, the proportions of both women and people of color have steadily increased in recent years. This course chronicles and examines the transition that is taking place in the workplace due to the increased diversity in employees. It examines gender-related issues such as sex differences and sex role development, occupational choice and organizational entry, peer and manager-subordinate interactions, sexual harassment, career development, the interface between work and family, and strategies for promoting equal opportunity in organizations. It examines diversity issues stemming from differences in individual characteristics such as race, ethnicity, and national origin.

**MGMT 5640. International Business**

(MGMT 340) 3 credits. Lecture.

The growing impact of a rapidly changing international business environment on organizations today means that few managers can afford to remain indifferent to the issues of international business. It is important to understand the changing patterns of international business, the dynamics of international competition, government-business interactions in other countries, and the organizational challenges of managing strategically across borders. This course addresses these issues through an applied approach in the discussion of cases.

**MGMT 5650. Managerial Communications**

(MGMT 350) 3 credits. Lecture.

Designed to improve effective oral and written communication skills for managers. Topics in written communications include: organization, structure, and clarity of business communications; practice in writing formal papers and research reports; establishing style and tone in different types of written business communications. Topics in oral communications include: analysis of audiences, presentations to small and large groups, persuasion and motivation techniques, using audio-visual aids, and improving delivery and style using video feedback.

**MGMT 5672. Career Dynamics**

(MGMT 372) 1-3 credits. Lecture.

As individuals pass through organizations, they both shape them and are shaped by them. This course looks at the issues involved in integrating the individual with the organization through the process known as career development. In particular, it focuses on the realities of entry, membership, and advancement that occur in organizations. Topics cover career stages and life stages; career stages and organizational stages; individual self-assessment including personal characteristics, interests, values and interpersonal styles; individual career mapping; and changing jobs and careers.

**MGMT 5673. Organizational Renewal Development**

(MGMT 373) 1-3 credits. Lecture.

Organizational renewal must be a regular part of the job of every manager. This course focuses on the management skills needed to diagnose, change and develop an organization. Participants learn not only the latest concepts but also are required to engage in organizational development (OD) exercises. Topics to be covered include methods of diagnosing organizations, planning and OD effort, deciding on a change strategy, fitting the intervention to the client's needs, managing an intervention and obtaining evaluative feedback. Through the use of exercises, presentations and hands-on-training, participants have the opportunity to practice their OD skills.

**MGMT 5674. Negotiation Strategies**

(MGMT 374) 3 credits. Lecture.

Developing and implementing effective negotiation strategies and tactics is an increasingly important activity in a wide range of managerial positions. This course deals with negotiations both within and between organizations. Effective negotiations skills are essential for successful managers in complex contemporary organizations characterized by changing structures, temporary task forces, multiple demands on resources, and the increased importance of interdepartmental cooperation. Critical negotiation situations with other organizations range from those dealing with labor unions, purchasing, mergers, acquisitions, and joint ventures. During this course, participants plan and conduct negotiations simulations, as well as receive feedback on their performance.

**MGMT 5675. Strategic Management of Human Resources**

(MGMT 375) 3 credits. Lecture.

Effective human resources management (HRM) is one of the most decisive factors in the success of any organization. This course examines how to manage human resources effectively in the dynamic legal, social, and economic environments currently constraining organizations. Among the topics included are: formulation and implementation of human resource strategy, job analysis, methods of recruitment and selection, techniques for training and management development, performance appraisal, compensation analysis and administration, and evaluation of the effectiveness of HRM systems. Attention is also given to the need for adjusting human resource strategies and tactics when applying them in a foreign setting. Emphasis is placed on integrating human resource management with other key aspects of management. A variety of teaching methods are used to help students acquire an understanding and appreciation of HRM.

**MGMT 5676. Business Improvement through Training and Development**

(MGMT 376) 3 credits. Lecture.

Planning, implementing, and evaluating training programs designed to meet individual and organizational needs. Training methods, techniques, and processes. Strategic and international training issues. Focuses on the process by which organizations train and develop employees. Topics include training needs assessment, program design, training evaluation, and management development practices.

**MGMT 5678. Compensation and Benefits**

(MGMT 378) 3 credits. Lecture.

Application of compensation principles to organizational objectives. Strategic use of compensation systems for attracting, motivating, and retaining employees. Managerial aspects of paying employees at all organizational levels. Focuses on managing employee compensation in contemporary organizations. The major objectives are: to examine the current state of compensation decision making, to examine how recent theoretical and research developments inform compensation decisions, and to offer an opportunity to develop competencies in making compensation decisions.

**MGMT 5800. Strategy, Policy, and Planning**

(MGMT 390) 3 credits. Lecture. Open to MBA students, others with permission.

A firm's ability to survive and succeed in an increasingly competitive global arena depends on its ability to develop and maintain an effective strategy. This capstone course deals with the two major aspects of strategy: formulation and implementation. Strategy formulation examines such issues as environmental threats and opportunities, the values and priorities of management and societal stakeholders, and the strengths of company resources and competencies relative to principal competitors. Strategy implementation covers such topics as strategic leadership, organizational structure, resource allocation, and building a strategy-supportive culture. The course uses cases and readings to develop the knowledge and skills necessary to

prepare students to deal with strategic issues. The student must have completed basic courses in the functional areas of business in order to be ready to assume the holistic perspective required of those who address this important topic.

**MGMT 5801. Advanced Strategy, Policy, and Planning**

(MGMT 391) 3 credits. Lecture.

This advanced strategy course offers practical tools to evaluate sources of a firm's competitive advantage. A supplement to the capstone course, this course offers an in-depth look at special strategic problems such as the implementation of strategy, corporate renewal, strategy formulation in decline contexts, and/or political elements of strategy.

**MGMT 5894. Seminar**

(MGMT 300) 1-3 credits. Seminar. Prerequisite: MGMT 5138.

Investigation and discussion of special topics in management.

**MGMT 5895. Special Topics in Management**

(MGMT 396) 1-3 credits. Independent study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of management. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

**MGMT 6200. Directed Readings in Special Topics**

(MGMT 400) 1-6 credits. Independent study. Open only to PhD students in the School of Business.

**MGMT 6201. Seminar in Organizational Behavior**

(MGMT 401) 3 credits. Seminar.

A survey of research in organizational behavior and theory. Topics include learning and cognition in organization, attribution theory, satisfaction and performance, leadership, motivation and group dynamics.

**MGMT 6202. Research Methods in Strategic Management**

(MGMT 402) 3 credits. Seminar.

This course is an in-depth review of the content of policy research. The course is designed to cover several "streams" of research currently popular in the strategic management literature. The course will cover the major findings within each stream.

**MGMT 6203. Contemporary Research in Organizational Behavior**

(MGMT 403) 3 credits. Seminar.

Focus is on several of the contemporary research themes popular in Organization Behavior. Students critique the methodology and future potential of each theme.

**MGMT 6204. Seminar in Strategic Management**

(MGMT 404) 3 credits. Lecture.

Reviews the research of strategic management that emphasizes macro explanatory models. Students

review recent dissertations and critique the content and methodology of each.

**MGMT 6405. Research Design**

(MGMT 405) 3 credits. Lecture.

Examination of research methods utilized in management research. Topics include the laboratory-field distinction, randomized experiments in field settings, content analysis and interrater reliability, log-linear analysis, instrument design and reliability analysis, survey design and sampling techniques, meta-analysis, quasi-experimental design, nonequivalent group design, interrupted time-series design and correlational analysis.

**MGMT 6206. Applied Research in Management**

(MGMT 406) 3 credits. Lecture.

Students, individually or in groups, formulate, conduct and prepare a written report in publishable format on a research project pertaining to the area of management. Meetings will be devoted to discussion of issues which arise in the conduct of student projects and to presentation of projects.

**MGMT 6408. Seminar in Strategic Entrepreneurship, Innovation, and New Ventures**

(MGMT 408) 3 credits. Seminar. Instructor consent required.

This seminar introduces students to major theoretical and empirical issues in the area of strategic entrepreneurship, innovation, and new ventures. The course focuses on the construction and testing of theory regarding the generation, identification, assessment, and capture of opportunities that support the expansion of existing ventures or formation of new businesses. Subject matter includes, but is not limited to, an overview of the field; generation and identification of entrepreneurial opportunities; entrepreneurial thinking and the associated decisions to explore and exploit; and influences on and processes associated with innovation management and venture creation.

## Marketing

**MKTG 5115. Market-Driven Management**

(MKTG 315) 3 credits. Lecture. Open to MBA students, others with permission.

The purpose of a business is to create a satisfied customer. To accomplish this objective managers must incorporate both their customers' and competitors' perspectives into their decision-making. This course focuses on the necessity to become a market-driven organization. Topics covered in this course include: market segmentation and target marketing, marketing research for obtaining critical customer information, development of marketing strategies, product development and the key linkage between marketing and R&D, pricing strategies and implementation, working with distribution partners, developing effective promotional programs, control and evaluation of the marketing function. These and

other topics are applied in a wide range of market arenas such as global marketing, the new service economy, industrial and high technology products, consumer goods and services, financial services, and health care.

**MKTG 5220. Customer Relationship Marketing**

(MKTG 320) 3 credits. Lecture. Prerequisite: MKTG 5115.

This course discusses the scope of interactive marketing strategies and programs and introduces business models that are suited for this purpose. It covers the concept of customer lifetime value and its linkage to various customer relationship forms including customer, partner, stakeholder, and employee relationship marketing. Cross-marketing strategies for maximizing customer lifetime value are emphasized. Brand development and brand equity management are also explored from a relationship marketing perspective. Integrated marketing communications and interactive marketing tools including digital marketing are discussed. Students obtain hands-on experience of creating detailed marketing plans with appropriate financials for typical interactive marketing situations. Case studies of actual companies are used to better illustrate the concepts.

**MKTG 5230. New Product and Innovation Management**

(MKTG 330) 3 credits. Lecture. Prerequisite: MKTG 5115.

This course takes a "whole enterprise" approach to the management of innovation, based on the perspectives of product managers and a CEO. The course's primary objective is to develop effective conceptual frameworks and analytical tools for managing innovation throughout the firm. The analytical tools used in the course range from traditional methods for forecasting new product performance (e.g. Bases, Assessor, etc.) to more sophisticated methods that use virtual reality lab environments. Topics include the nature of innovation, new product development processes, new product sales forecasting, successful integration of marketing and R&D, and acceleration of the new product process from design to commercialization advantages.

**MKTG 5250. Market Research and Information Systems**

(MKTG 350) 3 credits. Lecture. Prerequisites: MKTG 5115 and OPIM 5103.

This course discusses the collection and use of information on customers and their needs for designing marketing programs. The course develops skills in obtaining and using customer input for product design, communications, pricing, distribution, and customer service decisions. Some of the topics covered include: research design; use of secondary information sources; decision support systems; sampling techniques; questionnaire design; scaling and measurement; and multivariate data analysis procedures. The applications discussed in the course include the creation and use of data-warehouses; customer satisfaction measurement; customer-based brand equity measurement; and the use of the Internet as an information-gathering tool.

**MKTG 5251. Data Analytics**

(MKTG 351) 3 credits. Lecture. Prerequisite: MKTG 5115.

Introduces students to the concepts, methods, and quantitative tools for creating and exploiting customer databases. The course will have a strong hand-on methodological orientation with emphasis on applications involving real customer data. Students will learn quantitative tools for estimation of customer lifetime value, customer response modeling (e.g., multiple regression, logistic regression, cluster analysis, discriminant analysis, and neural network analysis) and experimentation in test markets. Applications will include prospecting, market segmentation and targeting, product customization, cross-selling, and customer loyalty programs. The applications will span several different types of businesses, such as Internet retailing, financial services, computers, and knowledge-intensive enterprises.

**MKTG 5625. Marketing for Global Competitiveness**

(MKTG 325) 3 credits. Lecture. Prerequisite: MKTG 5115.

The United States is the largest market for consumer goods in the world, yet it is also one of the slowest growing markets. Faced with increasing competition from American, Japanese, European and other global competitors, all companies are faced with the necessity of developing truly global marketing strategies. This course helps prepare the manager for these challenges by investigating specific success criteria in the world's major markets. Cultural, political, economic and institutional factors are discussed and their implications for marketing strategies are explored.

**MKTG 5635. Marketing for Non-Profit Institutions**

(MKTG 335) 3 credits. Lecture. Prerequisite: MKTG 5115.

With reduced financial support from the government, non-profit organizations must adopt a marketing orientation to successfully survive in the turbulent environments which they face. This course explores techniques to analyze market needs and environmental opportunities as the basis for planning the products, services and communications of such non-profit organizations as government agencies, social action groups, universities, hospitals, religious organizations, charities, museums, public arts organizations, and civic groups. The course utilizes extensive case studies as well as field projects.

**MKTG 5640. Integrated Marketing Communications**

(MKTG 340) 3 credits. Lecture. Prerequisite: MKTG 5115.

The implementation of integrated marketing communications is increasingly important for an organization's competitiveness. This course covers: communications models; the communications mix; communications strategy - including setting objectives,

designing and implementing communications programs, and evaluation. Emphasis upon: customer response models; interactive marketing; direct marketing; information driven marketing; measuring customer life-time value, creation and use of marketing data bases in communications strategy, the emergence of one-to-one marketing, and measurement of marketing productivity.

**MKTG 5645. Business and Industrial Marketing**

(MKTG 345) 3 credits. Lecture. Prerequisite: MKTG 5115.

Explores the differences between consumer markets and business-to-business or industrial markets. Organizational buying models are discussed as they apply to a variety of purchasing situations. Special consideration is given to industrial and high technology market segmentation, industrial distribution, industrial sales practices, and requirements of cross functional marketing.

**MKTG 5655. Pricing Strategies**

(MKTG 355) 3 credits. Lecture. Prerequisite: MKTG 5115.

One of the most closely scrutinized aspects of the marketing mix, pricing is a critical factor in the success of both new and old products and services. This course examines the price-setting process and the role of marketing, engineering, manufacturing and other business functions in price determination. Students will integrate economic and behavioral aspects of customer response to pricing, legal constraints as they impact the marketing manager's pricing flexibility, and the particular problems of pricing within the context of a global marketing strategy.

**MKTG 5660. Customer Behavior**

(MKTG 360) 3 credits. Lecture. Prerequisite: MKTG 5115.

The analysis of customer behavior as it informs marketing decisions - customer relationship management, brand management, and marketing strategy. Topics: customer information search; customer responses to marketing communications; customer choice processes; post-choice experiences, including product consumption and usage, satisfaction, brand and supplier loyalty, and customer defection; internal and external influences on customer behavior; and customer behavior research methods. The course considers both online and traditional behaviors, as well as individual, household and organizational customers.

**MKTG 5662. Services Marketing**

(MKTG 362) 3 credits. Lecture. Prerequisite: MKTG 5115.

An examination the application of marketing principles to the service arena. Exploration of the differences between the marketing of goods and services. Development of appropriate decision models for services in consumer and industrial market segments and the use of services as a differentiation tool for product marketers. Topics include new

service development; the service-profit chain; evaluating service quality; strategic service management; and the impact of customer satisfaction and loyalty on company profits. A variety of service industries are used as points of illustration, including telecommunications; insurance and financial services; health care; and business-to-business services such as advertising, temporary employees, and accounting.

**MKTG 5665. Digital Marketing**

(MKTG 365) 3 credits. Seminar. Prerequisite: MKTG 5115.

An exploration and evaluation of the potential for digital technology, especially the Internet, to enhance the marketing of goods and services. Emphasis is on strategies and tactics for creating, retaining, and enhancing customer relationships via the World-Wide-Web, and on integrating the digital environment into other elements of the marketing mix. Business models for cyberspace are compared and contrasted with those for physical space. Heavy reliance on the Internet as a teaching tool.

**MKTG 5894. Seminar**

(MKTG 300) 1-6 credits. Seminar. Prerequisite: MKTG 5115.

Investigation and discussion of special topics in marketing.

**MKTG 5895. Special Topics in Marketing**

(MKTG 396) 1-6 credits. Independent Study.  
Faculty-student interaction on a one-to-one basis involving independent study of specific areas of marketing. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

**MKTG 6200. Investigation of Special Topics**

(MKTG 400) 1-6 credits. Lecture. Open only to students in the Marketing doctoral program.

**MKTG 6202. Behavioral Applications in Marketing**

(MKTG 402) 3 credits. Seminar.

This survey course is designed to provide a strong foundation of theory and research in the area of consumer behavior. Topics are subject to change at the discretion of the instructor, but would typically cover: theory development and testing, validity and reliability, relationships among conceptual, methodological and substantive domains, attitude theory, affect, branding, information processing, individual difference variables, advertising, and cultural meaning of goods. Both quantitative and interpretive methods are explored.

**MKTG 6203. Quantitative Applications in Marketing**

(MKTG 403) 3 credits. Seminar.

This survey course acquaints students with the state of the art in mathematical marketing models. Topics are subject to change at the discretion of the instructor, but would typically cover: validity and reliability, diffusion models, managerial models of advertising allocations, channel design, sales force

allocations, sales promotion, pricing, product design, test markets, and competitive positioning, models of consumer and market behavior, for example, utility theory, discrete choice models, stochastic models, hazard rate models multi-dimensional scaling, and hierarchical decision making.

**MKTG 6210. Strategic Applications in Marketing**

(MKTG 410) 3 credits. Seminar.

This survey course acquaints students with the state of the art in strategic marketing. Topics are subject to change at the discretion of the instructor, but would typically cover strategic issues related to products, firms, customers and competition.

**MKTG 6211. Multivariate Analysis in Marketing**

(MKTG 411) 3 credits. Seminar.

This course will present an overview of various multivariate statistical methods. Topics are subject to change at the discretion of the instructor, but would typically cover: discriminant, canonical, cluster, and factor analysis, multidimensional scaling, and conjoint, logit, probit and tobit analysis. Hands on experience in use of these methods will be provided; the primary focus will be on marketing applications.

**MKTG 6296. Special Topics: Progress toward Qualifying Paper**

(MKTG 496) 3 credits. Independent Study. Open only to students in the Marketing doctoral program.

Independent study under faculty supervision in area chosen for doctoral student's qualifying paper. Satisfactory progress on qualifying paper (including literature review and research conceptualization) is required. Student can also develop research design, conduct pilot studies, refine questionnaires and measures, or develop a framework for model specification and model estimation. A written report is required.

**Operations and Information Management**

**OPIM 5103. Managerial Statistics**

(OPIM 303) 3 credits. Lecture. Open to MBA students, others with permission.

A manager is concerned with recognizing and formulating statistical problems in business decision-making. This course covers some of the more familiar classical inference procedures and the basic statistical concepts that are often essential to the interpretation of business data. Methods of understanding variability, and detecting changes are explored using descriptive, exploratory, and inferential statistics found in widely available statistical packages. Topics include: discrete and continuous random variables, sampling, confidence intervals, hypothesis testing, and linear regression.

**OPIM 5110. Operations Management**

(OPIM 310) 3 credits. Lecture. Open to MBA

students, others with permission. Prerequisite: OPIM 5103.

An operations manager is concerned with designing, operating and controlling a system for producing goods and services. Design decisions include selecting a process technology, organizing jobs, selecting vendors, and developing the location and layout of facilities. Operating the system involves planning and scheduling work and material flow, controlling quality, and managing inventories. General systems concepts and models are developed and applied. Topics include process flow analysis, inventory systems, waiting line analysis, quality design, capacity resource planning, project management, and integrating operations with the firm's strategic plans.

**OPIM 5165. Management Information Systems**

(OPIM 365) 3 credits. Lecture. Open to MBA students, others with permission.

A manager is concerned with the solution of business problems by exploiting the information resources that are becoming available through the explosion in information technology. The emphasis is on business applications and how to structure the development and use of information systems for maximum benefit to the organization. Topics include: decision support systems, impact of the computer upon individual and organizations, competitive implications, technology change, telecommunications, and control of information systems resources.

**OPIM 5270. Introduction to Project Management**

3 credits. Lecture. Prerequisite: OPIM 5165. Open to MBA students, others with permission.

Business objectives are increasingly solved by projects. Many projects fail to produce the expected results, are over budget, or not completed on time. Good project management significantly improves the likelihood of a successful project. This course will examine the project management process and the management of a portfolio of projects, with focus on techniques to overcome the pitfalls and obstacles that frequently occur during a typical project. It is designed for business leaders responsible for implementing projects, as well as beginning and intermediate project managers.

**OPIM 5272. Business Process Modeling and Data Management**

3 credits. Lecture. Prerequisite: OPIM 5165. Instructor consent required. Open to MBA students, others with permission.

Managing and improving a business process adds to the bottom line, and data is a core business asset derived from multiple business processes. The need to manage both efficiently and use them effectively has assumed paramount importance. This course introduces market-leading techniques that help to identify and manage key data from business processes. It provides the essential tools required for data mining and business process re-engineering. It combines lecture, class discussion and hands-on computer work in a business-oriented environment.

**OPIM 5602. Mathematical Analysis for Business**

(OPIM 302) 3 credits. Lecture.

Review of algebra followed by introduction to functions, limits, differentiation, integration, vectors, matrices and linear programming. Examples and applications of mathematical topics to business problems.

**OPIM 5604. Predictive Modeling**

3 credits. Lecture. Prerequisite: OPIM 5103 or consent of the instructor.

Introduces the techniques of predictive modeling in a data-rich business environment. Covers the process of formulating business objectives, data selection, preparation, and partition to successfully design, build, evaluate and implement predictive models for a variety of practical business applications. Predictive models such as neural networks, decision trees, Bayesian classification, and others will be studied. The course emphasizes the relationship of each step to a company's specific business needs, goals and objectives. The focus on the business goal highlights how the process is both powerful and practical.

**OPIM 5620. Managing and Controlling Information Systems**

(OPIM 380) 3 credits. Lecture. Prerequisite: OPIM 5165.

Examines the management control problems and systems development processes from the dual perspective of (a) managers of the computer information system, and (b) the organization as a whole, including persons who interact extensively with the systems personnel or are administratively in a position to influence the information system.

**OPIM 5641. Business Decision Modeling**

3 credits. Lecture. Prerequisite: OPIM 5103 or consent of the instructor.

The course discusses business modeling and decision analysis. Covers topics such as optimization, simulation, and sensitivity analysis to model and solve complex business problems. As spreadsheets are often used as software tools for such problem solving, the course will emphasize developing high quality spreadsheets to ensure that the objectives of the model are clear, defining the calculations, good design practices, testing and presenting the results.

**OPIM 5668. Project Risk and Cost Management**

3 credits. Lecture. Prerequisite: OPIM 5270.

Introduces the art and science of project risk as well as continuity management and cost management. Risk management ensures a project is completed through both general and severe business disruptions on local, national and international levels. Managing the risk of a project as it relates to a three-part systematic process of identifying, analyzing, and responding is examined through actual case studies. In addition, this course will examine the process of cost management, early cost estimation, detailed cost estimation, cost control using the earned value method, issues related to project procurement management, and the different types of contracts for various scope scenarios.

**OPIM 5671. Data Mining and Business Intelligence**

3 credits. Lecture. Prerequisite: OPIM 5604.

Discusses data mining techniques that can be utilized to effectively sift through large volumes of operational data and extract actionable information and knowledge (meaningful patterns, trends, and anomalies) to help optimize businesses and significantly improve bottom lines. The course is practically oriented with a focus of applying various data analytical techniques in various business domains such as customer profiling and segmentation, database marketing, credit rating, fraud detection, click-stream Web mining, and component failure predictions.

**OPIM 5894. Seminar**

(OPIM 300) 1-6 credits. Seminar.

Introduces many of the most exciting concepts emerging in the field of consumer oriented Internet-working, including high speed access [cable modem, satellites and digital subscriber lines (DSL)] and infrastructure developments such as gigabyte networking with asynchronous transfer mode (ATM). Evaluates the emerging directions in EC that are expected to shape both consumer and business applications in the coming decade. A "macro perspective" is used to examine the technical and managerial aspects of electronic commerce. Focus is on questions such as: What are or will be the key attributes of current and future digital products, payment systems, online retailing, and banking? How are these systems designed and implemented? What are the different mercantile processes and tradeoffs associated with these processes? What impact has global connectivity made on traditional supply-chain(s)?

**OPIM 5895. Special Topics in Information Management**

(OPIM 396) 1-3 credits. Independent Study.

Faculty-student interaction on a one-to-one basis involving independent study of specific areas of operations management, operations research and/or information management. Emphasis, selected by the student, may be on theoretical or applied aspects. A written report is required.

**OPIM 6201. Research Methods for Operations and Information Management**

(OPIM 401) 3 credits. Seminar.

Several advanced analytical methods that are relevant to students' areas of research will be studied in depth in this seminar. Topics may include special mathematical programming; complex decision making; linear models; advanced statistical analysis; and stochastic processes.

**OPIM 6202. Seminar in Operations Management**

(OPIM 402) 3 credits. Seminar.

Introduces doctoral students to the current research concerns in the field of Operations Management. The course will also acquaint students with the variety of research tools used in the field, enable them to critically evaluate the research of

other scholars in the field as well as to develop research skills in identifying potential research problems to be analyzed.

**OPIM 6203. Seminar in Management Information Systems**

(OPIM 403) 3 credits. Seminar.

A topic on a significant applied or theoretical aspect of information systems will be chosen. Broadly, these aspects will encompass modeling, design, implementation, testing, and operation of computer information systems, and the implications of information technologies for the organization.

**All Sections****†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 498) Non-credit.

# CHEMICAL ENGINEERING

*Department Head:* Professor C. Barry Carter  
*Professors:* Cooper, Laurencin, M. Shaw, and Weiss  
*Associate Professors:* Parnas, Srivastava, Willis, and Zhu  
*Assistant Professors:* Lei, McCutcheon, Mustain, Smirnova, Srivastava, Wang, and Wilhite

Study and research programs leading to the degrees of Doctor of Philosophy and Master of Science in chemical engineering are offered. Areas of special interest include: environmental engineering, electrochemical engineering, biochemical engineering, polymer science and engineering, nanomaterials engineering, kinetics, catalysis and reaction engineering, computer simulation of chemical processes, process optimization, and process dynamics and control.

**Requirements for the Ph.D. Degree.** Ph.D. candidates must pass both written and oral qualifying examinations taken after the first semester of graduate study. The written exam covers the areas of thermodynamics, transport phenomena, and kinetics (CHEG 5301, 5315 and 5321 are required preparation for this exam). The oral exam involves the critique and discussion of a paper from the literature assigned to the student after passing the written exam. The doctoral plan of study developed jointly by the student and his/her advisory committee usually includes one year of full-time course work beyond the master's degree. Doctoral students also must fulfill a foreign language requirement of the Graduate School (which may be satisfied by courses in a related or supporting area such as math or computer science). In addition to the qualifying exams, the student must complete a General Examination and the writing of a Ph.D. dissertation proposal, which is defended orally. The Ph.D. dissertation must contain the results of original research in chemical engineering. An oral defense of the dissertation is required.

**Special Facilities.** Available are large, well-equipped laboratories. Facilities and research opportunities are available though a number of other departments and University Institutes as well, including Chemistry, the Institute of Materials Science, the Center for Environmental Science and Engineering, the Connecticut Global Fuel Cell Center, the Biotechnology Center, Booth Research Center and the Advanced Technology Institute. Examples of equipment available in these research laboratories include: clean room for surface and interface research, polymer preparation and characterization instrumentation, electron microscopes, atomic-force microscopes, surface analysis equipment, a wide variety of analytical and visualization equipment, electrochemical instrumentation and reactors, electro dialysis units, fuel cell lab, injection molding machine, and a variety of biological reactors. Computing resources are widely available, including those in the University Computer Center and the Booth Computer Applications and Research Center. Machine, glass and electronics shops provide services for the construction of specialized equipment.



**COURSES OF STUDY****CHEG 5301. Chemical Engineering Thermodynamics I**

(CHEG 301) 3 credits. Lecture.

An advanced study of classical thermodynamics with emphasis on phase and chemical equilibria and applications to the chemical process industries. Kinetic theory and statistical thermodynamics with emphasis on the prediction and correlation of physical and chemical properties of gases and liquids, including mixtures. Theory and application of flames, plasmas, and shock waves.

**CHEG 5302. Chemical Engineering Thermodynamics II**

(CHEG 302) 3 credits. Lecture.

An advanced study of classical thermodynamics with emphasis on phase and chemical equilibria and applications to the chemical process industries. Kinetic theory and statistical thermodynamics with emphasis on the prediction and correlation of physical and chemical properties of gases and liquids, including mixtures. Theory and application of flames, plasmas, and shock waves.

**CHEG 5311. Transport Phenomena**

(CHEG 311) 3 credits. Lecture.

An advanced study of transport phenomena and rate processes with emphasis on a differential balance approach. Designed for non-chemical engineers and chemical engineers with an inadequate background in differential balances.

**CHEG 5315. Transfer Operations I**

(CHEG 315) 3 credits. Lecture.

An advanced study of momentum, heat and mass transfer with application to complex problems. Cartesian tensors, non-Newtonian flow, statistical theory of turbulence. Mass transfer in multicomponent systems and with chemical reaction. Mass transfer in drops and bubbles; two-phase flow and fluidization.

**CHEG 5316. Transfer Operations II**

(CHEG 316) 3 credits. Lecture.

An advanced study of momentum, heat and mass transfer with application to complex problems. Cartesian tensors, non-Newtonian flow, statistical theory of turbulence. Mass transfer in multicomponent systems and with chemical reaction. Mass transfer in drops and bubbles; two-phase flow and fluidization.

**CHEG 5321. Reaction Kinetics I**

(CHEG 321) 3 credits. Lecture.

Chemical kinetics and reactor design. An advanced study of chemical reaction engineering with emphasis on catalysis. Applications to stirred-tanks, fixed-bed, and fluidized bed reactors.

**CHEG 5331. Process Engineering**

(CHEG 331) 3 credits. Lecture.

Applications of thermodynamics, kinetics, unit operations, mechanics, and economics to the design of process plant equipment and complete plant design.

**CHEG 5336. Optimization**

(CHEG 347) 3 credits. Lecture.

Advanced topics in optimization such as linear and nonlinear programming, mixed-integer linear and nonlinear programming, deterministic and stochastic global optimization, and interval global optimization. Example applications drawn from engineering.

**CHEG 5345. Chemical Engineering Analysis I**

(CHEG 345) 3 credits. Lecture.

Techniques for the solution of chemical engineering problems including the solution of ordinary and partial differential equations, numerical analysis, and computer simulation.

**CHEG 5347. Process Dynamics and Control I**

(CHEG 336) 3 credits. Lecture.

Dynamic behavior of chemical process operations. Distributed parameter and non-linear processes. Specification of control systems. Stability analysis. Optimal operation of chemical processes. Design of feedback and feedforward control schemes for multiloop processes. Adaptive control.

**CHEG 5351. Polymer Physics**

(CHEG 351) 3 credits. Lecture.

Modern concepts relating to glassy, rubbery and organized states of bulk polymers. Considers rubber elasticity, glass-to-rubber transitions, networks, elements of crystallization, blends and interfacial phenomena.

**CHEG 5352. Polymer Properties**

(CHEG 352) 3 credits. Lecture.

Interrelationships between solid state structure, dynamics, and mechanical properties of non-crystalline and semi-crystalline polymers. Considers polymer viscoelasticity, diffusion, failure mechanism, and elementary polymer rheology.

**CHEG 5355. Polymer Structure and Morphology**

(CHEG 355) 3 credits. Lecture. Prerequisite: CHEM 5381.

A fundamental study of the various levels of structure and morphology in polymers from the molecular to the macroscopic level, and how this structure influences the overall material properties. The principle methods used to characterize morphology are described for the analysis of amorphous and crystalline homopolymers, polymer blends, and copolymers.

**CHEG 5356. Adhesion**

(CHEG 356) 3 credits. Lecture. Prerequisite: CHEG 5351.

A study of both physical and chemical factors controlling adhesion behavior. Thermodynamics, surface energy and surface tension. Intermolecular forces. Surface roughness effects. Mechanical evaluation of bond strength. Factors controlling adhesion durability. Chemical coupling agents.

**CHEG 5358. Composite Materials**

(CHEG 358) 3 credits. Lecture.

An introduction to the mechanical properties of fiber reinforced composite materials. Included are discussions of the behavior of unidirectional composites, short fiber composites and laminates. Special topics such as fatigue, fracture and environmental effects are also included.

**CHEG 5363. Electrochemical Engineering**

(CHEG 363) 3 credits. Lecture.

Principles underlying electrochemical processes. Transformation of chemical and electrical energy. Applications of fundamental electrochemical laws to industrial processes, energy conversion, and electrometallurgical operations.

**CHEG 5367. Polymer Rheology**

(CHEG 367) 3 credits. Lecture.

Analysis of the deformation and flow of polymeric materials. Topics include non-Newtonian flow, viscoelastic behavior and melt fracture with application to polymer processing.

**CHEG 5368. Polymer Rheology and Processing Laboratory**

(CHEG 368) 3 credits. Lecture/Laboratory.

Prerequisite: CHEG 5367.

Classical and modern experimental techniques for measuring the viscoelastic properties of polymers. Experiments include: creep, dynamic mechanical analysis, cone and plate viscometer, single-screw extruder, capillary rheometer, and extensional viscosity.

**CHEG 5373. Biochemical Engineering**

(CHEG 373) 3 credits. Lecture.

Principles and design of processes involving biochemical reactions. Nature of biological materials, biochemical kinetics, heat and mass transfer, application to fermentation and other biological processes.

**CHEG 5374. Bioremediation**

(CHEG 374) 3 credits. Lecture.

Application of engineering and biological principles toward remediation of hazardous wastes. Degradation of toxic chemicals using genetically-engineered microorganisms. Biological contacting devices for waste remediation.

**CHEG 5375. Fermentation and Separation Technology Laboratory**

(CHEG 375) 3 credits. Laboratory. Also offered as MCB 5684.

Introduction to techniques used for industrial mass culture of prokaryotic and eukaryotic cells, and methods used to extract useful products from these cultures. Metabolic processes, energetics, growth kinetics and nutrition of microorganisms. Synthesis of cellular material and end products. Heat exchange, oxygen transfer, pH control, sterilization and design of fermentors. Culture of eukaryotic cell mass. Immobilized enzyme and cell reactors. Product

recovery methods of precipitation centrifugation, extraction filtration and chromatography.

**CHEG 5381. Water Purification Principles**  
(CHEG 381) 3 credits. Lecture.

An advanced study of the application of thermodynamics, transfer operations, and chemical kinetics to disposal and recovery of aqueous industrial and municipal wastes.

**CHEG 5385. Air Pollution**  
(CHEG 385) 3 credits. Lecture. Prerequisites: CE 5210 or ENVE 5210 for non-CHEG majors.

Sources and properties of air pollutants, atmospheric chemistry, dynamics of atmospheric pollution, analytical and sampling techniques, control and abatement processes and air pollutants.

**CHEG 5389. Chemical Transport Processes in the Environment**  
(CHEG 389) 3 credits. Lecture.

Movement and fate of chemicals within the air, water, and soils in the environments. Emphasis on interfacial processes and exchange rates involving surface water, groundwater and air pollution problems.

**CHEG 5393. Seminar**  
(CHEG 393) 0 credits. Seminar.

**CHEG 5394. Seminar**  
(CHEG 394) 0 credits. Seminar.

**CHEG 5395. Investigation of Special Topics**  
(CHEG 320) 1-3 credits. Lecture.

This course is designed for special topics, or for individual students who desire to pursue investigations in a specialized field.

**CHEG 5399. Independent Study**  
(CHEG 300) 1-3 credits. Independent Study.

Independent study under the supervision of a Chemical Engineering faculty member.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(grad 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(grad 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## CHEMISTRY

*Department Head:* Professor Steven L. Suib  
*Professors:* W. Bailey, Basu, Birge, Bohn, David, Frank, Howell, Kumar, Mason, Michel, Papadimitrakopoulos, Rusling, M. Smith, Stwalley, and Sung  
*Associate Professors:* Adamson, Brueckner, Fenteany, Seery, Sotzing, and B. Shaw  
*Assistant Professors:* Asandei, Burdette, Gascon, Kasi, Leadbeater, Lin, T. Miller, Peczuh, Vlahos, and Yao

The Department of Chemistry offers course work and research in the areas of analytical, biological, chemical education, environmental, inorganic, organic, physical, and polymer chemistry leading to the M.S. and Ph.D. degrees in Chemistry. Research projects within these areas include: *Analytical* – atomic spectroscopy, biomedical sensors and microarrays, chemistry, proteomics, separations and mass spectrometry; *Biological* – bio-analytical, bio-inorganic, bio-organic, bio-physical, bio-polymer, and bio-materials; *Inorganic* – bioinorganic and coordination chemistry, catalysis, crystal growth and structure, organometallic and transition metal chemistry, physical methods, solid state chemistry, structure determination, synthesis and characterization, and surface analysis; *Organic* – bioorganic, medicinal and toxicological chemistry, natural products, synthetic and physical organic chemistry, and organic polymer chemistry; *Physical* – kinetics, biophysical chemistry, spectroscopy, physical methods, theoretical and computational chemistry, thermodynamics, x-ray crystal structure; and *Polymer* – organic and inorganic polymers, and synthesis and characterization of materials; and *Chemical Education*. A detailed description of the research programs of individual faculty members is available in a departmental brochure, which is available on the departmental Website <<http://chemistry.uconn.edu/>>.

In addition to the basic requirements for admission to the Graduate School, an applicant should submit scores from the General and the Advanced Test in Chemistry of the Graduate Record Examinations at the time of application. All entering graduate students must take comprehensive proficiency examinations in analytical, inorganic, organic, and physical chemistry at the advanced undergraduate level. The results of these examinations are used to determine the appropriate course level for the student.

The student must qualify in the four areas listed above either by passing the proficiency examinations upon entry, or by earning a grade of B or higher (not B-) in a graduate course in the discipline(s) in which the examination was not passed. Students lacking undergraduate background in an area, may elect to take an undergraduate course or sequence and retake the proficiency examination. Students who do not qualify for admission to the Ph.D. program may be allowed to continue towards a master's degree.

**Requirements for the Ph.D. Degree.** There are no specific course requirements for the Ph.D. degree in chemistry beyond those established by the student's advisory committee. Students should confer with their advisory committees concerning those courses which are recommended as preparation

for the doctoral General Examination in the various divisions. Ordinarily, students also are expected to demonstrate reasonable competence in an area or areas outside their major program emphasis.

After the successful completion of the qualification requirements (see above), the student must pass the General Examination for the Ph.D. degree, consisting of a written and an oral portion as determined by the student's chosen Division (analytical, biological, chemical education, environmental, inorganic, organic, physical and polymer). The General Examination (see the department's Graduate Student Handbook for details) usually is completed during the second or third year of graduate study.

The Ph.D. dissertation must contain the results of original research in chemistry and make a substantial contribution to the particular field. Upon completion of the dissertation, the student takes an oral examination in its defense.

**Special Facilities.** In addition to the standard equipment found in chemistry departments, the facilities available for research include: electrochemical instrumentation, electron spin resonance spectrometers, FT-IR and Raman spectrometers, high field NMR facility, gas and liquid chromatographs, flash photolysis apparatus, laser spectroscopy instrumentation (atomic and molecular), Mössbauer instruments, magnetic susceptibility balances, microscopes (including fluorescence and scanning electron microscopes), UV/visible and fluorescence plate readers, multimode digital imaging systems, nanocalorimeters, polymer preparation and characterization instrumentation, high-resolution mass spectrometry (MS facility for GC-MS and LC-MS with state-of-the-art mass spectrometers (QqTOF, QqQ, QqLIT) with various ionization sources, surface analysis equipment (Auger, SAM, XPS, ISS-SIMS), high throughput synthesis and screening facility, thermal analysis equipment, ultra-high temperature and pressure equipment, UV/visible spectrophotometers, spectrofluorimeters, and powder X-ray diffraction equipment. Advanced computing facilities and access to supercomputers are available within the department and university; computer services are also available at the University of Connecticut Computer Center on campus. Some faculty members are also members of the University's Institute of Materials Science (IMS) or the Center for Environmental Science and Engineering (CESE) where additional research facilities are available, especially for polymer synthesis, characterization, and processing, or environmental analysis and research, respectively.

## COURSES OF STUDY

**CHEM 5300. Independent Study**  
(CHEM 300) 1-3 credits. Independent Study.

†**CHEM 5310. Seminar**  
(CHEM 310) 1 credit. Seminar.

Reports and discussion of topics of current interest in a variety of fields of chemistry.

**CHEM 5324. Advanced Inorganic Chemistry I**  
(CHEM 324) 3 credits. Lecture.

Synthetic methods in inorganic chemistry; the application of physical methods to the investigation of inorganic compounds.

**CHEM 5325. Advanced Inorganic Chemistry II**  
(CHEM 325) 3 credits. Lecture. Prerequisite: CHEM 5324.

In depth study of general principles of inorganic chemistry; the structure of the elements and of inorganic compounds; group theory; different approaches to understanding the chemical bond.

**CHEM 5326. Advanced Inorganic Chemistry III**  
(CHEM 326) 3 credits. Lecture. Prerequisite: CHEM 5325.

Main group and transition metal compounds with inorganic and organic ligands; the study of the transition metals is in preparation for Chemistry 5327.

**CHEM 5327. Advanced Inorganic Chemistry IV**  
(CHEM 327) 3 credits. Lecture. Prerequisite: CHEM 5326.

Transition metal chemistry; organometallic and coordination compounds of the transition elements, including the lanthanides and actinides; selected topics in bioinorganic chemistry.

**CHEM 5335. Theoretical Analytical Chemistry**  
(CHEM 335) 3 credits. Lecture.

A problem oriented course, involving hands on computer use, which incorporates modern methods of analyzing data obtained from the various analytical techniques. Use of theoretical and empirical models and chemometrics is stressed.

**CHEM 5336. Electroanalytical Chemistry**  
(CHEM 336) 3 credits. Lecture.

A study of the theoretical and practical basis for electroanalytical methods. Topics include voltammetric methods of analysis (including polarography, cyclic voltammetry, rotating disk voltammetry, pulse and square-wave methods, and stripping analysis), coulometric, and chronoamperometric methods. Recent advances using micro- and modified electrodes, thin-layer and flow cells, electrochemical sensors and detectors, and bioelectrochemistry may be included.

**CHEM 5337. Optical Methods of Analysis**  
(CHEM 337) 3 credits. Lecture.

A discussion of fundamental principles, instrumentation and applications of some spectroscopic techniques of analytical chemistry including Raman spectroscopy, molecular fluorescence spectroscopy, atomic spectroscopy.

**CHEM 5338. Separation Methods**  
(CHEM 338) 3 credits. Lecture.

A study of the theoretical and practical basis for modern separation methods. Topics to be discussed include the various methods dealing with gas-liquid, liquid-liquid, liquid-solid, gas-solid, ion-exchange, size

exclusion, chromatography, electrophoresis, and mass spectrometry.

**CHEM 5340. Electronic Interpretation of Organic Chemistry**  
(CHEM 340) 1 credit. Lecture.

Approaches to writing organic reaction mechanisms.

**CHEM 5341. Advanced Organic Chemistry**  
(CHEM 341) 3 credits. Lecture.

This course will review the fundamentals of bonding, stereochemistry and conformations and basic reactions from undergraduate organic chemistry. These fundamental principles will then be elaborated to include more advanced concepts of reactions and reactivity.

**CHEM 5343. Organic Reactions**  
(CHEM 343) 4 credits. Lecture.

Nomenclature. Classes of compounds. A focus upon those reactions in which C-C bonds are formed. Emphasis on the fundamentals of each reaction, their utility and applications. A background of functional group exchanges; reaction control by steric, electronic, and topological considerations.

**CHEM 5344. Concepts in Organic Chemistry**  
(CHEM 344) 3 credits. Lecture. Prerequisite: CHEM 5343.

Structure and mechanism. Such topics as chemical bonding, stereochemistry, conformation, molecular orbital theory and applications, acids and bases, and study of organic reaction mechanisms, including kinetics, substitutions, rearrangements and photochemical reactions.

**CHEM 5345. Determination of Organic Structures**  
(CHEM 345) 3 credits. Lecture. Prerequisite: CHEM 5343.

Structural problem solving using fundamental data including spectroscopic and wet chemical techniques.

**CHEM 5347. Organic Synthesis**  
(CHEM 347) 3 credits. Lecture. Prerequisite: CHEM 5343 and CHEM 5344.

An investigation of efficient strategies for the synthesis of natural and unnatural organic molecules. Topics include: retrosynthetic analysis, synthetic strategies, common carbon-carbon bond formation reactions, multiple bond disconnection strategies (applications of pericyclic reactions), organometallic coupling reactions, radical and carbene reactions in organic synthesis, strategies to construct carbocyclic and heterocyclic ring systems.

**CHEM 5351. Quantum Chemistry I**  
(CHEM 351) 3 credits. Lecture.

The concepts of the quantum theory starting with an historical introduction and proceeding to the formulation of the Schroedinger equation and its exact solutions. Other topics include group theory, angular momentum, and approximate methods with applications to atomic and molecular structure and spectroscopy.

**CHEM 5352. Quantum Chemistry II**  
(CHEM 352) 3 credits. Lecture. Prerequisite: CHEM 5351.

Selected topics in quantum chemistry, building on the concepts developed in Chemistry 5351.

**CHEM 5353. Chemical Kinetics**  
(CHEM 353) 3 credits. Lecture.

The empirical and theoretical treatment of reaction rates. Experimental methods and treatment of data. Simple kinetic forms. Deduction of reaction mechanisms. Reaction energetics. Theories of elementary reaction rates. Diffusion. Homogeneous and heterogeneous catalysis. Extrakinetic probes of mechanism.

**CHEM 5360. Biological Chemistry I**  
(CHEM 360) 3 credits. Lecture.

Recent advances in understanding the mechanisms of chemical processes in biological systems. Chemical perspectives or problems of biological significance at the interfaces of the various divisions of chemistry.

**CHEM 5361. Biological Chemistry II**  
(CHEM 361) 1-3 credits. Lecture.

Selected topics in Biological Chemistry building on the concepts developed in Chemistry 5360.

**CHEM 5370. Environmental Chemistry I**  
(CHEM 370) 3 credits. Lecture.

Recent advances in studies of sources, reactions, transport, effects and fate of chemical species in air, water and soil environments. Emphasis on analytical methods for studying environmental phenomena and sampling methods.

**CHEM 5371. Environmental Chemistry II**  
(CHEM 371) 3 credits. Lecture. Prerequisite: CHEM 5370.

Environmental sampling and methods of chemical contaminant analyses, sources and types of chemical pollution, pollution prevention, waste management, waste reduction, recycling, and ultimate chemical destruction.

**CHEM 5380. Polymer Synthesis**  
(CHEM 380) 3 credits. Lecture.

Chemistry of the formation of high polymers, including kinetics, mechanisms, and stereochemistry of step growth and addition polymerization. Recent advances in polymer synthesis.

**CHEM 5381. Polymer Physical Chemistry**  
(CHEM 381) 3 credits. Lecture.

A molecular description of the fundamental physico-chemical aspects of polymer solutions and solids. Considers thermodynamics, chain statistics, dynamics, and structure of polymer molecules.

**CHEM 5382. Polymer Characterization I**  
(CHEM 382) 3 credits. Lecture/Practicum.

Experimental techniques for characterizing polymers on a molecular level, with emphasis on the provision of a working knowledge of instrumental analysis. Experiments include dilute solution viscosity,

vapor pressure osmometry, gel permeation chromatography, chemical and spectroscopic analysis.

**CHEM 5384. Polymer Characterization II**  
(CHEM 384) 3 credits. Lecture/Practicum.

Experimental techniques for characterizing polymers on a macroscopic scale, with emphasis on provision of a working knowledge of instrumental analysis. Experiments include calorimetry, mechanical analysis, surface characterization, and structure determination.

**CHEM 5385. Reactions of Polymers**  
(CHEM 385) 3 credits. Lecture

A comprehensive coverage of theories of reactions of high polymers, as applied to reaction mechanisms and the relationships of structure with physical properties and reactivity. Topics include modification of polymers, degradation of polymers, polymer reagents and polymer catalysis.

**CHEM 5388. Infrared Spectroscopy of Polymers**  
(CHEM 388) 3 credits. Lecture.

The nature of the interaction of IR radiation with molecules, modern spectrometer design, non-conventional sampling techniques, and applications to polymer-related problems.

**CHEM 5393. Special Topics in Physical Chemistry**  
(CHEM 393) 1-3 credits. Lecture.

**CHEM 5394. Special Topics in Polymer Chemistry**  
(CHEM 394) 1-3 credits. Lecture.

**CHEM 5395. Special Topics in Analytical Chemistry**  
(CHEM 395) 1-3 credits. Lecture.

**CHEM 5396. Special Topics in Inorganic Chemistry**  
(CHEM 396) 1-3 credits. Lecture.

**CHEM 5397 Special Topics in Organic Chemistry**  
(CHEM 397) 1-3 credits. Lecture. Prerequisite: CHEM 343.

**CHEM 5550. Advanced Physical Chemistry I**  
3 credits. Lecture. Instructor consent required. Not open to students who have passed any of CHEM 5351, 5352, 5353, 355, or 356.

Thermodynamics, quantum mechanics and reaction dynamics, including enthalpy, entropy, free energy, equilibrium, quantum behavior of electrons and molecules, atomic and molecular spectroscopy, and theories of reaction rates.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)  
(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research  
(GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research  
(GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral)  
(GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation  
(GRAD 499) Non-credit.

## CIVIL ENGINEERING

*Department Head:* Professor Michael Accorsi  
*Associate Department Head & Graduate Program*

*Director:* Professor Amvrosios C. Bagtzoglou

*Professors:* Epstein, Frantz, and Ivan

*Associate Professors:* Abboud, Anagnostou,  
Garrick, Liu, MacKay, and Malla

*Assistant Professors:* Basu, Bushey, Christenson,  
Chrysochoou, Gebremichael, Kim, Li, Lownes, and  
Zolka

The Department of Civil and Environmental Engineering offers graduate courses and research opportunities for students seeking the M.S. or Ph.D. Research areas include environmental, geotechnical, structural and transportation engineering. In addition, the Department participates in interdisciplinary programs in applied mechanics, environmental engineering and fluid dynamics.

**Special Requirements for the Master's Degree.** Master's degrees may be earned under either of two plans. Plan A requires not fewer than 21 credits of graduate program course work and the writing of a Thesis, while Plan B requires not fewer than 30 credits of graduate program course work and a final examination (but no thesis). For outstanding students who have completed six credits of approved graduate-level course work (5000's level or higher) as part of an undergraduate program (as electives and/or as professional requirements) prior to entry to the master's degree program (with grades of **B+** or higher in all such courses) the advisory committee may reduce the course work to 15 credits for Plan A and to 24 credits for Plan B.

**Special Requirements for the Ph.D. Program.** By the end of the first year of study, the Ph.D. student must have passed a qualifying examination and have submitted evidence of his or her capacity for independent study in the form of a master's thesis or a comparable achievement. In many cases the final examination of the student's M.S. program serves as the qualifying examination (See also "Applied Mechanics" and "Fluid Dynamics.")

**Special Facilities.** The Department has fully-equipped, state-of-the-art laboratories for graduate research in applied mechanics, environmental, geotechnical, structural and transportation engineering. In addition to the typical laboratories, special departmental facilities include a 40' x 65' fully-equipped structures testing strong floor, state-of-the-art computer lab for computer aided design (CAD) and geographical information systems (GIS) laboratory, specialized asphaltic and bituminous materials laboratories and controlled environment rooms for both environmental and geotechnical research laboratories. Equipment is also available for conducting experimental research in the field. Specialized laboratories of the Center for Environmental Sciences and Engineering (CESI) are also available for research in environmental engineering. Departmental research is funded by national and state agencies and by the private sector.

**Special Courses.** For additional mathematical analysis and fluid mechanics courses students should consider ME 307, 308, and 312.

## COURSES OF STUDY

**NOTE -- The following courses are part of the interdisciplinary Applied Mechanics program: CE 5122, 5124, 5126, 5128, 5160, 5164, 5166, 6810, and 6811.**

### CE 5010. Civil Engineering Graduate Seminar

(CE 312) 1 credit. Lecture. May be taken up to three times for credit.

Presentation and discussion of advanced civil engineering problems.

### CE 5020. Independent Graduate Study in Civil Engineering

(CE 300) 1-6 credits. Independent Study.

Special problems in civil engineering as arranged by the student with a supervisory instructor of his or her choice.

### CE 5030. Seminar in Transportation and Urban Engineering

(CE 310) 0 credits. Seminar.

Extended discussions on presentations contributed by staff, students and outside speakers. Required every semester for all full-time students in the Transportation and Urban Engineering Area of Concentration in the Civil Engineering Field of Study.

### CE 5090. Advanced Topics in Civil Engineering

(CE 320) 1-3 credits. Lecture.

Classroom or laboratory courses as announced for each semester. For independent, study see CE 5020.

### CE 5122. Advanced Mechanics of Materials

(CE 322) 3 credits. Lecture.

Stress and strain, combined stress, and theories of failure. Torsion of non-circular sections. Shear center, unsymmetrical bending, curved flexural members, and beams on elastic foundations. Energy methods.

### CE 5124. Applied Elasticity

(CE 324) 3 credits. Lecture.

Theory of elasticity; two-dimensional solutions of beams, wedges, disks, and rings under load; stress concentrations; strain-energy methods; torsion of bars; stresses in bodies of revolution.

### CE 5126. Plates and Shells

(CE 325) 3 credits. Lecture.

Stresses and deformations in flat plates and curved shells; bending of circular and rectangular plates; energy methods; buckling; shells of revolution.

### CE 5128. Elastic Stability

(CE 326) 3 credits. Lecture.

Buckling of elastic and inelastic columns; lateral buckling of beams; buckling of plates, rings and tubes; stability of frames.

### CE 5130. Numerical Methods in Civil Engineering

(CE 327) 3 credits. Lecture.

Solution of linear and nonlinear systems of equations and algebraic eigenvalue problems. Interpolation, numerical integration, and regression. Ordinary and partial differential equations by finite difference method. Computer programming.

### CE 5140. Classical Structural Analysis (CE 351) 3 credits. Lecture.

Classical indeterminate analysis, displacement analysis, consistent deformations, energy methods, elastic center and column analogy, slope-deflection, moment and shear distribution, second order effects.

### CE 5150. Structural Vibrations

(CE 359) 3 credits. Lecture.

Vibrating systems; application to design; discrete and continuous systems, free and forced vibrations; response to periodic and non-periodic loads; analytical and numerical techniques; earthquake loading; response spectra.

### CE 5151. Experimental Structural Dynamics

3 credits. Lecture.

Characteristics of random data; vibration test hardware; data acquisition and analysis; and experimental modal analysis and system identification. Laboratory experiments will be used to enhance understanding of taught concepts.

### CE 5160. Matrix Analysis of Structures (CE 360) 3 credits. Lecture.

Matrix methods; force and displacement methods; energy principles; analysis of indeterminate structures, rigid frames, trusses and grids; settlement of supports, lack of fit, and temperature stresses; computer programming.

### CE 5162. Applied Finite Element Analysis (CE 363) 3 credits. Lecture. This course and CE 5164 may not both be taken for credit.

Structural engineering applications using plane stress, plane strain, plate and solid finite elements. Applications using available programs.

### CE 5163. Fracture Mechanics

3 credits. Lecture.

This course focuses on fundamental concepts and applications of fracture mechanics. Topics include linear elastic fracture mechanics, elastic plastic fracture mechanics, computational fracture mechanics, fracture mechanics in metals and non-metals, fracture testing, dynamic and time-dependent fracture, fatigue crack growth, interfacial fracture, fracture in advanced materials, and engineering applications.

### CE 5164. Finite Element Methods in Applied Mechanics I

(CE 366) 3 credits. Lecture. Also offered as ME 5520. This course and CE 5162 may not both be taken for credit.

Formulation of finite elements methods for linear static analysis. Development of two and three dimensional continuum elements, axisymmetric

elements, plate and shell elements, and heat transfer elements. Evaluation of basic modeling principles including convergence and element distortion. Applications using commercial finite element programs.

**CE 5166. Finite Element Methods in Applied Mechanics II**

(CE 367) 3 credits. Lecture. Also offered as ME 5521.

Formulation of finite elements methods for modal and transient analysis. Development of implicit and explicit transient algorithms. Stability and accuracy analysis. Formulation of finite element methods for material and geometric nonlinearities. Development of nonlinear solution algorithms. Applications using commercial finite element code.

**CE 5210. Environmental Engineering Chemistry - I**

(CE 390) 3 credits. Lecture. Also offered as ENVE 5210.

Quantitative variables governing chemical behavior in environmental systems. Thermodynamics and kinetics of acid/base coordination, precipitation/dissolution, and redox reactions.

**CE 5211. Environmental Engineering Chemistry - II**

(CE 490) 3 credits. Lecture. Prerequisite: CE 5210 or ENVE 5210. Also offered as ENVE 5211.

Environmental organic chemistry: ideal and regular solution thermodynamics; linear free energy relations; estimation of vapor pressure, solubility, and partitioning behavior, abiotic organic compound transformations; chemical fate modeling.

**CE 5220. Transportation and Air Quality**

(CE 305) 3 credits. Lecture. Also offered as ENVE 5220.

Mobile source emissions models in theory and practice. Regulatory framework. Emissions control technology. Field and laboratory measurement techniques. Roadway dispersion modeling. Current topics in mobile source emissions.

**CE 5221. Transport and Transformation of Air Pollutants**

(CE 408) 3 credits. Lecture. Prerequisite: CE 5210 or ENVE 5210. Also offered as ENVE 5221.

Transport and deposition of gaseous and aerosol pollutants; chemical formation and reactions of oxidants and acidic compounds.

**CE 5240. Biodegradation and Bioremediation**

(CE 394) 3 credits. Lecture. Prerequisites: CE 5210 or ENVE 5210, and CE 5211 or ENVE 5211. Also offered as ENVE 5240.

Biochemical basis of the transformation of key organic and inorganic pollutants; quantitative description of kinetics and thermodynamics of pollutant transformation; impact of physicochemical and ecological factors on biotransformation.

**CE 5250. Environmental Physicochemical Processes**

(CE 387) 3 credits. Lecture. Also offered as ENVE 5251.

Reactor dynamics, applications of interfacial phenomena and surface chemistry, processes for separation and destruction of dissolved and particulate contaminants. Scholarly reviews.

**CE 5251. Environmental Biochemical Processes**

(CE 388) 3 credits. Lecture. Also offered as ENVE 5311.

Major biochemical reactions; stoichiometric and kinetic description; suspended and attached growth modeling; engineered biotreatment systems for contaminant removal from aqueous, gaseous, and solid streams; process design.

**CE 5252. Contaminant Source Remediation**

(CE 411) 3 credits. Lecture. Prerequisites: CE 5250 or ENVE 5251, and CE 5251 or ENVE 5311. Also offered as ENVE 5252.

Regulatory framework. Soil clean-up criteria. Treatment technologies: soil vapor extraction, solidification - stabilization, soil washing - chemical extraction, hydrolysis - dehalogenation, thermal processes, bioremediation. Risk analysis.

**CE 5253. Ground Water Assessment and Remediation**

(CE 410) 3 credits. Lecture. Also offered as ENVE 5250.

Quantitative evaluation of field data in assessing nature and extent of groundwater contamination. Subsurface control and remediation. Case studies.

**CE 5310. Environmental Transport Phenomena**

(CE 389) 3 credits. Lecture. Also offered as ENVE 5310.

Movement and fate of chemicals: interfacial processes and exchange rates in environmental matrices.

**CE 5320. Environmental Quantitative Methods**

(CE 432) 3 credits. Lecture. This course and NRME 5605 may not both be taken for credit.

Topics on natural resources and environmental data analysis: random variables and probability distributions, parameter estimation and Monte Carlo simulation, hypothesis testing, simple regression and curve fitting, wavelet analysis, factor analysis; formulation and classification of optimization problems with/without constraints, linear programming; models for time series; solution of ordinary differential equations with Laplace transforms and Euler integration; solution of partial differential equations with finite differences; basics of modeling.

**CE 5330. Probabilistic Methods in Engineering Systems**

(CE 304) 3 credits. Lecture. Also offered as ENVE 5330.

Common probabilistic models used in engineering and physical science design, prediction, and operation problems; derived distributions, multivariate stochastic models, and estimation of model parameters; analysis of data, model building and hypothesis testing; uncertainty analysis.

**CE 5340. Environmental Systems Modeling**

(CE 405) 3 credits. Lecture. Also offered as ENVE 5340.

Modeling pollutants in natural surface waters. Advective, dispersive, and advective-dispersive systems. Modeling water quality, toxic organic and heavy metals pollution.

**CE 5370. Environmental Monitoring**

(CE 314) 3 credits. Lecture. Also offered as ENVE 5370.

Introduction to complexities and challenges associated with acquisition of information on environmental processes and characteristics of natural systems. Hands-on experience with selection of measurement strategy and sensing technology; sampling network and protocol design; and deployment, acquisition and interpretation of measurements in natural systems.

**CE 5380. Bridge Structures**

(CE 352) 3 credits. Lecture.

Steel, reinforced concrete, prestressed concrete, and girder, box girder bridges; curved bridges; loadings; durability; fatigue; vibrations. Design project.

**CE 5381. Subsurface Contaminant Transport Modeling**

3 credits. Lecture. Also offered as ENVE 5381.

Fate and transport of contaminants in groundwater. Convection, dispersion, adsorption, and biological and radioactive decay. Field scale modeling. Galerkin finite elements. Application to field sites.

**CE 5394. Seminar in Environmental Sciences and Engineering**

(CE 400) 0 credits. Seminar. Also offered as ENVE 5094.

Extended discussions on presentations contributed by staff, students and outside speakers. A certificate of completion will be issued from the Environmental Engineering Program.

**CE 5541. Advanced Soil Mechanics**

(CE 341) 3 credits. Lecture. Introduction of soil as a multi-phase material, brief overview of origin and mineralogy of soil; stress and strain analysis in soil; soil compression and consolidation, soil shear strength; common laboratory and in situ tests pertaining to soil strength and stiffness; introduction to critical state soil mechanics; discussion and analysis of relevant case histories.

**CE 5543. Advanced Foundation Design**

(CE 343) 3 credits. Lecture.

Soil behavior in retaining systems, shallow foundations, deep foundations.

**CE 5544. Geosynthetics in Geotechnical Design**

(CE 344) 3 credits. Lecture.

The properties of geotextiles, geomembranes, geocomposites, and geogrids and their use in road construction, retaining structures, drainage, hazardous waste sites, etc. Design, testing and selection.

**CE 5545. Earth Structures**

(CE 345) 3 credits. Lecture.

Embankments, earth dams, earth and rock slopes, consolidation, vertical drains, soft deposits, landslides, subsurface investigations.

**CE 5546. Ground Water Flow and Drainage**

(CE 346) 3 credits. Lecture.

Permeability, flow nets, ground water flow and filter design, excavation dewatering, foundation drains, slope stabilization, highway drainage.

**CE 5547. Soil Behavior**

(CE 347) 3 credits. Lecture.

Clay mineralogy and interfacial properties, electro-osmosis, thixotropy, shear strength, consolidation, permeability, frost heave, and swelling.

**CE 5548. Soil Settlement and Consolidation**

(CE 348) 3 credits. Lecture.

Settlement predictions, theories of consolidation, secondary compression, numerical solutions, analysis of field data.

**CE 5549. Soil Shear Strength**

(CE 349) 3 credits. Lecture.

Failure theories for particulate media, plastic equilibrium, laboratory testing and interpretation.

**CE 5570. Bituminous Materials**

(CE 372) 3 credits. Lecture.

Properties, performance and design of bituminous materials for highway and airport paving; physical and chemical properties of binders; testing methods; specifications; production and construction.

**CE 5580. Pavement Design**

(CE 373) 3 credits. Lecture.

Analysis and design of flexible and rigid pavements; testing and characterization of paving materials.

**CE 5610. Advanced Reinforced Concrete Structures**

(CE 355) 3 credits. Lecture.

Behavior and design of reinforced concrete for flexure, shear, torsion, bond, and axial loads; two way slabs; beam-column joints; general flexure theory; seismic considerations; review of design specifications.

**CE 5620. Advanced Steel Structures**

(CE 353) 3 credits. Lecture.

Behavior, stability and design of steel columns, beams, beam-columns, plates, bracing, frames; torsional behavior; fatigue and brittle fracture; review of design specifications.

**CE 5630. Wood Design**

(CE 319) 3 credits. Lecture.

Physical and mechanical properties of wood. Behavior of wood beams, columns, beam columns, connectors and fasteners; introduction to plywood and glued-laminated members; analysis and design of structural diaphragms and shear walls.

**CE 5640. Prestressed Concrete Structures**

(CE 354) 3 credits. Lecture.

Analysis, design, and behavior of pretensioned and post-tensioned concrete; simple and continuous span structures; time dependent behavior; review of design specifications.

**CE 5710. Case Studies in Transportation Engineering**

(CE 302) 3 credits. Lecture. Not open to students who have passed CE 4710.

Analysis of transportation case studies in transportation design, and transportation and land use planning. Application of transportation engineering and planning skills. Oral and written group reports, group discussions, individual papers.

**CE 5720. Highway Engineering - Design**

(CE 371) 3 credits. Lecture.

Urban street and highway design: vertical and horizontal alignment, cross-section elements, traffic barriers, interchanges and intersections, pedestrian and bike facilities, traffic calming, community and roadside elements.

**CE 5730. Transportation Planning**

(CE 370) 3 credits. Lecture.

Transportation economics, urban transportation planning process, local area traffic management, evaluation of transportation improvements, land use and transportation interaction.

**CE 5740. Traffic Engineering Characteristics**

(CE 378) 3 credits. Lecture.

Relationships among traffic flow characteristics; microscopic and macroscopic representations of traffic flow; capacity of highways; traffic stream models; shock wave analysis; queueing analysis; traffic simulation.

**CE 5810. Hydrometeorology**

(CE 383) 3 credits. Lecture. Also offered as ENVE 5810.

Global dynamics of aquatic distribution and circulation. Hydrologic cycle, atmospheric circulation, precipitation, interception, storage, infiltration, overland flow, distributed hydrologic modeling, and stream routing.

**CE 5811. Hydroclimatology**

(CE 313) 3 credits. Lecture. Also offered as ENVE 5811.

This course focuses on the physical principles underlying the spatial and temporal variability of hydrological processes. Topics include atmospheric physics and dynamics controlling the water/energy budgets; global water cycle, its dynamics, and causes of variability/changes; occurrence of drought and flood; climate teleconnections and their hydrological application; hydrological impact of global changes; quantitative methods in hydroclimatic analysis.

**CE 5812. Ecohydrology**

3 credits. Lecture. Also offered as ENVE 5812.

This course focuses on the interactions between ecological processes and the water cycle, emphasizing the hydrological mechanisms underlying various terrestrial ecological patterns and the ecological properties controlling the hydrologic and climatic regimes. Topics include conceptual understanding of hydrological cycle over vegetated land, quantifying and modeling flux exchanges in the soil-vegetation-atmosphere continuum, case studies on the hydrological impact of land use land cover changes, ecosystem response to environmental changes, and vegetation-climate feedback at the regional and global scales.

**CE 5820. Unsaturated Flow and Transport**

(CE 315) 3 credits. Lecture. Also offered as ENVE 5820.

Modern approaches to water flow and solute transport in partially-saturated porous media including media characterization (review); unsaturated flow in porous media (governing equations, hydraulic functions, numerical and analytical solution methods); solute transport in unsaturated media (convection dispersion, transfer functions, solutions); modeling and observational scales; coupled water flow and solute transport (model applications); special topics (preferential flow, effects of spatial variability, stochastic aspects of flow and transport, gas exchange and transport measurement methods).

**CE 5821. Vadose Zone Hydrology**

(CE 316) 3 credits. Lecture. Also offered as ENVE 5821.

Theoretical and experimental elements of primary physical and hydrological properties of porous media and processes occurring in partially-saturated soils. Practical experience in measurement and interpretation of hydrological information and methods of analysis for vadose-zone related environmental problems.

**CE 5830. Groundwater Flow Modeling**

(CE 406) 3 credits. Lecture. Also offered as ENVE 5830.

Basics of modeling with Finite Difference and Finite Element Methods. Modeling flow in saturated and unsaturated zones. Model calibration and validation. Parameter estimation. Treatment of heterogeneity. Basic geostatistics. Modeling surface-groundwater interactions. Application to field sites.

**CE 5840. Open Channel Hydraulics**

(CE 338) 3 credits. Lecture. Also offered as ENVE 5840.

Unsteady, nonuniform flow; energy and momentum concepts; flow control; de St. Venant equations; unsteady flow modeling of channels and natural rivers.

**CE 5841. River Mechanics**

(CE 381) 3 credits. Lecture.

Erosion and sedimentation, physical properties of sediment, dimensional analysis, mechanics of sediment laden flows, particle motion, incipient motion, bedforms, bed load, suspended load.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**CE 6730. Travel Demand Forecasting**

(CE 380) 3 credits. Lecture.

Alternative formulations and calibration of trip generation, trip distribution and travel mode choice prediction models. Traffic network equilibrium and assignment.

**CE 6740. Traffic Engineering Operations**

(CE 379) 3 credits. Lecture.

Driver, pedestrian and vehicle operating characteristics. Traffic data collection. Accident and safety analysis. Highway capacity analysis. Traffic signs and markings. Traffic signal timing and operation. Traffic management.

**CE 6810. Advanced Fluid Mechanics I**

(CE 332) 3 credits. Lecture. Also offered as ENVE 6810.

Dimensional analysis; vector analysis, circulation and vorticity; irrotational motion and velocity potential; two-dimensional flow and stream function; complex variable theory; conformal mapping; airfoils; sources and sinks; free streamline flow; water waves; three-dimensional flow.

**CE 6811. Advanced Fluid Mechanics II**

(CE 334) 3 credits. Lecture. Also offered as ENVE 6811.

Turbulent boundary layer. Dimensional analysis. Free shear flows. Flows in pipes and channels. Boundary layers on smooth and rough surfaces.

**CE 6820. Hydraulic Machinery and Transients**

(CE 384) 3 credits. Lecture. Also offered as ENVE 6820.

Pumps and turbines. Surging, water hammer, cavitation, hydraulic machinery for hydroelectric plants, water supply, irrigation, and river navigation.

**CE 6821. Hydraulic Structures**

(CE 385) 3 credits. Lecture. Also offered as ENVE 6821.

River regulation and development. Hydroelectric plants, storage and turbines, canals, locks, and penstocks, dams, regulation of power, flood control, navigation and irrigation.

**CE 6830. The Flood Problem**

(CE 386) 3 credits. Lecture.

Flood hazards. Preventing or alleviating damages. Flood frequency analysis. Effect of land-use/land-cover and soil moisture on flooding. Remote sensing in flood prediction. Flood and dam-break modeling. Multiple purpose projects.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## CLINICAL AND TRANSLATIONAL RESEARCH

*Program Directors:* Associate Professor Anne Kenny and Professor Peter Snyder

*Professors:* Kranzler, Kuchel, Raisz, Snyder, and Tennen  
*Associate Professors:* Brewer, Kenny, LaSala, and Pendrys

*Assistant Professors:* Lalla, Tannenbaum, and Uribe

*Adjunct Professor:* Zucker

*Adjunct Associate Professor:* Hagstrom

*Adjunct Assistant Professor:* Orsey

The M.S. program in Clinical and Translational Research is designed to prepare health care professionals with the academic and research skills needed to be competitive for independent research. The program focuses on the preparation of individuals with established, terminal degrees in a health related field (M.D., Ph.D., Pharm.D., D.D.S. or D.M.D.) to conduct independent research in translation of information from the basic sciences to the community as researchers, teachers, public health administrators, clinicians, and industry employees competent to carry out the broad health mission of the State of Connecticut.

**The M.S. Program.** The Master of Science degree program in Clinical and Translational Research is administered in the Department of Medicine. The program stresses clinical research methods and research practicum. The program is offered to individuals with a health related terminal degree (M.D., D.M.D. or Ph.D.) to provide practical research training to be prepared for independent research. The Master Program is based on both course work and research experience, but no research thesis is required. Students will be required to sit for a final examination, which may entail the oral defense of a grant application and a manuscript.

Entering students should have a terminal degree (M.D., D.M.D. or Ph.D. in a health-related field) or be involved in an M.D., D.M.D. or Ph.D. program in a health-related field and in good standing. A complete description of the program with recommended preparation and instructions for applying may be obtained from Ms. Lisa Godin, General Clinical Research Center, University of Connecticut Health Center, Farmington, CT 06030-3805; (860) 679-4145; e-mail <godin@nso.uchc.edu>.

### COURSES OF STUDY

**CLTR 5357. Principles of Clinical and Translational Research I**

3 credits. Lecture.

This is the first core course in research methods, biostatistics and topics in clinical and translational research. In the methods section, the topics covered include Defining a Research Question, Cross-Sectional Studies, and Case-Control Studies. The Biostatistics



section covers Probability Distributions, Sample Size Calculations, Hypothesis Testing, Odds Ratios and Logistic Regression. The major other topic is ethical issues in research, including specifically those related to the conduct of research with human beings.

**CLTR 5358. Principles of Clinical and Translational Research II**

3 credits. Lecture.

This is the second core course in research methods, biostatistics and topics in clinical and translational research. The methods section covers Observational Perspective Studies, Randomized Controlled Trials, and Information Synthesis. The biostatistics section covers Analysis of Variance, Survival Analysis, Analysis of Randomized Controlled Trials, and Methods of Meta-Analysis. The major other topics are data management and other informatics.

**CLTR 5359. Principles of Clinical and Translational Research III**

(MEDS 359) 3 credits. Lecture.

This is the third core course in research methods, biostatistics and topics in clinical and translational research. The methods section includes Instrument Development, Cross Cultural Adaptation of Research Instruments, Genetic Epidemiology, Pharmacoepidemiology, Pharmacogenomics, and Secondary Data Analysis. The biostatistics section includes Handling Missing Data, Analysis of Genetic Epidemiologic Studies, Structural Equation Modeling, and Economic Analyses. The other topics include writing and presenting scientific information.

**CLTR 5407. Clinical and Translational Research Practicum**

1-12 credits. Practicum. Program director consent required. This course may be repeated for a maximum of 12 credits.

This course seeks to provide practical training in the formulation and conduct of clinical and translational research. Specific aspects that will be covered during the 9-12 total hours of the practicum will be: the identification of a specific research question and its specification as one or more aims, review of the relevant literature, and specification of the methods to be employed in the conduct of the study, including experience in recruitment and retention of subjects, an IRB application and HIPAA documents preparation. The student will initiate a research project and participate in data collection and analysis, culminating in a report of the findings. These activities will be monitored and mentored by a research advisor who is a member of the Graduate Faculty.

†GRAD 5930. Full-Time Directed Studies (Master's Level) (GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research (GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research (GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's) (GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation (GRAD 399) Non-credit.

## COMMUNICATION SCIENCES

*Department Head:* Professor Carl A. Coelho  
*Professors:* Atkin, Buck, Gilbert, Lin, Musiek, and Snyder  
*Associate Professors:* Cienkowski, D'Alessio, Grela, Hamilton, Jalbert, Nowak, Rios, Van Lear, and Wang  
*Assistant Professors:* Farrar, Gaztambide-Geigel, Spaulding, Tafoya, and Tufts

The field of communication sciences deals with the process and analysis of human communication. The Department of Communication Sciences has two major sections: Communication Disorders and Communication, each of which offer graduate degree programs. The Communication Disorders Section offers M.A., Au.D., and Ph.D. concentrations in Speech, Language, and Hearing. The Communication Section offers an M.A. concentration in Communication and a Ph.D. concentration in Communication Processes and Marketing Communication.



**Communication Disorders.** The mission of this section is to develop a theoretical perspective on human communication disorders and their clinical management. Two distinct areas of study are offered in this section which lead to either professional or research degrees:

**Audiology-** The Doctor of Audiology (Au.D.) is a professional degree which prepares students for clinical certification in Audiology.

**Speech-Language Pathology-** The M.A. in Speech-Language Pathology, is a professional degree which also prepares students for clinical certification.

Both of these degree programs are accredited by the American Speech, Language, Hearing Association's (ASHA) Council on Academic Accreditation (CAA).

Five areas of emphasis are offered for the Ph.D. degree: (1) speech pathology, (2) language, (3) audiology, (4) speech science, and (5) hearing science. The curriculum involves broad-based coursework and independent experimental investigations followed by dissertation research.

**Admission Requirements.** Requirements for admission to the professional degree programs (Au.D., M.A.) include completion of pre-professional background coursework (approximately 25 credits) as well as basic courses in math/statistics, physics, and biology or a Bachelor's Degree in Communication Disorders. Requirements for admission to the Ph.D. programs require a B.A./B.S. in a related field of study. Applicants for all programs must also submit scores from the Graduate Record Examination. The application deadline for the professional degree programs is February 1. The application form and instructions for applying are available at: <[www.grad.uconn.edu](http://www.grad.uconn.edu)>. For questions regarding

the Communication Disorders graduate programs call (860) 486-2628, or send an email to <comsci3@uconn.edu>.

**Communication.** The mission of this section is to study and teach about communication with areas of specialization that include interpersonal communication, persuasion, communication technology, nonverbal communication, and media effects. Our goal is to pursue theoretically grounded research and to disseminate knowledge by publishing our research and through teaching. Ample experimental and survey research facilities are available.

**M.A. in Communication.** Graduate work in the M.A. program emphasizes the empirical investigation of human communication. Students receive a basic foundation in communication theory and research methodology. Those pursuing the M.A. in communication prepare to carry out independent research in communication and to evaluate communication programs, either at institutions offering doctoral-level work in communication or in business or government. Areas of emphasis include: general communication theory; organizational communication; mass communication; interpersonal communication; marketing communication; and new communication technology (12-month course of study).

**Ph.D. in Communication Processes and Marketing Communication.** Graduate work in the Ph.D. program provides the student with strong theoretical and research skills to prepare for an academic career or professional research position. Areas of emphasis include: media effects, persuasion, emotional, intercultural, international, nonverbal, organizational, political, relational, and small group communication; public opinion, health communication campaigns, new communication technology, advertising, social marketing, and consumer research.

**Admission Requirements.** Applicants to both the M.A. and Ph.D. programs must present scores on the three parts of the general Graduate Record Examination. Applicants for the Ph.D. program must have an M.A. degree to be considered. The application form and instructions for applying are available at: <www.grad.uconn.edu>.

The application deadline for Communication is January 1. For questions regarding the Communication graduate programs, please visit our website: <www.coms.uconn.edu>, call (860) 486-2628, or send an e-mail message to <comsci3@uconn.edu>.

## COURSES OF STUDY

### Communication

**COMM 5001. Introduction to Graduate Communication Research** (COMM 301) 3 credits. Lecture.

An introduction to quantitative research methods and statistics. Issues of measurement and design of communication studies as well as basic descriptive and inferential statistics are covered.

**COMM 5002. Research Methods** (COMM 302) 3 credits. Lecture.

Integrative approach to modeling theory, research design, and statistical analysis, including mathematical models, scale construction, measurement issues, correlation, regression, and analysis of variance.

**COMM 5003. Advanced Communication Research Methods** (COMM 303) 3 credits. Lecture. Prerequisite: COMM 5002.

Research techniques and procedures for the study of communication. Research design, multivariate statistics, and structural modeling.

**COMM 5010. Theory Construction and Research Design** (COMM 305) 3 credits. Lecture. Prerequisite: COMM 5002.

Conceptualization, theory construction, and review of communication methodologies. Students will write a proposal for independent research, thesis, or dissertation.

**COMM 5100. Persuasion Theory and Research** (COMM 310) 3 credits. Lecture.

Evaluation of current and traditional theories of persuasion and attitude change from communication, social psychology, and related disciplines.

**COMM 5101. Motivation** (COMM 340) 3 credits. Lecture. Also offered as PSYC 5101.

Theories of motivation considered in relation to their supporting data.

**COMM 5120. Communication Campaigns** (COMM 315) 3 credits. Lecture.

Campaign theory and planning. Students learn how to conduct interviews and focus groups with members of a target audience, and work with non-profit organizations to design a campaign.

**COMM 5200. Interpersonal Communication** (COMM 320) 3 credits. Lecture.

Cognitive, emotional and behavioral interactions in specific contexts, including interpersonal relationships, groups, and work.

**COMM 5220. Group Communication Research** (COMM 325) 3 credits. Lecture.

The group communication process with emphasis upon research methodologies for the study of interactions in a group setting.

**COMM 5230. Organizational Communication: Theory and Research** (COMM 326) 3 credits. Lecture.

Relationship of prescribed and informal communi-

cation networks to organizational goal achievement and individual integration. Emphasis on frequently used research methodologies.

**COMM 5300. Mass Communication Theory** (COMM 330) 3 credits. Lecture.

Introduction to major theories, with emphasis on the structure, function, and effects of mass media.

**COMM 5310. Seminar in Mass Communication Research** (COMM 331) 3 credits. Seminar.

Recent theories of social and political effects of mass communication, and the cognitive processing of media messages.

**COMM 5500. Nonverbal Communication** (COMM 350) 3 credits. Lecture.

The study of metacommunication: Kinesics, space, time and other concomitants of verbal messages. How the non-verbal band helps in the interpretation of verbal messages.

**COMM 5501. Seminar in Nonverbal Communication and Persuasion** (COMM 351) 3 units. Lecture.

Role of media nonverbal communication in persuasion and media preferences. Affective and analytic communications in attitude formation, structure, and change.

**COMM 5650. Communication Technology and Society: Theory and Research** 3 credits. Seminar.

Theory and research associated with the study of emerging communication technologies. Provides a comprehensive foundation in the scholarly literature addressing the content, adoption, uses and effects of new media.

**COMM 5660. Computer Mediated Communication** (COMM 371) 3 credits. Lecture.

Communication networks, human-computer interaction and interface design, social and collaborative communication via computer.

**COMM 5670. Computer Modeling in Communication Research** (COMM 379) 3 credits. Lecture.

History, basic concepts, and minimal skills of computer simulation and mathematical modeling.

**COMM 5680. Seminar in Message Systems Analysis** (COMM 365) 3 credits. Lecture.

Selected topics in information and communication; analysis of message elements in human communication; discussion of message factors as related to behavioral effects.

**COMM 5770. Health Communication** 3 credits. Seminar.

Overview of health communication, including health behavior change interventions, emergency communication, risk assessment, media influences,

provider-patient communication, socialization and identity, stereotyping, social support, diverse populations, and new communication technologies.

**COMM 5892. Practicum in Research** (COMM 390) 1-6 credits. Practicum. May be repeated for credit.

**COMM 5895. Variable Topics in Communication**  
1-3 credits. Lecture. Instructor consent required. May be repeated for credit with a change in topic.

**COMM 5899. Independent Study in Communication Science** (COMM 300) 1-6 credits. Independent Study.

This course is an independent study course in which periodic conferences with the instructor are required.

**COMM 6001. Proseminar in Communication Research** (COMM 401) 3 credits. Seminar. Prerequisites: COMM 5002, COMM 5003, and COMM 5010.

Advanced topics in communication research presented by faculty and specialists. Topics include information theory, survey of sampling and data collection, time series analysis (time-domain and panel design), physiological measurement, interaction analysis, and meta analysis.

**COMM 6800. Seminar and Directed Research in Communication** (COMM 490) 1-6 credits. Seminar. Open to graduate students in the Marketing Communication Program. May be repeated to a maximum of 12 credits.

**COMM 6850. Seminar in Marketing Communication Research** (COMM 480) 3 credits. Seminar.

Theories of emotional and cognitive processing of communications; cognitive mapping and message construction; design, implementation and evaluation of information campaigns.

**COMM 6895. Topics in Applied Communication Research** (COMM 402) 3 credits. Seminar.

Investigation of special research techniques and findings in selected areas of applied communication research.

## Communication Disorders

**CDIS 5320. Directed Observation in Hearing** (CDIS 320) 1-3 credits. Lecture. May be repeated for credit.

Directed observation of diagnostic and rehabilitative procedures in audiology for pediatric and adult populations. Effects of etiology considered. Credits and hours by arrangement.

**CDIS 5321. Otologic Basis of Hearing Loss** (CDIS 321) 3 credits. Lecture.

Basic and advanced principles of medical audiology including anatomy and physiology of the system, disorders of the auditory system, genetics, radiology, and functional brain imaging.

**CDIS 5322. Electrophysiology Techniques and Interpretation I** (CDIS 322) 4 credits. Lecture/Laboratory.

Review of clinical applications of otoacoustic emissions, auditory brainstem response, electrocochleography, and auditory steady state potentials with emphasis on diagnostic issues.

**CDIS 5323. Geriatric Audiology** (CDIS 323) 3 credits. Lecture.

The physical effects of aging on the auditory periphery and central nervous system, as well as the consequences of aging on diagnostic and rehabilitative services to older clients.

**CDIS 5324. Psychosocial Issues of Hearing Loss** (CDIS 324) 3 credits. Lecture.

Contemporary counseling issues related to working with individuals with hearing disorders. Emphasis on family systems and the impact of a hearing disorder.

**CDIS 5325. Adult Aural Rehabilitation** (CDIS 325) 3 credits. Lecture. Prerequisite: CDIS 5356.

The provision of aural rehabilitation services to adults with hearing loss including auditory training, speechreading, auditory-visual integration, effective communication strategies, and Deaf culture.

**CDIS 5326. Professional Issues in Audiology** (CDIS 326) 3 credits. Lecture.

Issues related to ethics and practice in the field of audiology, multicultural sensitivity, legal rights and responsibilities.

**CDIS 5335. Fluency Disorders** (CDIS 335) 3 credits. Lecture.

Research data and theoretical models regarding the etiology and characteristics of fluency disorders (primarily stuttering) are integrated to form the foundation for clinical management. Treatment approaches for children and adults are presented.

**CDIS 5336. Clinical Practicum in Speech Disorders** (CDIS 336) 1-6 credits. Discussion/Practicum.

**CDIS 5337. Clinical Practicum in Hearing** (CDIS 337) 1 credits. Discussion/Practicum. May be repeated for credit.

**CDIS 5342. Aphasia** (CDIS 342) 3 credits. Lecture.

The differential diagnosis of acquired neurogenic communication disorders as well as research, theory, and efficacy of language interventions for aphasia in adults.

**CDIS 5343. Cognitive-Communicative Disorders** (CDIS 343) 3 credits. Lecture.

Cognitive-communicative disorders in adults secondary to right hemisphere damage, traumatic brain injury, and dementia. Emphasis on differential diagnosis and theories and research pertaining to clinical management including the efficacy of interventions.

**CDIS 5344. Pediatric Rehabilitative Audiology** (CDIS 344) 3 credits. Lecture.

Auditory-based components of managing hearing loss in children; the role of the family and cultural environment in service delivery.

**CDIS 5345. Motor Speech Disorders** (CDIS 345) 3 credits. Lecture.

The effects of acquired and developmental neuropathology on speech. Emphasis on differential diagnosis and clinical management.

**CDIS 5346. Dysphagia** (CDIS 346) 1-3 credits. Lecture.

Dysphagia secondary to neurologic impairments, cancer, and degenerative disease. Anatomy and physiology of normal and disordered swallowing, evaluation including instrumental assessment techniques, and multidisciplinary management.

**CDIS 5348. Language Disorders I: Birth to 5 Years** (CDIS 348) 3 credits. Lecture.

The nature, assessment, and intervention of delayed and disordered language in children birth to five years of age.

**CDIS 5349. Language Disorders II: School Age Population** (CDIS 349) 3 credits. Lecture.

The nature, assessment, and intervention of delayed and disordered language in school-age children.

**CDIS 5351. Amplification for Residual Hearing** (CDIS 351) 3 credits. Lecture.

Introduction to hearing aids and assessment of the personal amplification needs of hearing-impaired individuals.

**CDIS 5353. Articulation and Phonological Disorders** (CDIS 353) 3 credits. Lecture.

The nature, assessment, and intervention of anatomical, physiological, and language-based disorders affecting the production of speech.

**CDIS 5354. Physiological and Psychological Acoustics** (CDIS 354) 3 credits. Lecture.

Anatomy, physiology and psychoacoustics of the auditory system.

**CDIS 5355. Psychoacoustics**

3 credits. Lecture.

Basic principles of human perception of sound.

**CDIS 5356. Audiological Assessment**

(CDIS 356) 3 credits. Lecture.

The development and administration of advanced pure-tone and auditory discrimination tests; the interpretation of audiometric findings for adults and children.

**CDIS 5357. Organic Disorders of Communication**

(CDIS 357) 3 credits. Lecture.

Research and theory pertaining to speech and language disorders resulting from congenital structural anomalies.

**CDIS 5358. Diagnostic Principles in Speech Pathology**

(CDIS 358) 3 credits. Lecture/Laboratory.

**CDIS 5359. Voice Disorders**

(CDIS 359) 3 credits. Lecture.

Normal anatomy and physiology of voice production including the effects of: aging across the lifespan, gender, and multicultural issues. Voice disorders, diagnostic procedures and management techniques to remediate voice disorders will be discussed.

**CDIS 5360. Laboratory Instrumentation**

(CDIS 360) 3 credits. Lecture/Laboratory.

Presentation of basic concepts necessary for the application of electronic instrumentation to the study of speech and hearing. Description, analysis, and application of electronic and electro-acoustical instrumentation employed in communication science research.

**CDIS 5361. Advanced Speech Science I**

(CDIS 361) 3 credits. Lecture/Laboratory.

Generation, transmission, detection, and analysis of the speech signal. Special attention is given the myology of speech production and the physiological correlates of the acoustic output. Theoretical models of speech production are examined in light of recent empirical findings. Biomedical and other research techniques are employed in the laboratory setting to investigate the speech communication processes.

**CDIS 5362. Advanced Speech Science II**

(CDIS 362) 3 credits. Lecture/Laboratory.

Prerequisite: CDIS 5361.

A continuation of CDIS 5361.

**CDIS 5372. Central Auditory Disorders**

(CDIS 372) 3 credits. Seminar.

Assessment of auditory processing in adults and children. Effects of processing problems on communication and a discussion of management techniques. Electrophysiological measurement techniques are stressed.

**CDIS 5373. Pediatric Audiology**

(CDIS 373) 3 credits. Lecture.

Physiological and perceptual maturation of the auditory system from gestation through two years of age. Assessment of children's hearing, including difficult to test children, public school and neonatal screening.

**CDIS 5374. Clinical Project in Speech-Language Pathology**

(CDIS 374) 3 credits. Independent Study.

Written report and oral presentation on a client's clinical intervention. The clinical project must be successfully completed to graduate with an M.A. in speech-language pathology via the non-thesis track.

**CDIS 5375. Auditory System: Anatomy and Physiology**

3 credits. Lecture.

Review of the structure and function of the human auditory system, with emphasis on the clinical/applied aspects of anatomy and physiology. Oriented towards relationships to various auditory disorders.

**CDIS 5376. Language Impairments and Literacy**

3 credits. Seminar. Open to graduate students in Communication Disorders, others with permission. Recommended preparation: a course in normal language development and language disorders in preschool and school-age children.

A research seminar covering the theories, assessment, and treatment of children with reading disabilities from a language-based perspective.

**CDIS 5377. Introduction to Research**

3 credits. Lecture. Open to graduate students in Communication Disorders, others with permission.

Introduction to research, experimental design, and statistics. Includes ethics in research, publishing, grant writing, general research skills, and computerized statistics.

**CDIS 6300. Independent Study in Communication Disorders**

(CDIS 300) 1-6 credits. Independent Study. May be repeated for credit.

This course is an independent study course in which periodic conferences with the instructor are required.

**CDIS 6319. Practicum in Research**

(CDIS 319) 1-6 credits. Practicum. May be repeated for credit.

**CDIS 6363. Seminar in Speech Pathology**

(CDIS 363) 1-6 credits. Seminar. May be repeated for credit with a change in content.

**CDIS 6364. Seminar in Audiology**

(CDIS 364) 1-6 credits. Seminar. May be repeated for credit with a change in content.

**CDIS 6365. Seminar in Speech Science**

(CDIS 365) 1-6 credits. Seminar. May be repeated with a change in content.

**CDIS 6366. Seminar in Hearing Science**

(CDIS 366) 1-6 credits. Seminar. May be repeated for credit with a change in content.

**CDIS 6367. Topics in Hearing and Speech Science**

(CDIS 367) 1-3 credits. Lecture. May be repeated for credit with a change in content.

**CDIS 6368. Topics in Speech Pathology**

(CDIS 368) 1-3 credits. Lecture. May be repeated for credit with a change in content.

**CDIS 6369. Topics in Audiology**

(CDIS 369) 1-3 credits. Lecture. May be repeated for credit with a change in content.

**CDIS 6370. Seminar in Psycholinguistics**

(CDIS 370) 3 credits. Seminar. May be repeated for credit with a change in content.

Reports and discussion of current research on a selected topic each semester.

**CDIS 6401 Amplification of Residual Hearing II**

(CDIS 401) 3 credits. Lecture. Prerequisite: CDIS 5351.

Theoretical and clinical issues related to hearing aid candidacy and fitting with an emphasis on advanced signal processing strategies.

**CDIS 6402. Hearing Conservation / Industrial Audiology**

(CDIS 402) 3 credits. Lecture.

Effects of noise on the structure and function of the auditory system. Elements of noise measurements, otoprotection, and key issues in establishment and maintenance of a hearing conservation program.

**CDIS 6410. Vestibular System: Clinical Aspects**

(CDIS 410) 4 credits. Lecture/Laboratory. Open to graduate students in Audiology; others with permission. Instructor consent required.

Anatomy, physiology and functional assessment of the vestibular system including instrumentation, procedures, and interpretation of clinical tests. Hands-on laboratory exercises included.

**CDIS 6422. Electrophysiologic Techniques and Interpretation II**

(CDIS 422) 4 units. Lecture/Laboratory. Prerequisite: CDIS 5322.

Methods of acquiring, averaging and analyzing cortical evoked and event-related potentials following auditory input. Emphasis on utilization of multi-channel recording devices for research and clinical purposes. Four credits. Lecture. Three class periods and one 1-hour laboratory period.

## All Sections

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)  
(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research  
(GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research  
(GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral)  
(GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation  
(GRAD 499) Non-credit.

## COMPARATIVE LITERARY AND CULTURAL STUDIES

The Program in Comparative Literary and Cultural Studies offers work leading to the M.A. and Ph.D. degrees, encouraging intercultural and interdisciplinary approaches to the study of literature and culture. Students are prepared in such areas as literary theory, discourse analysis, the history and methods of literary and cultural criticism, and in the comparative study of literary texts in relation to other cultural productions. The program's curriculum reflects changing relations among the literatures and cultures of Europe, the Middle East, Africa, Asia, the Americas and other regions of the world.

The Master's degree student chooses one literature other than English for major emphasis and a second for minor emphasis; the Ph.D. candidate chooses in addition a third literature or related area of study such as music or philosophy.

**Admission to Degree Programs.** A prospective student should be able to do graduate study in at least two different fields when applying for admission to the master's program and in three fields when applying to the doctoral program. An undergraduate major in one of these fields is not required. In special cases students may be required to make up lacunae in their background by taking additional courses. Also, the student's committee may require changes in the student's program in view of his or her particular needs.

**The M.A. Program.** The M.A. ordinarily requires a minimum of 24 credits of course work beyond the baccalaureate, including a course in literary theory and methodology; a course in at least one non-Western literature and culture; and a course from at least two of the following periods—ancient, medieval/Renaissance, modern. The course work must include studies in at least two genres. Proficiency is required in three languages, one of them English. Students are responsible for two periods in one literature and for one period in another. Students must successfully complete the M.A. qualifying exams, or, with the approval of the committee, have the option to prepare a Masters' project, a 50-page comparative work on a topic not previously submitted for a course and applying a critical apparatus.

**The Ph.D. Program.** The Ph.D. ordinarily requires 24 credits beyond the satisfaction of the requirements for the master's degree listed above, drawn from courses in theory and criticism, studies in at least two courses in literature and cultures drawing on non-western traditions, work in more than one discipline (e.g., anthropology, architecture, history, film, and sociology); a course involving the period before 1700 A.D.; proficiency in three languages, one of them English, and a reading knowledge of an ancient language; Ph.D. qualifying exams, written and oral; a Ph.D. dissertation that reflects appropriate use of bibliographic materials in foreign languages, the application of a critical apparatus upon a genuinely comparative topic, successful teacher training and practice supervised by members of the committee in a workshop series.

All students are expected to develop proficiency in a national language and literature to increase their options when entering the professional job market.

**Language Requirements.** These may be satisfied either by scoring a B or above in a 200-level literature or culture course in the target language or by obtaining a respectable score on a proficiency examination. The reading exams require translations of materials chosen by the faculty, to be completed before the final semester of studies.

**Foreign Study.** The program offers the possibility of studying in a variety of foreign countries for graduate credit. Universities now open to our students are located in Canada, Europe, Latin America, North Africa and Sub-Saharan Africa.

Information about the program and admissions may be obtained by writing to the Chairperson of the Program (Associate Professor Lucy McNeece) and the Department Head (Associate Professor Norma Bouchard).

Advisors from the fields of study participating include:

*English* – Professors Benson, Higonnet, Hogan, R. Miller, Peterson; Associate Professors Coundouriotos and Phillips; and Assistant Professors Sánchez and Van Alst

*Classics* – Assistant Professors Travis and Johnson

*French* – Professors Berthelot and Célestin; Associate Professor McNeece

*German* – Assistant Professor Wogenstein

*Italian* – Professor Masciandaro; Associate Professor Bouchard; and Assistant Professor Balma

*Spanish* – Associate Professors Loss and Gomes and Assistant Professors Nanclares, Pardo, and Urios-Aparisi

### COURSES OF STUDY

#### CLCS 5301. Variable Topics

(CLCS 301) 3 credits. Lecture. May be repeated for up to nine credits with a change of topic.

Possible topics include literature and the other arts, the sociology of literature, literature and psychology, and themes.

#### CLCS 5302. Critical Theory

(CLCS 302) 3 credits. Seminar.

Modern literary theories and critical approaches, such as structuralism, semiotics, archetypal, or Marxist criticism.

#### CLCS 5303. Comparative Studies in the Novel

(CLCS 303) 3 credits. Lecture.

The novel as a modern literary form, its relation to society, its epistemological strategies; European and American texts, including detective fiction.

#### CLCS 5304. Studies in Literary History

(CLCS 304) 3 credits. Seminar.

Periods, movements, and literary relations involving several national literatures. Possible topics include the Baroque, the Enlightenment, Symbolism, and the Avant-Garde.

**CLCS 5305. Comparative Studies in Romanticism**

(CLCS 305) 3 credits. Lecture.

West European Romanticism, the Bildungsroman, the quest, stories of the fantastic, and the greater Romantic lyric. Includes works of Goethe, Coleridge, Poe, Hugo and Leopardi.

**CLCS 5306. Studies in Form and Genre**

(CLCS 306) 3 credits. Seminar.

Aspects of epic, drama, poetry, or narrative, such as the classical epic, the historical drama, the pastoral poem, or the picaresque novel.

**CLCS 5307. Literature and Science**

(CLCS 307) 3 credits. Lecture.

The impact of science on literary imagination and style.

**CLCS 5308. Marxist Literary Criticism**

(CLCS 308) 3 credits. Lecture.

Introduction and survey of Marxist texts from Marx and Engels to Gramsci, Lukacs, Frankfurt School theoreticians, and contemporary theorists, feminists, and third-world practitioners.

**CLCS 5310. Psychoanalysis and Literature**

(CLCS 310) 3 credits. Lecture.

Introduction to the literary and cultural application of psychoanalytic theory to the reading of literary texts; psychoanalytic interpretation from Freud to Lacan and feminist Lacanians.

**CLCS 5311. Introduction to Semiotics**

(CLCS 311) 3 credits. Lecture.

Historical development and fundamentals of semiotics. Classical and structural models. Varying emphasis on a particular theory and its development.

**CLCS 5312. Third-World Narratives**

(CLCS 312) 3 credits. Seminar.

The study of creative and critical writings from developing nations in Latin America, Africa, and Asia, including works of minorities in America.

**CLCS 5313. Theory and Practice of Translation**

(CLCS 313) 3 credits. Lecture.

**CLCS 5315. Third-World Cinema**

(CLCS 315) 3 credits. Seminar.

The cinema of developing countries studied as art and as cultural document; its relation to political and social realities and to film produced in the industrialized world.

**CLCS 5316. Literature and Linguistics**

(CLCS 316) 3 credits. Lecture.

Literary texts studied in the light of modern linguistic theory.

**CLCS 5317. Studies in Comparative Culture**

(CLCS 317) 3 credits. Seminar.

The intersection of ideas concerning urbanization and modernism through the medium of literature, architecture, fine arts, and film.

**CLCS 5318. Special Studies**

(CLCS 318) 1-6 credits. Practicum. May be repeated for up to nine credits with a change of topic.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## COMPUTER SCIENCE AND ENGINEERING

*Department Head:* Professor Reda Ammar  
*Professors:* Barker, Cooper, Demurjian, Peters, Rajasekaran, Shin, and Shvartsman  
*Associate Professors:* Cui, Gokhale, Greenshields, Huang, Mandoiu, McCartney, Michel, and Russell  
*Assistant Professors:* Kiavias, Kim, Shi, Wang, and Wu

Study leading to the Master of Science and Doctor of Philosophy degrees in Computer Science and Engineering is offered. This study can involve courses selected from the fields of computer science, engineering, mathematics, statistics and the natural sciences. Current research activities are in the areas of software engineering, reusability, databases, data mining, programming languages, artificial intelligence, decision support, robotics, security, cryptography, theory of computing, algorithms, distributed computing, quantum computing, computer networks, parallel computing, cluster computing, grid computing, performance modeling, queueing theory, bioinformatics, scientific computing, pattern recognition, image processing, computer graphics, computational geometry, and optimization.

**Admission to the M.S. Program.** Normally it is expected that an applicant has a B.S. in Computer Science, Computer Engineering or a closely related field. Students with a degree in another area, but with a strong background in mathematics through calculus, extensive experience with one or more computer languages, and course work involving digital network design, computer organization, and programming systems also will be considered for admission. Students with little or no previous experience in the computer area will not be considered until they have acquired an adequate background. The following courses or their equivalents normally are expected: (A) MATH 1131, 1132, 2110 (calculus), MATH 2410 (differential equations), MATH 2210 (linear algebra), STAT 3025 (statistical methods); (B) CSE 2100 (computing), CSE 2363 (digital systems organization), CSE 220 (microprocessor assembly language), CSE 4302 (computer organization), CSE 2102 (software engineering), CSE 3502 (automata); (C) CSE 3504 (probabilistic performance analysis), CSE 4100 (compilers), CSE 4500 (parallel systems), CSE 2500 (mathematics of discrete systems), CSE 4300 (operating systems), CSE 3500 (algorithms).

Outstanding students who are missing some of this background may be admitted before all of it is acquired but the first 2 calculus courses and all of (B) MUST be completed before acceptance. Students admitted to the program without an undergraduate degree in the computer area normally must take a number of undergraduate courses as background before starting their graduate studies. Some of these courses may be available during the summer session. These additional courses will lengthen the period of study necessary to earn the M.S. degree.

**Requirements of the Ph.D. Program.** Decision for acceptance to the Doctor of Philosophy program is made by the graduate admissions committee in consultation with an advisor selected (if feasible) by the applicant. Admitted students must also submit evidence of capacity for independent study in

the form of a master's thesis or comparable achievement.

**Special Facilities. Graduate Computing Facilities** – The Computer Science & Engineering Department maintains several computing labs for graduate training and research. These include labs consisting of Sun Workstations running Unix and Pentium platforms running a mixture of Linux, Solaris for Intel, and Windows operating systems. The facilities are managed by the department and used for various research projects. This is in addition to 10 specialized research labs located in the Information Technology Engineering building, maintained by individual faculty members supporting different projects in the department.

**Additional Research Facilities** – The Taylor L. Booth Engineering Center for Advanced Technologies maintains a modern set of networked laboratory facilities available to Computer Science and Engineering faculty and graduate students conducting research. Facilities available include several high performance supercomputing systems (an Altix 3700 BX2 with 64 nodes and an Altix 350 with 8 nodes) and a 24-node cluster. In addition, there are numerous computing workstations which are available for small-scale and prototype research projects using platforms that range from Solaris to Windows to Linux.

For specific information with regard to the Computer Science and Engineering Program, fellowships, assistantships, and part-time instructorships, students should write to:

Chair, Computer Science Graduate Admissions Committee

Department of Computer Science and Engineering, Unit 2155

Storrs, Connecticut 06269-2155

Information concerning assistantships in the University Computer Center should be addressed to the Executive Director.

## COURSES OF STUDY

### CSE 5095. Special Topics in Computer Science and Engineering

(CSE 300) 3 credits. Lecture.

Classroom courses in special topics as announced in advance for each semester.

### †CSE 5097. Seminar

(CSE 311) 1 credit. Seminar. This course may be repeated to a maximum of 3 credits.

Presentation and discussion of advanced computer science problems.

### CSE 5099. Independent Study in Computer Science and Engineering

(CSE 320) 1-6 credits. Independent Study.

Individual exploration of special topics as arranged by the student with an instructor.

### CSE 5101. Advanced Software Engineering

(CSE 327) 3 credits. Lecture. Recommended preparation: CSE 2102 and CSE 4100 and CSE 4300, or the equivalent.

An in-depth study of methodologies for the specification, design, implementation, verification, testing, and documentation of large complex software

systems. Special attention is given to the impact of programming language constructs on the quality of complex software.

### CSE 5102. Advanced Programming Languages

(CSE 334) 3 credits. Lecture. Recommended preparation: CSE 3502 and CSE 4102 or the equivalent.

This course covers the theory and pragmatics of modern programming languages. Topics include syntax, semantics, type systems and control mechanisms. Key contributions from Functional and Logic Programming including first-order functions, closures, continuations, non-determinism and unification are studied. Study of declarative and operational semantics of recent entries in the field like Constraint Programming and Aspect Oriented Programming.

### CSE 5103. Software Performance Engineering

(CSE 321) 3 credits. Lecture. Recommended preparation: CSE 3504 and CSE 4500 or the equivalent.

Study of performance engineering techniques for the development of software systems to meet performance objectives. Software performance principles, hierarchical performance modeling, and current research trends related to Software Performance Engineering. Methods for computer performance evaluation and analysis with emphasis on direct measurement and analytic modeling, including queuing networks, computation structure models, state charts, probabilistic languages, and Petri-nets. Case studies for the evaluation and analysis of software architecture and design alternatives.

### CSE 5105. Software Reliability Engineering

(CSE 322) 3 credits. Lecture. Recommended preparation: CSE 3504 and CSE 2102 or the equivalent.

State-of-the-art as well as emerging reliability assessment techniques. Topics covered will include reliability modeling paradigms, software reliability growth models, software metrics and reliability, software testing and reliability, and architecture-based reliability assessment. Hands-on experience in the application of these techniques.

### CSE 5107. Distributed Component Systems

(CSE 333) 3 credits. Lecture. Recommended preparation: CSE 4100 and CSE 4300 or the equivalent.

This course examines the methodologies, techniques, and tools that can be utilized to design, construct, and prototype a distributed application using a combined object- and component-based approach. Topics that are covered include object-oriented modeling, reusable components, software architectures, security, software agents, interoperation techniques, and deployment strategies. The role of emerging technologies in support of these topics will also be considered.

### CSE 5300. Advanced Computer Networks

(CSE 330) 3 credits. Lecture. Recommended preparation: CSE 3300 and CSE 3504 or the equivalent.

This course covers advanced fundamental principles of computer networks. Topics include network design and optimization, protocol design and implementation, network algorithms, advanced network architectures, network simulation, performance evaluation, and network measurement.

### CSE 5302. Computer Architecture

(CSE 340) 3 credits. Lecture. Recommended preparation: CSE 4302 or the equivalent.

This course provides an in-depth understanding of the inner workings of

This course provides an in-depth understanding of the inner workings of modern digital computer systems. Traditional topics on uniprocessor systems such as performance analysis, instruction set architecture, hardware/software pipelining, memory hierarchy design and input-output systems will be discussed. Modern features of parallel computer systems such as memory consistency models, cache coherence protocols, and latency reducing/hiding techniques will also be addressed. Some experimental and commercially available parallel systems will be presented as case studies.

### CSE 5304. High-Performance Parallel Computing

(CSE 332) 3 credits. Lecture. Recommended preparation: CSE 4302 and CSE 4500 or the equivalent.

Models of parallel computations, fundamental parallel algorithms and applications, scalable parallel/distributed programming paradigms on clusters and grids, performance measures and analysis of parallel computers, data flow/pipelined/multi-threaded/object-oriented processor design in parallel architectures.

### CSE 5306. Advanced Operating Systems

3 credits. Lecture. Recommended preparation: CSE 4300 or the equivalent.

Topics in modern operating systems with the focus on distributed computing, communication, and concurrency. Selected topics from current research in the theory, design, implementation, and verification of operating systems.

### CSE 5500. Advanced Sequential and Parallel Algorithms

3 credits. Lecture. Recommended preparation: CSE 4500 or the equivalent.

Computational complexity measures. Survey of major techniques used to design an efficient algorithm. These include divide and conquer, greedy, dynamic programming, and branch and bound techniques. Randomized algorithms. General characteristics of parallel computation models. General structure of parallel algorithms. Development techniques of efficient parallel algorithms.

### CSE 5502. Fundamentals of Automata

3 credits. Lecture.

A rigorous treatment of automata and formal language theory. Emphasis placed upon finite state automata, regular languages, context-free languages, push-down automata, and Turing machines.

**CSE 5504. Probabilistic Methods in Digital Systems**

3 credits. Lecture. Recommended preparation: CSE 3504 or the equivalent.

Probabilistic methods used to describe random processes and queuing theory and their application to such areas as computer performance, scheduling algorithms, error correcting codes, and stochastic machines.

**CSE 5514. Computational Geometry**

3 credits. Lecture. Recommended preparation: MATH 2110Q and MATH 2210Q or the equivalent.

Curve and surface definitions emphasizing the interplay between those mathematical properties and efficient graphical display. Topics may include Bezier curves and surfaces, nonuniform rational B-spline (NURBS) curves and surfaces, Coons patches, Gordon surfaces, superquadrics, shape preservation, continuity/smoothness, differentiability, twist estimation, the convex hull property, and the treatment of supporting algorithms. Experimental projects are required.

**CSE 5600. Computer Science and Engineering Research Laboratory**

(CSE 367) 3 credits. Lecture. May be repeated for credit with a change in content.

Experimental investigation of current research topics in computer science.

**CSE 5701. Advanced Database Topics**

(CSE 350) 3 credits. Lecture. Recommended preparation: CSE 4701 and CSE 4300 or the equivalent.

Data models/languages including entity-relationship, functional, semantic, and object oriented. Database components including the different building blocks of a database system, concurrency, control, recovery, security, access methods, query optimization, and views. Database architectures including database machines, text-database systems, distributed database systems, multimedia systems, and performance metrics and methodologies. Database applications including CAD/CAM and CASE.

**CSE 5703. Advanced Computer Graphics**

3 credits. Lecture.

Computer graphics as a tool for effective human-machine communications. Graphical input and output devices and their relation to human perception. Software systems for image generation, display and manipulation. Languages for description of both static and moving pictures. Solutions to visible-surface and related problems. Computer animation. Models and methodologies for the design of interactive systems for various graphics-oriented applications. Experimental projects are required.

**CSE 5705. Advanced Artificial Intelligence**

(CSE 382) 3 credits. Lecture.

Design and implementation of intelligent systems. Topics covered will include automated reasoning, natural language, learning, agents, probabilistic reasoning, and robotics. The course will include a substantial design project, and advanced independent study of at least one of the above topics. This course and CSE 282 may not both be taken for credit.

**CSE 5709. Image Processing**

(CSE 372) 3 credits. Lecture. Recommended preparation: MATH 2210 or the equivalent.

A formal approach to continuous variable and discrete variable imaging. Continuous and discrete transforms. Image enhancement. Image analysis including multidimensional edge-primitive theories, shape analysis. Multispectral imaging and applications. Image modelling. Syntactical analysis, aspects of image database theories. The course involves exposure to multispectral and extraterrestrial imagery. A substantial programming project is assigned.

**CSE 5711. Distributed Database Systems**

(CSE 331) 3 credits. Lecture. Prerequisite: CSE 5701. Recommended preparation: CSE 4701 and CSE 4300 or the equivalent.

Architecture of distributed database systems and their major design problems. Topics include efficient data distribution, distributed views, query processing and optimization, and distributed synchronization. Particular attention is paid to the issue of concurrency control and reliability for distributed transaction processing. Backend database processors and database servers for local area networks are also discussed.

**CSE 5713. Data Mining**

(CSE 352) 3 credits. Lecture.

An introduction to data mining algorithms and their analysis. Application of and experimentation with data mining algorithms on real-world problems and domains, with a dual focus on addressing the solution quality issue and the time efficiency issue.

**CSE 5715. Semantic Data Models**

3 credits. Lecture. Recommended preparation: CSE 3502 and CSE 4701.

Conceptual data models, semantic and object-oriented data base systems, formal representation methods for data and knowledge, models of active and passive information.

**CSE 5800. Bioinformatics**

(CSE 377) 3 credits. Lecture.

Advanced mathematical models and computational techniques in bioinformatics. Topics covered include genome mapping and sequencing, sequence alignment, database search, gene prediction, genome rearrangements, phylogenetic trees, and computational proteomics.

**CSE 5850. Information and Data Security**

(CSE 353) 3 credits. Lecture. Recommended preparation: CSE 4701 and CSE 4300 or the equivalent.

Introduction to computer security and the design of secure systems. Security and threat modeling. Entity authentication and privacy, data integrity and confidentiality. Cryptographic tools: symmetric and asymmetric encryption, digital signatures, message authentication codes, hash functions. Security at the operating system level, access control, security enforcement, memory protection. Network security, firewalls, internet worms and viruses, intrusion detection. Digital rights management, software security, program obfuscation, implementation flaws, buffer overflow attacks. Case studies in topical areas.

**CSE 5852. Modern Cryptography: Foundations**

3 credits. Lecture. Recommended preparation: CSE 3500, CSE 3502, and CSE 3504, or the equivalent.

This course covers the foundations of modern cryptography introducing basic topics such as computational hardness, one-way functions, computational indistinguishability, trapdoor permutations and interactive proof systems. The course will cover fundamental cryptographic constructions such as hard-core predicates, security amplification, and pseudorandom generators; these are applied to develop generic, secure public-key encryption schemes and zero-knowledge proof systems.

**CSE 5854. Modern Cryptography: Primitives and Protocols**

3 credits. Lecture. Recommended Preparation: CSE 3500, CSE 3502, and CSE 3504, or the equivalent.

This course covers modern cryptography emphasizing provable security and concrete constructions based on the hardness of specific computational problems. The cryptographic primitives that will be covered include various public and private key encryption schemes, hash functions and digital signature algorithms. The protocols include identification and key-exchange schemes, distributed key generation, e-cash, blind signatures and electronic voting systems.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**CSE 6300. Research Topics in Computer Networks**

(CSE 430) 3 credits. Lecture. Prerequisite: CSE 5300.

Current research issues in the Internet, wireless and mobile networks, as well as emerging concepts such as sensor networks. Overview of the fundamental design principles underlying these networks. Discussion and exploration of the advanced research topics in these and other areas.

**CSE 6504. Linear Algebraic Queueing Theory**

(CSE 426) 3 credits. Lecture.

Brief survey of Markov Chains, and their application to simple queues, with some emphasis on their transient behavior. Matrix operators are then introduced to represent the behavior of non-exponential servers. This algebraic structure is applied to the steady-state and non steady-state behavior of both open and closed M/G/1 queues. Then G/M/1 queues are examined in detail. As time



permits additional advanced topics will be covered. Applications to computer and telecommunications system performance modeling will be studied.

### **CSE 6510. Fault-Tolerant Parallel Computing**

(CSE 461) 3 credits. Lecture. Prerequisite: CSE 5304.

Advanced topics in fault-tolerant parallel algorithms. Shared memory and message-passing models of computation. Models of failure. Formal treatment of complexity measures, such as time, space, communication, work, and speedup. Lower bounds for parallel fault-tolerant computation. Design and analysis of efficient fault-tolerant algorithms. Combining efficiency and fault-tolerance in parallel and distributed algorithms.

### **CSE 6512. Randomization in Computing**

(CSE 462) 3 credits. Lecture. Consent of the instructor.

Introduction to the theory and practice of randomization and randomized algorithms as a technique for science and engineering problem solving. Topics to be covered include: probability theory, types of randomization, sorting and selection, hashing and skip list, finger-printing, packet routing, geometry and linear programming, graph algorithms, combinatorial optimization, and external memory algorithms.

### **CSE 6514. Computational Topology**

(CSE 455) 3 credits. Lecture. Prerequisite: MATH 5310.

Topology has traditionally generalized concepts of real analysis to metric spaces and set axioms. The new field of computational topology has great potential for encompassing abstractions to unify domain-specific techniques now used in computational geometry, geometric modeling, visualization, image processing, engineering analyses and molecular simulation. The course will include perspectives from traditional topology and show how these need to be modified for realistic use in modern computing environments. Topics and emphases will vary.

### **CSE 6705. Natural Language Processing**

(CSE 483) 3 credits. Lecture. Prerequisite: CSE 5705.

An artificial-intelligence approach to computational linguistics. Representation of meaning and knowledge in computer-usable form. Understanding and generation of natural-language sentences and text. Theories of inference and application of world knowledge. Organization of large knowledge-based text-processing systems for applications in summary and paraphrase, question-answering, machine translation, conversation and computer-aided instruction. "Real" text-processing systems are demonstrated, and a term project is required.

### **CSE 6800. Computational Genomics**

(CSE 478) 3 credits. Lecture. Prerequisite: CSE 5800 or BME 5800 or consent of the instructor. Cross listed as BME 6160.

Advanced computational methods for genomic data analysis. Topics covered include motif finding, gene expression analysis, regulatory network inference, comparative genomics, genomic sequence variation and linkage analysis.

### **†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

### **†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

### **†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

### **GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

### **GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## **DENTAL SCIENCE**

*Program Director:* Professor Arthur Hand

*Professors:* Agar, Beazoglou, Cone, E. Eisenberg, Frank, Freilich, Goldberg, Gronowicz, Hand, Kreuzer, Lurie, MacNeil, Meiers, Mina, Nanda, Nichols, Pilbeam, Reisine, Rossomando, Safavi, J. Tanzer, Taylor, and Upholt

*Associate Professors:* D'Ambrosio, Dealy, Dean, Dongari-Bagtzoglou, Duncan, Kazemi, Kuhlberg, Pendrys, Wagner, and Zhu

*Assistant Professors:* Chun-Hsi, Diaz, Ioannidou, Jenkins, Jiang, Kalajzik, Kaufman, Kuhn, Mallya, Reichenberger, Rogina, Rungrunganunt, Schincaglia, Thibodeau, Uribe, and Wadhwa

### **Master of Dental Science Degree Program.**

Students in residency and specialty training in the School of Dental Medicine may also pursue a Master of Dental Science degree in the Graduate School. This program offers an opportunity for study and research in dental science, the basic life sciences, and the allied health fields and leads to the degree of Master of Dental Science. It is designed to fill the gap between the Ph.D. program in Biomedical Science and the various residency and specialty training programs provided by the School of Dental Medicine. A major objective of the Master of Dental Science program is to provide instruction in dental science that will enhance the student's ability to instruct and undertake research in dental schools. Courses of study are flexible with major emphasis on the accomplishment of research. Possibilities for interdisciplinary research are enhanced by cooperative activities with several university departments. Students may combine their work in this program with advanced training in Endodontics, Oral and Maxillofacial Radiology, Oral Medicine, Orthodontics, Pediatric Dentistry, Periodontics, and Prosthodontics. Further information and an application may be obtained from the School of Dental Medicine, Office of Admissions, Room AG030, University of Connecticut Health Center, Farmington, Connecticut 06030-3905.

### **M.P.H. and M.S. in Clinical and Translational Research Degree Programs.**

As an alternative to the Master of Dental Science degree, students in residency and specialty training in the School of Dental Medicine may pursue either the Master of Public Health degree or the Master of Science degree in Clinical and Translational Research in the Graduate School. For further information, see the descriptions of these programs in the this catalog.

### **Dual D.M.D./Ph.D. in Biomedical Science Degree Program.**

*Program Director:* Professor A. Lurie. This program leads to the awarding of dual D.M.D. and Ph.D. degrees. It is designed for a small number of outstanding students who have clearly defined career goals of research and teaching in the general area of the biological and biomedical sciences and who have the motivation and ability to pursue a rigorous training program in this area. The program provides basic science and research training as well as the standard dental curriculum and is designed to produce individuals who are likely to make important contributions to the solution of problems of significance to the health sciences. The overall program is administered by the Graduate Programs Committee of the Health Center. The student applies as a dual-degree applicant to the Dual D.M.D./Ph.D.

Committee of the Office of Admissions of the School of Dental Medicine. The Dual D.M.D./Ph.D. Committee operating in conjunction with the admission committee of the School of Dental Medicine reviews the application and admits the student. The student normally completes both programs, including the dissertation in a period of approximately seven academic years, including summers.

**Ph.D. in Biomedical Science Degree Program.** This is a rigorous academic program designed for students who have chosen career paths in research and teaching. The degree may be pursued independently or in conjunction with residency/specialty training in the School of Dental Medicine. For further information, see Biomedical Sciences.

**Ph.D. Degree Program in Materials Science: Dental Materials.** Students with research interests in the field of dental materials may pursue a Ph.D. degree in Materials Science. Similar to other special interdisciplinary programs in Materials Science, students study the broad areas of thermodynamics, kinetics, analysis and structure/property relations. The program also provides overviews of the structure of dental and oral tissues; the epidemiology, etiology and manifestations of dental diseases; and the treatment of dental diseases. These overviews are obtained in the formal course work at the Health Center. A primary objective of the program is to help the student develop an understanding of the manner in which the prevention and clinical treatment of dental disease is integrated with the limitations of the materials employed. The dissertation may involve study of any materials-related problem, but normally addresses a particular dental material or material-oral tissue interaction. Applicants would typically have backgrounds in materials science, metallurgy, polymer science or a related field and specific career goals in dentistry. For further information, see Materials Science.

## COURSES OF STUDY

**DENT 5414. Introduction to Biomaterials and Tissue Engineering**  
(DENT 414) 3 credits. Lecture.

A broad introduction to the field of biomaterials and tissue engineering. Presents basic principles of biological, medical, and material science as applied to implantable medical devices, drug delivery systems and artificial organs.

**DENT 5430. Advanced Oral Histology**  
(DENT 430) 2 credits. Lecture.

Oral tissues, their embryological origin, histology and function. Structure of developing teeth, alveolar bone, temporo-mandibular joint, oral mucosa, gingiva and salivary glands. Lecture, slide review, and student-led discussions of papers from the research literature.

**DENT 5431. Advanced Oral Pathology and Diagnosis**  
(DENT 431) 2 credits. Seminar.

Seminars on current developments in oral disease processes, with an emphasis on the clinical. Student presentations and lectures covering principles of Oral Diagnosis.

**DENT 5432. Biomaterials for Dental Graduates**

(DENT 432) 2 credits. Lecture.

Literature review/seminar covering various subjects of current interest in dental materials. Some prior knowledge of dental materials or of materials science is assumed.

**DENT 5434. Functional Oral Anatomy**  
(DENT 434) 2 credits. Lecture.

Anatomic structures and relationships of the head and neck emphasizing surgical anatomy for oral, periodontal and endodontic surgery. Lectures and dissections.

**DENT 5435. General Pathology**  
(DENT 435) 2 credits. Lecture

**DENT 5437. Principles of Oral Microbiology and Infections**  
(DENT 437) 2 credits. Lecture.

Oral flora with emphasis on recent research developments. Ecology of the oral cavity, dental caries and periodontal disease, viral and yeast infections. Prior knowledge of microbiology and biochemistry assumed. Lectures and discussions, term paper required

**DENT 5438. Craniofacial Growth and Development**  
(DENT 438) 2 credits. Lecture.

Part of a core series in the postgraduate program of orthodontics. Provides systematic coverage of basics in growth and development of the human face. Review and critique of selected articles from the research literature of the following areas: Physiology of facial growth, theories in growth mechanisms, pre- and postnatal growth of the face, normal and abnormal courses of the facial growth.

**DENT 5439. Research Methods in Epidemiology and Behavioral Sciences**  
(DENT 439) 1 credit. Lecture. Prerequisite: DENT 5456 or equivalent.

This course is intended to provide students with an applied understanding of behavioral science research methods, building off of concepts introduced in Biostatistics D456. Featured topics include: theoretical and methodological issues in research design; data collection strategies, focusing on survey measurement and the design and evaluation of survey questions; population sampling; data entry and variable construction; strategies for analyzing quantitative data, focusing in particular on regression analysis with dichotomous outcomes; and issues in analyzing longitudinal data.

**DENT 5440. Biodontics: Integrating Biotechnology with Clinical Dentistry**  
(DENT 440) 3 credits. Lecture.

The goal of the Biodontics educational program is to explore the process of introduction of biotechnology based innovations into clinical dentistry. The course will focus on a variety of innovations, including those considered "disruptive", and explore the laboratory

and clinical studies underlying their translation from the bench to chairside. The course will also consider the process of "diffusion" of innovations into dental practice and examine the barriers to acceptance by dental office personnel. Students, working in teams, will be required to present a business plan for the development and marketing of a new dental product.

**DENT 5441. Biomechanics in Dental Science**

(DENT 441) 4 credits. Lecture.

Physics and engineering principles applied to clinical and research problems in dentistry. Principles of statics and mechanics of materials. Engineering analysis of orthodontic appliances. Lectures, seminars, and demonstrations.

**DENT 5442. Biomechanics in Dental Science**

(DENT 442) 1 credit. Lecture. Prerequisite: DENT 5441.

History and critical review of orthodontic appliance systems. The relationship between treatment planning and therapy is explored. Detailed biomechanical analysis of appliance therapy. Lectures, seminars and demonstrations.

**DENT 5443. Biology of Tooth Movement**  
(DENT 443) 1 credit. Lecture. Prerequisite: DENT 5441.

Hard and soft tissue responses to tooth movement caused by orthodontic appliances; theory of related bone resorption and apposition from a morphological and biochemical standpoint. Seminars.

**DENT 5444. Epidemiology of Oral Diseases: Interpreting the Literature**  
(DENT 444) 2 credits. Seminar. Open to dental residents in the M.Dent.Sc. program.

The goal of this course is to provide the student with a basic understanding of epidemiologic principles to enable the critical review of the literature and to provide a methodological framework with which to better understand basic statistics. An overview of the specific epidemiology of oral diseases will be provided.

**DENT 5448. Periodontal Pathobiology I**  
(DENT 448) 3 credits. Lecture.

The first of a two-part course spanning the full year covering the structure and function of the periodontal tissues and the pathogenesis of diseases affecting these tissues. Special emphasis is placed on the role of oral bacteria and the host response to these bacteria in the initiation and progression of inflammatory periodontal disease. Lectures and seminars.

**DENT 5449. Periodontal Pathobiology II**  
(DENT 449) 3 credits. Lecture.

The second of a two-part course spanning the full year covering the epidemiology, natural history, diagnosis, prevention, treatment planning, and treatment of periodontal diseases.

**DENT 5452. Oral Maxillofacial Diagnostic Imaging and Interpretation**

(DENT 452) 4 credits. Lecture.

Seminar course examining interpretation of images produced by various techniques used in diagnosis of diseases involving the oral maxillofacial complex.

**DENT 5455. Scientific Writing**

(DENT 455) 2 credits. Lecture.

This course consists of three parts. The first reviews syntax and the elements of clear written expression. The second deals with the forms and functions of manuscripts, review articles, grant applications, and dissertations. The final component addresses rewriting, abstracting, and editing to improve clarity and conciseness.

**DENT 5456. Biostatistics**

(DENT 456) 2 credits. Lecture.

This course is intended to provide an introduction to biostatistics and overview of key concepts. The student is introduced to concepts of data measurement and summarization, probability, populations & samples, drawing inferences, and specific statistical analyses for testing differences in means and proportions, correlation, regression, multivariate analysis, and survival analysis. Special attention is placed upon understanding how to evaluate the appropriateness of and best interpret specific statistical tests and measures. An introduction to study design and the critical review of the literature is provided with emphasis on interpretation of presented statistics.

**DENT 5495. Independent Study**

(DENT 495) 1-6 credits. Independent Study.

A reading course for those wishing to pursue special topics in dental science under faculty supervision.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits. †GRAD 5950. **Master's Thesis Research**  
(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**DENT 6461 - Clinical Radiation Sciences: Physics and Biology I**

2 credits. Lecture/Seminar. Instructor consent required.

A continuous pair of semester lecture/seminar courses which examines the physical and biological principles underlying the uses of radiation and allied radiation sciences in clinical diagnosis and therapy. Characteristics of imaging systems, Nuclear

Medicine, Radiation Therapy, biological effects of ionizing radiation, radiation measurement and dosimetry and quality assurance will be covered through critical readings in texts and the literature.

**DENT 6462 - Clinical Radiation Sciences: Physics and Biology II**

2 credits. Lecture/Seminar. Prerequisite: DENT 6461. Instructor consent required.

A continuous pair of semester lecture/seminar courses which examines the physical and biological principles underlying the uses of radiation and allied radiation sciences in clinical diagnosis and therapy. Characteristics of imaging systems, Nuclear Medicine, Radiation Therapy, biological effects of ionizing radiation, radiation measurement and dosimetry and quality assurance will be covered through critical readings in texts and the literature.

## DRAMATIC ARTS

*Department Head:* Professor Gary English  
*Professors:* Crow, Hunter, McDonald, Molette, Sabatine, Roccoberton, Rose, Ryker, Saternow, and Stern  
*Associate Professors:* McDermott and Nardi

The Department of Dramatic Arts offers two graduate degree programs: the Master of Arts and the Master of Fine Arts.

**The Master of Arts** degree generally is considered a preparatory program for an advanced degree at a level between baccalaureate study and a terminal degree in Dramatic Arts. Our department offers the Master of Arts degree in Production, an applied study program with two areas of emphasis: Puppetry and Costuming.

Pursuit of the MA in production (with either the Puppetry or the Costuming emphasis) requires fulfillment of the admission requirements of the Graduate School and three letters of recommendation. All applicants for the MA (which requires a minimum of 30 credits) should consult the Department concerning program availability, personal interview with the program director, and portfolio review. Further information may be obtained by contacting the Department of Dramatic Arts.

**The Master of Fine Arts** degree generally is considered a terminal degree for students preparing for professional careers in commercial, regional, and educational theatre. Areas of concentration include: Acting, Design (Lighting, Costume and Scenery), Puppetry, and Technical Direction. Admission to this program requires fulfillment of the admission requirements of the Graduate School. Three letters of recommendation are required. Practical experience may be accepted in lieu of some course work. A personal interview on campus is required for residents of New England, New York and New Jersey. An audition is required for Acting applicants, and a portfolio is required for Design and Puppetry. Interview, audition and portfolio requirements can be fulfilled by applicants to the University Resident Theatre Association (U/RTA) finals in New York City, Evanston, Illinois, and Irvine, California. The Department admits a new class of MFA students in Acting once every three years. Prospective applicants for the MFA in Acting must consult the Department concerning program availability prior to applying. The Master of Fine Arts is a three year process-oriented program requiring a minimum of 60 graduate credits. A final project to be determined by student and advisors is required in all areas. A production record-book is required in all areas. Further information may be obtained by contacting the Department of Dramatic Arts.

**Curricular Opportunities and Special Facilities.** Through practicums and independent studies, students in the Department may expand the area of training beyond that indicated by the list of course offerings. Supplemental course work may be taken in humanistic and scientific disciplines appropriate to the concentration. The production program of the Department affords ample opportunity for students to supplement their work with practical experience in the many productions offered the public throughout the year. Opportunities for students in particular programs to act, direct,

design and technically produce are available in various facilities. Opportunities also are offered for original creative work.

The Department has at its disposal three well-equipped theatres. The Harriet S. Jorgensen and the Nafe Katter Theatres, seating 493 and 237 respectively, house the Main Stage Series productions. Both are air-conditioned. The Studio Works Series is presented in the Studio/Mobius Theatre, a 116 seat space, that also provides additional opportunities for theatrical experimentation. In addition, there are facilities for film and television production work.

**COURSES OF STUDY**

**DRAM 5001. Advanced Voice and Diction**  
(DRAM 320) 3 credits. Lecture.

An intensive program of vocal training on the graduate level. Recommended only for students with a concentration in acting.

**DRAM 5130. Introduction to Graduate Studies in Stage Design**  
(DRAM 330) 1-3 credits. Laboratory.

Projects in scenery, lighting and costume design for first-year graduate students in stage design and puppetry. Reading and discussion of various 20th century works on design theory for the theatre.

**DRAM 5131. Studies in Theatre History**  
(DRAM 393) 1-3 credits. Lecture.

†**DRAM 5159 Practicum in Dramatic Arts**  
(DRAM 359) 1-3 credits. Practicum.

Special projects in dramatic arts.

**DRAM 5134. Design Drawing**  
(DRAM 331) 1-3 credits. Laboratory.

Studio course in figure drawing and perspective drawing as foundation for students in theatre costume, scenic, and lighting design and puppetry arts.

**DRAM 5189. Field Studies Internship in Design/Technical Theatre**  
(DRAM 389) 1-6 credits. Independent Study.

Supervised practical experience in professional/regional theatres or academic institutions.

**DRAM 5190. Internship in Dramatic Arts**  
(DRAM 390) 0 credits. Practicum. Open only to Dramatic Arts graduate students holding a dramatic arts graduate assistantship.

Internships in acting, costuming, lighting, management, media, puppetry, pedagogy and technical theatre.

**DRAM 5192. Independent Study**  
(DRAM 392) 1-6 credits. Independent Study.

**DRAM 5196. M.F.A. Project**  
(DRAM 396) 1-6 credits. Independent Study. Open only to M.F.A. candidates. Students may enroll up to four times for a total not to exceed 12 credits.

*In design/technical theatre* - the design of sets, costumes and/or lights or technical direction for a production in the Department of Dramatic Arts. This project may consist of a portfolio presentation instead of an actual production.

*In puppetry* - the design and direction of a puppetry production in the Department of Dramatic Arts.

*In acting* - the preparation and performance of a substantial and challenging role from dramatic literature.

*In directing* - the direction of a production in the Department of Dramatic Arts.

**DRAM 5197. Investigation of Special Topics**

(DRAM 397) 1-6 credits. Independent Study.

A reading course under the direction of an appropriate staff member.

**DRAM 5200. Studies in Technical Production**

(DRAM 311) 1-3 credits. Lecture.

**DRAM 5201. Production Drafting**  
(DRAM 305) 3 credits. Lecture.

Emphasis on preparation of plans appropriate for scenic studio bidding procedures.

**DRAM 5202. Technical Direction**  
(DRAM 309) 3 credits. Lecture.

A study of the planning, management and execution of all technical aspects of production.

**DRAM 5204. Technical Analysis**  
(DRAM 312) 3 credits. Lecture.

Analysis of scenic structures and materials, including stress and vector analysis, static and dynamic loading of beams and battens, truss design, and time/cost studies.

**DRAM 5205. Audio Production**  
(DRAM 316) 3 credits. Lecture.

Audio recording and playback techniques used in the preparation of theatrical sound scores.

**DRAM 5206. Sound Technology**  
(DRAM 317) 3 credits. Lecture.

Application of signal processing devices and signal modification for specialized audio effects for production.

**DRAM 5207. Electricity and Electronics for the Theatre**  
(DRAM 318) 3 credits. Lecture.

Study of current electrical technology and applications, including AC theory and codes.

**DRAM 5208. Computer Applications**  
(DRAM 321) 3 credits. Lecture.

Survey of current software available for application to production management and technical design and production.

**DRAM 5209. Studies in Theatre Design**  
(DRAM 322) 3 credits. Lecture.

Investigates the physical problems and codes involved in integrating theatre technology into the architectural requirements of a performance facility.

**DRAM 5210. Properties Construction**  
(DRAM 323) 3 credits. Lecture.

Fabrication of unusual stage properties and study of the application of experimental materials.

**DRAM 5211. Advanced Rigging Techniques**  
(DRAM 324) 3 credits. Lecture.

Technology and materials used in conventional and specialized rigging systems.

**DRAM 5212. Shop Technology**  
(DRAM 327) 3 credits. Lecture.

Use of materials, equipment and processes required in special fabrication techniques.

**DRAM 5213. Stage Technology**  
(DRAM 328) 3 credits. Lecture.

Power sources and drive mechanisms for stage machinery including electro-mechanical, hydraulic and pneumatic systems.

**DRAM 5300. Advanced Scene Design I**  
(DRAM 302) 3 credits. Lecture.

Advanced work in the principles and techniques of scene design. Students applying for admission to this course must submit sketches that indicate ability to draw.

**DRAM 5301. Advanced Scene Design II**  
(DRAM 303) 3 credits. Lecture.

Detailed analysis of and practical experience in the solving of unusual problems in scene design. Students applying for admission to this course must have a thorough knowledge of technical theatre.

**DRAM 5310. Studies in Scene Design**  
(DRAM 301) 1-3 credits. Lecture.

**DRAM 5320. Scene Painting**  
(DRAM 304) 1-3 credits. Laboratory.

Scene painting in a variety of media and techniques. Traditional and experimental materials are explored.

**DRAM 5329. Technical Research and Writing**  
(DRAM 329) 3 credits. Lecture.

Application of writing techniques and research methods used in preparation of technical reports and project documentation.

**DRAM 5355. Studies in Television**  
(DRAM 355) 1-3 credits. Lecture.

**DRAM 5400. Advanced Costume Design I**  
(DRAM 313) 3 credits. Lecture.

Advanced work in the principles and techniques of costume design. Students applying for admission must submit sketches that indicate ability to draw.

**DRAM 5401. Advanced Costume Design II**  
(DRAM 314) 3 credits. Lecture.

Detailed analysis of unusual problems in costume design: Opera, Ballet, Musical Theatre.

**DRAM 5410. Studies in Costume Design**  
(DRAM 315) 1-3 credits. Lecture.

**DRAM 5500. Advanced Lighting Design I**  
(DRAM 306) 3 credits. Lecture.

Advanced work in the principles and techniques of lighting design and origins and traditions of equipment and style.

**DRAM 5501. Advanced Lighting Design II**  
(DRAM 307) 3 credits. Lecture.

Detailed analysis and practical experience in the solving of unusual and complex problems in lighting design.

**DRAM 5510. Studies in Lighting Design**  
(DRAM 308) 3 credits. Lecture.

**DRAM 5601. Advanced Puppetry I**  
(DRAM 349) 3 credits. Lecture.

Advanced work in the history and construction of marionettes.

**DRAM 5602. Advanced Puppetry II**  
(DRAM 350) 3 credits. Lecture. Prerequisite: DRAM 5601.

Advanced work in the principles and techniques of marionette production.

**DRAM 5603. Studies in Puppetry**  
(DRAM 351) 1-3 credits. Lecture.

**DRAM 5701. Advanced Acting I**  
(DRAM 345) 3 credits. Laboratory.

**DRAM 5702. Advanced Acting II**  
(DRAM 346) 3 credits. Laboratory. Prerequisite: DRAM 345.

**DRAM 5703. Studies in Acting**  
(DRAM 352) 1-3 credits. Laboratory.

**DRAM 5711. Studies in Directing**  
(DRAM 363) 1-3 credits. Lecture.

**DRAM 5721. Performance Techniques**  
(DRAM 391) 1-3 credits. Lecture.

Performance study and practice in selected areas of dramatic arts.

**DRAM 5801. Advanced Movement for the Actor I**  
(DRAM 337) 3 credits. Laboratory.

Intensive study of organic movement, physicalization of character and movement in a scene for the advanced actor.

**DRAM 5802. Advanced Movement for the Actor II**  
(DRAM 338) 3 credits. Laboratory. Prerequisite: DRAM 337.

Continuation of DRAM 5801.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

## ***ECOLOGY AND EVOLUTIONARY BIOLOGY***

*Department Head:* Professor Kentwood Wells  
*Professors:* Adams, Anderson, Caira, Chazdon, Colwell, Desch, Henry, Holsinger, Les, Schaefer, Schlichting, Schwenk, Silander, Simon, Thorson, Trumbo, Turchin, Wagner, Willig, and Yarish  
*Associate Professors:* Crespi, Goffinet, Jockusch, C. Jones, L. Lewis, P. Lewis, Rubega, Schultz, and Taigen  
*Assistant Professors:* Bush, Coe, and Elphick

Ecology and Evolutionary Biology emphasizes the diversity and evolution of animals and plants and their interactions with the environment. The department includes the following major areas of research: (1) *Botany* – angiosperm taxonomy and evolution; paleobotany and anatomy; pollination biology; plant morphology; cytotaxonomy; phycology; ethnobotany. (2) *Ecology* – behavioral ecology; population and community ecology; ecosystem ecology; physiological ecology; theoretical ecology; marine ecology; plant ecology; limnology. (3) *Entomology* – insect systematics, biogeography, and evolution; insect ecology; insect behavior. (4) *Zoology* – animal behavior; herpetology; ichthyology; mammalogy; ornithology; parasitology; vertebrate systematics and morphology; (5) *Evolutionary Biology* – population genetics; evolutionary ecology; speciation theory; systematic theory; molecular evolution and systematics.

### **Biodiversity and Conservation Biology**

Biodiversity refers to the variation in life's forms, from genes to ecosystems. Conservation biology is the science of understanding and protecting the earth's biodiversity. Practitioners in this field require a solid grounding in ecology and evolutionary biology, combined with an understanding of the societal factors that influence ecological systems.

**The B.S./M.S. Program.** The Master of Science degree in Biodiversity and Conservation Biology is administered by the Department of Ecology and Evolutionary Biology. The Biodiversity and Conservation Biology M.S. is a Plan B degree, based primarily on coursework. Students are required to participate in a vocational internship and a research project as part of their plan of study, but no research thesis is required. The M.S. is designed to be earned jointly with the EEB B.S. degree, with M.S. level classes integrated into a student's plan of study during their final two years. Students who have already completed an equivalent B.S. degree may confine their study to the M.S. portion of the degree program. Coursework combines education in ecology, evolution, systematics, and natural history, with relevant training in public policy, economics, and ethics.

Students are prepared for a diversity of career tracks, ranging from conservation planning to endangered species management, environmental education to museum curation, ecological consultancy to environmental law.

Potential employers include non-governmental organizations, state and federal agencies, and

environmental industries. More detailed information about the program is available at the EEB department's web site: <<http://hydrodictyon.eeb.uconn.edu/departments/BSMS/>>.

**Interdisciplinary Study**

**Plant Biology.** Course work and research opportunities in plant biology are offered in three separate departments. Plant systematics and evolution, plant ecology, plant physiological ecology, plant morphology, and plant molecular systematics and evolution are offered in the Department of Ecology and Evolutionary Biology. Plant physiology, cellular and molecular biology are offered in the Department of Molecular and Cell Biology. Additional course offerings in plant biology are available in the Department of Plant Science.

**Marine Sciences.** Research and teaching facilities for marine sciences are located at the Avery Point campus of the University of Connecticut, and on the main campus in Storrs. Major areas of research include the ecology, physiology, behavior, and systematics of marine organisms; physical and chemical oceanography; sedimentology; and climatology. Recirculating sea water systems are available for maintaining marine organisms over extended periods for research. Direct inquiries to: Department Head, Marine Sciences, University of Connecticut at Avery Point, Groton, Connecticut 06340-6043.

**Organization for Tropical Studies.** The University of Connecticut is a member of the Organization for Tropical Studies, which offers graduate courses on tropical ecology in Costa Rica. Qualified graduate students in biology and related areas are eligible to participate in the February-March and July-August sessions. For information, write to Director of Graduate Studies, Department of Ecology and Evolutionary Biology, Unit 3043, Storrs, Connecticut 06269-3043.

**COURSES OF STUDY**

**EEB 5203. Developmental Plant Morphology** 4 credits. Lecture/Laboratory.

Exploration and analysis of diversity in plant form using basic principles of plant construction and development. A research paper is required, in which the principles learned in lecture are applied to the analysis of the development of a plant from seed through reproductive maturity.

**EEB 5204. Aquatic Plant Biology** (EEB 304) 4 credits. Laboratory

Field and laboratory-oriented study of the anatomy, morphology, ecology, physiology, systematics and evolution of vascular aquatic and wetland plants. A research paper and class presentation are required on a topic pre-approved by the instructor.

**EEB 5209. Soil Degradation** (EEB 309) 3 credits. Lecture

Causes and consequences of soil degradation in agricultural and natural ecosystems, including salinization, erosion, nutrient impoverishment, acidification, and biodiversity loss. Historical perspectives and current

strategies for soil conservation. Readings in original literature will be emphasized.

**EEB 5220. Evolution of Green Plants** (EEB 380) 3 credits. Lecture.

Introduction to morphological, ultrastructural, and molecular characters used for inferring evolutionary relationships of green plants, from the green algae to the flowering plants, with emphasis on evolutionary changes involved in the transition from aquatic to terrestrial habitats.

**EEB 5221 Evolution of Green Plants Laboratory** (EEB 391) 1 credit. Laboratory. Open only to students who are enrolled in or have completed EEB 5220.

Study of morphological and anatomical characters of extant and fossil plants. Phylogenetic inferences from morphological and molecular characters. Discussion of primacy literature.

**EEB 5240. Biology of Bryophytes and Lichens** (EEB 340) 4 credits. Lecture/Laboratory.

Diversity, evolution, ecology, development and taxonomy of the bryophytes (mosses, liverworts, and hornworts) and lichen-forming fungi.

**EEB 5250. Biology of the Algae** (EEB 390) 4 credits. Lecture/Laboratory.

Laboratory and field-oriented study of the major groups of algae, emphasizing structure, function, systematics, and ecology.

**EEB 5254. Mammalogy** (EEB 454) 4 credits. Lecture/Laboratory.

Lectures cover diversity, natural history (including behavior, ecology, reproduction, etc.), and evolution of mammals; readings from original literature are included. Laboratories cover anatomy, systematics, and distribution of major groups of mammals.

**EEB 5265. Herpetology** (EEB 465) 4 credits. Lecture/Laboratory.

Lectures cover environmental physiology, ecology, and behavior of amphibians and reptiles. Emphasis is on readings from the original literature. Laboratories cover evolution, systematics, and distribution of major groups of the world.

**EEB 5269. Social Insects.** (EEB 369) 3 credits. Lecture/Discussion. Open to graduate students in EEB, others with permission.

Behavior, ecology, and evolution of social insects (especially wasps, bees, ants, and termites) with an emphasis on the evolution of social behavior and on the ecological impact of social insects.

**EEB 5271. Systematic Botany** (EEB 471) 4 credits. Lecture/Laboratory.

Classification, identification, economic importance, evolution and nomenclature of flowering plants. Laboratory compares vegetative and reproductive characteristics of major families. A research paper and class presentation are required on a topic pre-approved by the instructor.

**EEB 5301. Population and Community Ecology** (EEB 301) 3 credits. Lecture. Open to graduate students in EEB, others with permission.

Overview of population and community ecology, including population regulation and dynamics, metapopulations, species interactions, biodiversity, community structure, and evolutionary ecology. Theoretical and case-history approaches, emphasizing plants, invertebrates, and vertebrates. Lecture, discussion, and exercises in analysis and modeling.

**EEB 5302. Organisms and Ecosystems** (EEB 302) 3 credits. Lecture. Open to graduate students in EEB, others with permission.

Overview of organismal and ecosystem ecology, including biophysical basics, resource utilization and allocation, life history patterns, energetics, matter and energy flow in ecosystems, and temporal and spatial dynamics at ecosystem and landscape scales. Theory, experiments, and computer modeling.

**EEB 5303. Developmental Plant Morphology** (EEB 303) 4 credits. Laboratory.

Exploration and analysis of diversity in plant form using basic principles of plant construction and development. A research paper is required, in which the principles learned in lecture are applied to the analysis of the development of a plant from seed through reproductive maturity.

**EEB 5307. African Field Ecology and Renewable Resources Management** (EEB 307) 4 credits. Field studies.

An intensive, field oriented methods course conducted primarily in South Africa at the Basil Kent Field Station, Great Fish River Reserve in collaboration with the University of Fort Hare. An introduction to South Africa culture and history, ecology, and natural resources is provided in weekly meetings during the semester. This is followed by 3 weeks in South Africa. Topics covered include vegetation and faunal surveys, data collection and analysis, biodiversity monitoring, and conservation management. A research paper relating to an independent study conducted by the student in the field is required.

**EEB 5310. Conservation Biology** (EEB 310) 3 credits. Lecture.

Case studies and theoretical approaches to conservation of biological diversity, genetic resources, plant and animal communities, and ecosystem functions. Topics emphasize ecological and evolutionary principles that form the scientific basis of this emerging, interdisciplinary field, as well as socio-political, legal, economic, and ethical aspects of conservation.

**EEB 5333 Evolutionary Developmental Biology** (EEB 333) 3 credits. Lecture.

An advanced course in evolutionary biology, emphasizing the underlying developmental bases of evolutionary change. Concepts of homology, constraint, and heterochrony, with examples from both animal and plant systems.

**EEB 5335W. Vertebrate Social Behavior** (EEB 335W) 3 credits. Lecture.

Lectures and discussions dealing with various aspects of vertebrate social behavior, including territoriality, mating systems, sexual selection, and group behavior. The emphasis is on reading and critical analysis of original literature.

**EEB 5347. Principles and Methods of Systematic Biology**

(EEB 458) 4 credits. Lecture/Laboratory.

The basic concepts and modern procedures employed in systematic biology: literature retrieval, species description, phylogenetic inference, nomenclature, and current conceptual issues. Laboratories include computer techniques in phylogenetic analysis.

**EEB 5348. Population Genetics**

(EEB 348) 3 credits. Lecture

This course is designed to provide a theoretical background for studies in evolution. Emphasis is placed on understanding the conceptual foundations of the field and on the application of these concepts to an understanding of the roles of mutation, evolution of populations.

**EEB 5349. Phylogenetics.**

(EEB 349) 4 credits. Lecture. Prerequisite: EEB 458 or consent of instructor.

Estimation of genealogies at the level of species and above, and their application and relevance to various biological disciplines, including systematics, ecology, and morphological and molecular evolution. Surveys both parsimony and model-based methods, but emphasizes maximum likelihood and Bayesian approaches.

**EEB 5350. Molecular Systematics**

(EEB 350) 2 credits. Lecture/Laboratory. Instructor consent required. Recommended preparation: EEB 349 and 458.

Exploration of key literature focusing on the practical aspects of incorporating knowledge of DNA sequence evolution into phylogenetic tree construction. Laboratory methods for collection of molecular data including management, extraction, amplification, and sequencing.

**EEB 5360. Functional Ecology of Plants**

(EEB 385) 3 credits. Lecture.

Physiological, morphological, and structural responses of plants to the physical and biotic environment and to environmental change. Readings, lectures and discussions emphasize plant responses at all levels of organization, from cells to whole plants. Themes include: organismal integration, consequences and constraints in plant adaptation, and the functioning of plants within communities and ecosystems.

**†EEB 5369. Current Topics in Biodiversity.**

(EEB 488) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature on biodiversity.

**†EEB 5370. Current Topics in Conservation Biology**

1 credit. Seminar.

Analysis and discussion of current literature on conservation.

**EEB 5371. Current Topics in Molecular Evolution and Systematics**

1 credit. Lecture.

Current concepts, ideas and techniques in the field of molecular evolution, and theoretical problems peculiar to the phylogenetic analysis of molecular data.

**EEB 5372. Computer Methods in Molecular Evolution**

(EEB 372) 3 credits. Lecture.

Practical aspects of molecular data analyses. Databank searches, sequence alignments, statistical analyses of sequence data. Parsimony, distance matrix, and spectral analysis methods. Students compile and analyze a data set of their choice.

**EEB 5375. Evolution and Ecology of Communities.**

(EEB 375) 3 credits. Lecture. This course may be repeated to a maximum of 24 credits.

The evolutionary consequences of ecological interactions between species and the role of evolution in shaping biological communities. Readings, lectures, and discussions emphasize the importance of descriptive, experimental, and theoretical approaches in community biology.

**EEB 5445. Advanced Invertebrate Zoology**

(EEB 445) 4 credits. Lecture/Laboratory.

The functional morphology, ecology and evolution of selected invertebrate groups. Field trips are required.

**EEB 5447. Mathematical Ecology**

(EEB 447) 4 credits. Lecture.

Theory and methods of mathematical modeling as applied to ecological systems. Modeling techniques developed around examples from ecological literature.

**EEB 5449. Evolution**

(EEB 449) 3 credits. Lecture.

A review of our current understanding of the patterns and processes of organic evolution. Class periods will include discussion and critical analysis of primary literature.

**EEB 5452. Field Ecology**

(EEB 452) 2 credits. Lecture.

A field of study of the biotic communities in selected areas of eastern North America.

**EEB 5453. Helminthology**

(EEB 453) 3 credits. Lecture/Laboratory.

Morphology, taxonomy, and physiology of the parasitic worms. Methods of culture, preparation for study, and experimental determination of life cycles.

**EEB 5459. Aquatic Insects**

(EEB 459) 3 credits. Lecture/Laboratory.

Taxonomic, habitat, and life history studies of aquatic insects.

**EEB 5462. Evolutionary Pattern and Process: Experimental Approaches**

(EEB 462) 4 credits. Lecture/Laboratory.

A rigorous introduction to the concepts and methods for systematic and evolutionary studies with an emphasis on genetic, molecular (proteins and DNA), and phylogenetic analyses. The laboratory portion provides the opportunity to gain experience in DNA extraction, amplification, sequencing, alignment, and phylogenetic analyses.

**EEB 5463. Plant Ecology**

(EEB 463) 4 credits. Lecture/Laboratory.

An advanced course in plant ecology with emphasis on the effects of environment on development of vegetation, metabolism of the ecosystem, cycling of nutrients, growth and succession. Principles of vegetation dynamics, classification and their ecological interpretation will be discussed.

**EEB 5477W. Insect Phylogeny**

(EEB 477W) 3 credits. Lecture.

A review of our current understanding of the evolutionary relationships of the major orders and families of insects, including the phylogenetic position of Insecta within Arthropoda.

**EEB 5889. Research**

(EEB 397) 1-6 credits. Independent study. This course may be repeated to a maximum of 24 credits.

Conferences and laboratory work covering selected fields of Ecology and Evolutionary Biology.

**†EEB 5891. Internship in Ecology, Conservation, or Evolutionary Biology**

(EEB 306) 1-9 credits. Practicum. This course may be repeated to a maximum of 24 credits.

An internship with a non-profit organization, a governmental agency, or a business under the supervision of Ecology and Evolutionary Biology faculty. Activities relevant to the practice of ecology, biodiversity, evolutionary biology, or conservation biology will be planned and agreed upon in advance by the job site supervisor, the faculty coordinator, and the intern. One credit may be earned for each 42 hours of pre-approved activities up to a maximum of nine credits.

**†EEB 5894. Seminar**

(EEB 469) 1-3 credits. Seminar. This course may be repeated to a maximum of 24 credits.

Study and discussion of current researches, books and periodicals in the field of Biology. Subtopic designations: Ec, Ecology; M, Mammalogy; Mec, Marine Ecology; Pr, Parasitology; En, Entomology; Bi, Biogeography; Ev, Evolution; Sy, Systematics.

**EEB 5895. Investigation of Special Topics** (EEB 396) 1-6 credits. Lecture. This course may be repeated to a maximum of 24 credits.

Advanced study in a field within Ecology and Evolutionary Biology.

**EEB 5899. Independent Study**

(EEB 395) 1 credit. Independent study. This course may be repeated to a maximum of 24 credits.

A reading course for those wishing to pursue special work in biology. It may also be elected by undergraduate students preparing to be candidates for degrees with distinction.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†EEB 6480. Seminar in Vertebrate Biology.**

(EEB 480) 1 credit, Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in vertebrate biology.

**†EEB 6481. Seminar in Biodiversity.**

(EEB 481) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Provides the opportunity for students to present research plans, reports of work in progress, and full-length seminars on completed research projects in ecology, systematics, and evolutionary biology to a supportive but critical audience.

**†EEB 6482. Seminar in Spatial Ecology**

(EEB 482) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in spatial ecology.

**†EEB 6483 Seminar in Marine Biology.**

(EEB 483) 1 credits. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in marine biology.

**†EEB 6484. Seminar in Plant Ecology**

(EEB 484) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in plant ecology.

**†EEB 6485. Seminar in Comparative Biology**

(EEB 485) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in evolution and comparative ecology.

**†EEB 6486. Seminar in Systematics**

(EEB 486) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in systematic biology.

**†EEB 6487. Seminar in Parasitology**

(EEB 487) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in parasitology.

**†EEB 6490. Seminar in Behavioral Ecology**

(EEB 490) 1 credit. Seminar. This course may be repeated to a maximum of 24 credits.

Analysis and discussion of current literature in behavioral ecology.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## ECONOMICS

*Department Head:* Professor Dennis R. Heffley

*Professors:* Carstensen, Clapp, Cosgel, Cotterill, Hallwood, Knoblauch, Langlois, Miceli, Ray, Ross, Santerre, and Segerson

*Associate Professors:* Ahking, Alpert, Couch, Cunningham, Dharmapala, Harding, Harmon, Kimenyi, Landau, Lott, Minkler, Morand, Randolph, Tripathi, and Zimmerman

*Assistant Professors:* Aysun, and Matschke

Study leading to the Master of Arts and Doctor of Philosophy degrees is offered.

**Requirements for the Master of Arts Degree.** The program of studies for the M.A. degree is not uniform for all students. The combination of courses depends on the candidate's objective. For some purposes, a broad spread of subject-matter courses may be advisable, while for other purposes a narrowly focused program may be appropriate. Economics 5201, 5202, 5301, and 5311 are required. Candidates with inadequate backgrounds in mathematics are required to take Economics 2301.

**Requirements for the Doctor of Philosophy Degree.** Students in the Ph.D. program are required to pass Economics 6110, 6201, 6202, 6211, 6212 6301, 6311, 6312, or their equivalents.

If a supporting area of study is elected rather than a foreign language, it cannot include any of the courses used to satisfy the above requirements; it must consist of a coherent unit of work in one subject considered a special skill for economists, and it must include at least one course above the 4000's level.

Each student must pass the preliminary examination in economic theory before taking the field examination. Students choose from among the following: Industrial Organizations, International Economics, Macro/Money, and Public Economics. This field is then augmented with other course offerings.

**Special Facilities.** Computer time and assistance are available at the University Computer Center. In addition, there is a PC lab in the Department for use by graduate students. Research opportunities may be available in connection with faculty projects or at the Connecticut Center for Economic Analysis. Some students publish scholarly articles in partnership with faculty.

### COURSES OF STUDY

**ECON 5101. European Economic History** (ECON 305) 3 credits. Lecture.

The economic development of Europe from the Industrial Revolution to World War I. Emphasis on the economic and social factors that led to the industrialization of Europe.

**ECON 5102. American Economic History** (ECON 306) 3 credits. Lecture

The growth and development of the American economy and the evolution of its economic institutions from the colonial period to the present. Assessment of agriculture, industry, transportation, commerce, finance, government, and population; and of their interaction with the physical environment, technology, public policy, and the world economy.



**ECON 5110. History of Economic Thought from 1890**

(ECON 322W) 3 credits. Lecture.

The history and methodological underpinnings of modern economic theory. Topics include macroeconomics and business cycles; utility and demand theory; and industrial organization. Particular attention to Marshall and Keynes.

**ECON 5128. Economic Rights**

3 credits. Seminar. Also offered as HRTS 5390 and POLS 390.

Economic Rights include the right to an adequate standard of living, the right to work, and the right to basic income guarantees for those unable to work. These rights are grounded in international law - particularly in the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights. This class will explore the conceptual bases, measurement, and policy applications of economic rights. Specific topics will include: child labor, the right to development, non-governmental initiatives, and the institutionalization of economic rights (e.g., constitutionalization versus statutory implementation versus discretionary policies).

**ECON 5198. Topics in Economic History**

(ECON 301W) 3 credits. Lecture.

Focuses on critical episodes and salient turning points in the history of European, American, and Third World economic development; emphasis on institutional and technological factors. Evaluates different approaches.

**ECON 5201. Microeconomics I**

(ECON 308) 3 credits. Lecture.

Beginning graduate microeconomics covering consumer and producer theory, price determination, economic efficiency, and welfare analysis.

**ECON 5202. Macroeconomics I**

(ECON 309) 3 credits. Lecture.

Survey of the field: its historical foundations and development, conceptual framework, and application to current macroeconomic problems.

**ECON 5298. Topics in Microeconomics**

(ECON 316) 3 credits. Lecture.

Topics in microeconomic theory; students choose the material to be covered.

**ECON 5301. Mathematical Economics**

(ECON 314) 3 credits. Lecture.

Optimization, comparative statics, envelope theorem, basic differential and difference equations.

**ECON 5311. Econometrics I**

(ECON 310) 3 credits. Lecture.

Construction, estimation, and interpretation of economic behavioral and technical equations using data that are passively generated by a system of simultaneous, dynamic and stochastic relations.

**ECON 5348. Economic Development Policy**

(ECON 348) 3 credits. Lecture.

The role of government in the economic development of underdeveloped countries. Topics include: alternative paradigms of development and the resulting place for government in the economy; the theory, institutions, and policies of government in planning, fiscal, and monetary concerns; analysis of policy instruments influencing international trade and financial flows; and the influence of international organizations on the development process.

**ECON 5411. Monetary Theory and Policy**

(ECON 346) 3 credits. Lecture.

Theoretical analysis of the role of money in the economy, including general equilibrium and monetarist frameworks, the demand for and supply of money, channels of monetary influence, and determinants of long-term and short-term interest rates. Problems of monetary policy, such as selection of instruments and targets, use of discretionary policy, and stability of the money multiplier.

**ECON 5416. Issues in Monetary Theory and Policy**

(ECON 347) 3 credits. Lecture. Prerequisite: ECON 5411.

Contemporary theoretical and policy issues in money, such as portfolio theory, the money supply process, the mechanics of policy implementation, "crowding out," dynamic macro models, disequilibrium macro models, and rational expectations.

**ECON 5421. International Trade: Theory and Policy**

(ECON 342) 3 credits. Lecture.

The economic aspects of international relations, including the pure theory of international trade and the instruments of commercial policy. Topics include comparative advantage; international economic policies; and regional economic integration.

**ECON 5422. International Finance: Theory and Policy**

(ECON 343) 3 credits. Lecture.

Theoretical and historical analysis of international finance, including balance-of-payments adjustments, foreign-exchange markets, international capital flows, and the effectiveness of macroeconomic policies in open economies.

**ECON 5433. Federal Finance**

(ECON 330) 3 credits. Lecture.

Theories of government in the economy including general equilibrium, public choice and institutional economics. Government expenditures: budgeting, cost-benefit studies and analysis of specific expenditure programs. Taxation: equity and efficiency criteria for evaluating taxes, with application to major sources of revenue; public debt.

**ECON 5434. State and Local Finance**

(ECON 332) 3 credits. Lecture.

Taxes and expenditures in a federal system, with particular emphasis on intergovernmental relationships. Rationale for federalism, problems of public choice, and tax incidence analysis.

**ECON 5439. Urban and Regional Economics**

(ECON 359) 3 credits. Lecture.

Theoretical and empirical analysis of urban and regional systems in developed and developing economies. Special emphasis on the spatial characteristics and problems of metropolitan markets for housing, transportation services, productive factors, and final products; land-use controls, housing subsidies, public transit, and other forms of public sector intervention.

**ECON 5441. The Labor Market**

(ECON 375) 3 credits. Lecture.

A thorough examination of the labor market. Topics include human capital, wage determination, public policy, and money wage rates.

**ECON 5464. Industrial Organization**

(ECON 381) 3 credits. Lecture.

Survey of contemporary theory and models of the organization of industry. Topics include oligopoly; product differentiation; advertising; innovation; contestable markets; the financial theory of the firm; dynamic and evolutionary models; and transaction-cost economics.

**ECON 5462. Topics in Public Policy toward Industry**

(ECON 382) 3 credits. Lecture.

Theories of economic regulation. U.S. antitrust policy. Regulation of natural monopolies in theory and practice. Health and safety regulation.

**ECON 5463. The Economics of Organization**

(ECON 386) 3 credits. Lecture.

Surveys the modern agency, transaction-cost, and evolutionary theories of organization. Topics include measurement and monitoring costs, asset specificity, incomplete-contracts theory, the dynamic capabilities approach, and alternative organizations.

**ECON 5473. Economic Development**

(ECON 350) 3 credits. Lecture.

An examination of the problems facing the less developed nations. Comparisons of alternative paradigms of economic development (orthodox to political economy) and the strategies and policies they imply.

**ECON 5474. Seminar in Development and Growth**

(ECON 355) 3 credits. Seminar.

A continuation of Economics 5473. Topics include agriculture and industry in development, investment criteria, essentials of developing planning, the promotion of domestic saving and fixed investment, foreign aid, improvements in international trade, and human capital formation.

**ECON 5479. Economic Growth and Fluctuations**

(ECON 351) 3 credits. Lecture.

Economic growth and business cycles in the economically advanced countries, with emphasis on both theory and evidence.

**ECON 5494. Applied Research Seminar**  
(ECON 396) 3 credits. Seminar.

A survey of research methods in economics and development of individual research projects.

**ECON 5495. Topics in Economics**  
(ECON 397) 3 credits. Seminar.

**ECON 5499. Independent Study in Economics**  
(ECON 300) 1-3 credits. Independent Study.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**ECON 6110. History of Economic Thought**  
(ECON 420) 3 credits. Lecture.  
Advanced treatment of material in ECON 5110.

**ECON 6201. Microeconomics II**  
(ECON 418) 3 credits. Lecture. Prerequisite: ECON 5201 or ARE 5201.

Microeconomic theory: contemporary economic analysis of decisions by consumers, producers, and other agents.

**ECON 6202. Macroeconomics II**  
(ECON 419) 3 credits. Lecture. Prerequisite: ECON 5202.

A rigorous course in macroeconomic modeling with policy applications. Focuses primarily on developments in the current literature, analytical techniques, and macroeconomic models. Includes an introduction to stochastic dynamic models.

**ECON 6211. Microeconomics III**  
(ECON 428) 3 credits. Lecture. Prerequisite: Completion of ECON 6201 with a grade of B- or higher.

Markets, general equilibrium theory, efficiency, and advanced topics in microeconomics.

**ECON 6212. Macroeconomics III**  
(ECON 429) 3 credits. Lecture. Prerequisite: Completion of ECON 6202 with a grade of B- or higher.

Stochastic modeling, recent developments in the literature, and policy applications. Topics may include real business cycle theory, new classical economics, neo-Keynesian theory and growth models.

**ECON 6301. Advanced Mathematical Economics I**  
(ECON 414) 3 credits. Lecture.

The application of matrix algebra and differential and integral calculus to statics, comparative statics, and optimization problems in economics.

**ECON 6302. Advanced Mathematical Economics II**  
(ECON 415) 3 credits. Lecture. Prerequisite: Completion of ECON 5301 with a grade of B- or higher.

The application of integral calculus, differential equations, difference equations, and convex sets to economic dynamics, linear programming, and non-linear programming.

**ECON 6311. Econometrics II**  
(ECON 411) 3 credits. Lecture. Prerequisite: STAT 5415.

Theoretical underpinnings of standard econometric methods of estimation and testing of single-equation models.

**ECON 6312. Econometrics III**  
(ECON 412) 3 credits. Lecture. Completion of ECON 6311 with a grade of B- or better.

Special topics from single-equation models; simultaneous equations models; full information maximum likelihood methods; and recent advances in econometrics.

**ECON 6400. Independent Study**  
(ECON 400) 1-3 credits. Independent Study.

Students pursue an in-depth study of an area of interest under the guidance of a faculty member.

**ECON 6411. Advanced Monetary Theory and Policy I**  
(ECON 446) 3 credits. Lecture. Prerequisite: ECON 6212.

Advanced treatment of material covered in ECON 5411.

**ECON 6412. Advanced Monetary Theory and Policy II**  
(ECON 447) 3 credits. Lecture. Prerequisite: ECON 6411.

Advanced treatment of material covered in ECON 5416.

**ECON 6421. Advanced International Trade: Theory and Policy**  
(ECON 442) 3 credits. Lecture. Prerequisite: ECON 6211.

Advanced treatment of material covered in ECON 5421.

**ECON 6422. Advanced International Finance: Theory and Policy**  
(ECON 443) 3 credits. Lecture. Prerequisite: ECON 6212.

Advanced treatment of material covered in ECON 5422.

**ECON 6435. Government Expenditures**  
(ECON 435) 3 credits. Lecture. Prerequisite: ECON 6211.

Theory and evidence of government expenditure policy.

**ECON 6436. Government Revenues**  
(ECON 436) 3 credits. Lecture. Prerequisite: ECON 6211.

Positive and normative analysis of alternative government resource uses.

**ECON 6441. Advanced Labor Economics I**  
(ECON 475) 3 credits. Lecture. Prerequisite: ECON 6211.

Labor supply with an emphasis on the family. Applications in the area of demography, development, and health.

**ECON 6442. Advanced Labor Economics II**  
(ECON 476) 3 credits. Lecture. Prerequisite: ECON 6211.

Labor demand and other applied topics in labor economics.

**ECON 6461. Industrial Organization**  
(ECON 481) 3 credits. Lecture. Prerequisite: ECON 6211.

Advanced treatment of material covered in ECON 5461.

**ECON 6463. Economics of Organization**  
(ECON 486) 3 credits. Lecture.

Advanced treatment of material covered in ECON 5463.

**ECON 6466. Environmental Economics**  
(ECON 354) 3 credits. Lecture. Prerequisite: ECON 5201 or ARE 5201.

Economic analysis of environmental problems and corrective policy instruments. Topics covered will include the theory of externalities and public goods, the role of uncertainty and imperfect information in policy design, benefit-cost analysis, and non-market valuation. Applications to various environmental problems (such as air and water pollution, hazardous waste, and occupational health and safety) will be discussed.

†**ECON 6494. Graduate Seminar**  
(ECON 490) 1 credit. Seminar.

Participation in departmental research seminars and presentation and discussion of original research projects.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## EDUCATION

*Dean:* Professor Thomas C. DeFranco

*Assistant Dean:* Associate Professor in Residence

Yuhang Rong

The Neag School of Education offers graduate programs which lead to the degrees of Master of Arts, Doctor of Physical Therapy, Doctor of Education, and Doctor of Philosophy. In addition, the School of Education confers the Sixth-Year Diploma in Professional Education. Graduate courses in education are offered in the following academic departments: Curriculum and Instruction, Educational Leadership, Educational Psychology, Kinesiology, and Physical Therapy.

Master's degree study is available in most secondary school teaching areas as well as in agricultural, elementary, music, and special education teaching areas. In addition, the Teacher Certification Program for College Graduates (TCPCG) is a 45-credit program beginning with two summer sessions followed by a full year of additional work, which culminates in the award of the M.A. degree and the University's recommendation for certification. Additional information is available at <www.education.uconn.edu>.

Courses of study also are available for school service personnel in areas such as evaluation and measurement, gifted and talented education, educational technology, reading, school counseling, school psychology, special education, supervision and curriculum development.

Additionally, master's-level study is available in a variety of areas including adult learning, counseling, curriculum and instruction, educational administration, educational psychology, educational technology, kinesiology, and higher education and student affairs.

A program leading to the Sixth-Year Diploma in Professional Education provides an opportunity for advanced students who have the master's degree to increase their professional competence through further study under the guidance of a faculty member. Inquiries and requests for admission to the Sixth-Year Program should be directed to the Office of the Dean, Neag School of Education, 249 Glenbrook Road, Unit 2064, Storrs, Connecticut 06269-2064.

The D.P.T. degree is offered in the field of physical therapy.

The Ph.D. degree is offered in the following fields of study: adult learning, curriculum and instruction, educational administration, educational psychology, educational technology, kinesiology, and special education. The Ed.D. degree is offered in the field of educational leadership.

**Admission Requirements for the Master of Arts Degree.** Applicants must have specific preparation for teaching adequate to meet the minimum professional requirements for obtaining a bachelor's degree through the Neag School of Education. College graduates with outstanding undergraduate records, but without such preparation, may apply for admission and if admitted, are expected to make up any deficiencies. Applicants wishing to specialize in elementary education must have completed an appropriate concentration of elementary education courses; applicants wishing to specialize in kinesiology should have an undergraduate major or the equivalent in kinesiology or in physical or recreation service education.

Applicants may be required to submit scores for the General Test of the Graduate Record Examinations and/or the Miller Analogies Test.

**Admission Requirements for the Ph.D. Degree.** The Doctor of Philosophy degree program is intended to give persons of unusual ability and promise the opportunity to become scholars in their areas of specialization. Only outstanding individuals whose experience and background will allow them to carry on a scholarly program and to work professionally at a level commensurate with the degree after its completion are accepted into the program.

Applicants to doctoral programs in education must submit scores for the Graduate Record Examinations General Test, except those applying for admission to the Ed.D. program. In addition, applicants to some programs may be required to submit scores for the Miller Analogies Test. These tests must have been taken within the last five years. International students may have these test requirements waived by the Admissions Committee of a given program or deferred until after admission.

**Special Facilities in the Neag School of Education.** Several important services, facilities, and agencies contribute to the scholarship and research experiences of graduate students in education.

There are opportunities in the Reading-Language Arts center for graduate students to pursue research studies of the many problems affecting the teachers of reading at all grade levels. The Institute for Urban School Improvement works with students, educators, school communities, local and state governing bodies, and scholars to meet the needs of urban youth and schools through collaboration and evidence-based practices. The University of Connecticut Center for Educational Policy Analysis serves to inform educational and public policy leaders about the development, analysis, and implementation of educational policies. The Center on Postsecondary Education and Disability educates preprofessionals and professionals in acquiring knowledge and skills and developing state-of-the-art practices in disability services. The Department of Kinesiology has laboratory facilities available for research in these areas: sport biomechanics, exercise physiology, sport disabilities, sport social sciences, and athletic training. In addition, the local public schools of Connecticut cooperate closely with the University and provide opportunities for internships, practica, and field studies.

**Graduate Courses.** Education courses are listed under the sponsoring departments. Reference should be made to the offerings of the Departments of Curriculum and Instruction, Educational Leadership, Educational Psychology, Kinesiology, and Physical Therapy.

## CURRICULUM AND INSTRUCTION

*Department Head:* Professor Mary Anne Doyle

*Professors:* DeFranco, Goodkind, and Leu

*Associate Professors:* Alfano, Glenn, Kaufman, Moss,

Osborn, Reyes, and Settlege

*Assistant Professors:* T. Casa, Howard, Irizarry, Levine,

Marcus, Rojas, Staples, and Truxaw

Graduate programs in Curriculum and Instruction lead to degrees of Master of Arts and Doctor of Philosophy. The Neag School of Education also confers a Sixth-Year Diploma in Professional Education. Master's and doctoral study is offered in bi-lingual and bi-cultural education, curriculum development, elementary education, and in most secondary school teaching areas. In addition, master's study is offered in Music Education. Students should consult the statement under Education for information pertaining to admission requirements and special facilities available in the Neag School of Education.

## COURSES OF STUDY

**EDCI 5000. Teaching in the Affective Domain** (EDCI 302) 3 credits. Lecture.

Study in the relationship between the affective and cognitive domains of education and how the affective domain influences student behavior in the learning process, self-awareness, and self-concept. Classroom activities, materials, and methods are featured.

**EDCI 5002. History of Education in the United States**

(EDCI 336) 3 credits. Lecture.

Development of educational ideas and practices in the United States from the colonial period to the present.

**EDCI 5004. History of Educational Thought** (EDCI 339) 3 credits. Lecture.

Leading educational ideas and how these ideas influence theory and professional practice. The contributions of key individuals in the ancient, medieval and modern worlds are the basis for course organization.

**EDCI 5006. Comparative and International Education**

(EDCI 356) 3 credits. Lecture.

Education and educational systems in comparative and international perspective, with emphasis on the interaction of educational institutions with other social, cultural and political institutions in society.

**EDCI 5008. Philosophical Analysis in Education**

(EDCI 359) 3 credits. Lecture.

Introduction to philosophical analysis of significant educational concepts.

**EDCI 5040. Experimentation in Music Education**

3 credits. Lecture.

Application of experimental techniques to a problem of learning or pedagogy in music.

**EDCI 5045. Supervision and Administration of the School Music Program**

3 credits. Lecture.

Programming, scheduling, housing as they apply to music in the schools; of community demands, public relations and legal commitments; of types of supervisory and in-service organization.

**EDCI 5047. Curriculum Construction in School Music**

3 credits. Lecture.

Developing courses and music activities as resource units.

**EDCI 5050. TPCPG Seminar I: Student Teaching Seminar**

(EDCI 388) 3 credits. Seminar. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Analysis of instructional practice in the clinical setting. Relationship of instruction to theory, and implications for instructional evaluation, are emphasized.

**EDCI 5055. TPCPG Seminar II: Teacher as Professional**

(EDCI 389) 3 credits. Seminar. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Culminating seminar experience in the TPCPG program.

**EDCI 5060. Social and Multicultural Foundations of Education**

(EDCI 390) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

An introduction to the social and multicultural foundations of contemporary public education in U.S. society. Includes discussion of the nature, organization and purposes of public education in a democratic society, cultural diversity in U.S. schools and society, the role of the classroom teacher, professional ethics, and contemporary issues in U.S. education.

**EDCI 5062. Evaluation in Vocational and Technical Education**

3 credits. Lecture.

Theories of evaluation; survey of practices and role of evaluation in educational programs; development of instruments and procedures for appraising educational programs and individual achievement.

**EDCI 5063. Occupational Experience Programs**

3 credits. Lecture.

Theory of occupational adjustment; design of experience programs; community cooperation; labor legislation, integration with school programs; and role of coordinator.

**EDCI 5064. Career Education: Theory and Practice**

3 credits. Lecture.

The need for and rationale of career education. Strategies and processes for implementing career education concepts and practices in schools and other educational settings.

**EDCI 5065. Learning Theories**

(EDCI 391) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Introduction to learning theories as they are applied to educational contexts. Topics include instructional objectives, behavioral analysis, social cognitive theory, cognitive psychology, social emotional development, and cognitive development.

**EDCI 5066. Principles and Philosophy of Vocational and Technical Education**

3 credits. Lecture.

Descriptive and normative principles of vocational and technical education with attention to their special, economic, psychological and political bases as a philosophical rationale.

**EDCI 5067. Administrative Applications in Vocational Education**

1 credit. Lecture.

The application of administrative theories to programs of vocational education.

**EDCI 5068. Instructional Strategies in Vocational and Adult and Human Resources Education**

3 credits. Lecture.

Innovative approaches to the improvement of learning; instructional techniques, materials and media.

**EDCI 5070. Methods of Instruction and Evaluation**

(EDCI 392) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Selection and organization of learning experiences, instructional activities and materials, and methods of instruction. Course activities include a combination of lecture and seminar experiences.

**EDCI 5071. Program Planning and Curriculum Development in Vocational and Technical Education**

3 credits. Lecture.

Analysis of vocational/technical program planning and curriculum development theory, with emphasis on principles and current issues influencing program decisions.

**EDCI 5072. Business Office Automation**

1-3 credits. Lecture.

Business office automation. Word processing and related practices. Teaching techniques.

**EDCI 5075. Meeting the Needs of Exceptional Learners**

(EDCI 393) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Introduction to the characteristics of and educational programming for students with exceptionalities.

**EDCI 5080. Reading and Literacy in the Content Areas**

(EDCI 394) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Effective use of reading and writing to help students learning content material. Includes selection of reading materials that are appropriate for individual students with diverse reading abilities, understanding reading diagnosis provided by other professionals, using reading material in ways that facilitate comprehension and learning, and using written assignments to increase understanding and recall.

**EDCI 5085. Subject Area Methods**

(EDCI 395) 3 credits. Lecture. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Selection and organization of learning experiences, instructional activities and materials, and methods of instruction related to the subject area. Course activities include a combination of lecture and seminar experiences, as well as extensive practice teaching.

**EDCI 5090. TPCPG Directed Student Teaching**

(EDCI 396) 9 credits. Clinical. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Supervised student teaching in a subject-specific content area.

**EDCI 5092. Practicum**

(EDCI 381) 1-6 credits. Practicum. Open primarily to master's and Sixth-Year students.

The implementation and application of theory in the student's area of specialization.

**EDCI 5094. Seminar**

(EDCI 384) 1-3 credits. Seminar. Open primarily to master's and Sixth-Year students.

Analysis of the issues and research in the field of education.

**EDCI 5099. Independent Study in Education**

(EDCI 300) 1-3 credits. Independent Study.

Students requesting this course should have a significant background in education and should present to the instructor problems, well-defined and well laid out for investigation, which hold special interest for them and which will be pursued on the plan of advanced study.

**EDCI 5100. Teaching Reading and Writing in the Primary Grades**

(EDCI 462) 3 credits. Lecture.

Processing unique to beginning reading and writing with emphasis on emerging literacy and promoting literacy development.

**EDCI 5105. Teaching the Language Arts**

(EDCI 463) 3 credits. Lecture.

Teaching integrated language arts including oral and written communication, creative language, and spelling development with an emphasis on current research.

**EDCI 5110. Teaching Writing in the Elementary School, Grades K-6**

(EDCI 308) 3 credits. Lecture.

A course for elementary teachers with emphasis on: teaching the writing process in persuasive, narrative and expository writing; evaluation of errors; developing appropriate curricular sequences; and research in the writing process.

**EDCI 5115. The Teaching of Reading**  
(EDCI 362) 3 credits. Lecture.

An overview of process and program; theoretical models of the reading, guidelines for a total school reading program, definition of terminology and principles of instruction. Analysis of available material made when appropriate. Intended as a background course for teachers with no previous course work or experience in teaching reading.

**EDCI 5120. Introductory Reading Clinic**  
(EDCI 343) 3 credits. Practicum.

Clinical practice in instruction of persons with corrective reading disabilities.

**EDCI 5125. Teaching Reading and Writing in Middle and Junior High School**  
(EDCI 425) 3 credits. Lecture.

Process and problems unique to reading and writing needs in the middle and junior high school. Emphasis on the development of reading and writing strategies as well as diagnostic teaching methods appropriate to this level.

**EDCI 5130. Teaching Children's Literature in the Elementary School**  
(EDCI 454) 3 credits. Lecture.

Literature for elementary school children, techniques for developing interest in independent and recreational reading.

**EDCI 5135. Literacy in the Secondary School**  
(EDCI 372) 3 credits. Lecture.

Process and problems unique to literacy needs in the secondary school. Emphasis on differentiated instruction for students with diverse backgrounds and abilities.

**EDCI 5140. Teaching Reading in the Content Areas**  
(EDCI 427) 3 credits. Lecture.

Emphasis upon the adaptation of materials, reading skills and study strategies applicable to the content areas; functional techniques for incorporating reading into subject matter instruction; the role of reading personnel within school settings.

**EDCI 5145. Classroom Assessment and Correction of Reading Difficulties**  
(EDCI 470) 3 credits. Lecture.

Types of reading difficulties and the remediation methods appropriate for use by the classroom teacher.

**EDCI 5150. Clinical Diagnosis and Correction of Reading Difficulties**  
(EDCI 471) 3 credits. Lecture.

Severe reading disabilities and clinical methods of remediation utilizing the case study approach.

**EDCI 5155. Advanced Reading/Language Arts Clinic**  
(EDCI 476) 6 credits. Practicum. Prerequisite: EDCI 5150.

For prospective reading/language arts specialists. A laboratory course in planning and implementing remedial reading/language arts instruction for persons with severe or complex reading and writing disabilities.

**EDCI 5160. Design, Management, and Supervision of Reading Programs**  
(EDCI 478) 3 credits. Lecture. Prerequisites: EDCI 5150 and EDCI 5155.

Designing, supervising and evaluating reading programs on a school and system-wide basis.

**EDCI 5250. Teaching Literature to Adolescents**  
(EDCI 386) 3 credits. Lecture.

A study of competing theories of literary response with an emphasis on implications for the teaching of literature and research on the teaching of literature. Includes some reading of literature for young adults.

**EDCI 5255. Teaching Composition (7-12)**  
(EDCI 387) 3 credits. Lecture.

A study of composition theory, with an emphasis on implications for the teaching of writing and research on the teaching of writing.

**EDCI 5350. Teaching Elementary and Middle School Social Studies**  
(EDCI 364) 3 credits. Lecture.

A study of curriculum alternatives, techniques of individual and small-group instruction, evaluation and the development of teaching materials.

**EDCI 5355. Trends in Social Studies Curricula**  
(EDCI 370) 3 credits. Lecture.

New curricula and developments. For teachers and supervisors of social studies.

**EDCI 5360. Education and Popular Culture**  
3 credits. Lecture. Instructor consent required.

This course examines important and timely issues around popular culture and education with a focus on film/television/music and students/teachers. The class will explore popular culture images of students and teachers and how these influence societal views of teaching and learning, analyze classroom practices with popular culture and develop skills and understanding applicable to teaching, study the history of film and television, and investigate issues of media literacy both in and out of the classroom.

**EDCI 5369. The Teaching and Learning of Mathematical Problem Solving**  
(EDCI 369) 3 credits. Lecture.

This course will focus on the processes involved in mathematical thinking and mathematical problem solving. Classroom discussions will address those aspects associated with expert problem solving-domain knowledge, problem solving skills,

metacognition (belief and issues of control), and aesthetic judgments. Students will have an opportunity to discuss and solve various types of mathematics problems and develop instructional strategies to teach and assess mathematical problem solving at the middle and secondary school levels.

**EDCI 5450. The Teaching and Learning of Mathematics in the Secondary School**  
(EDCI 351) 3 credits. Lecture.

An examination of current approaches to the teaching and learning of mathematics in the secondary school. Emphasis will be placed on issues surrounding content knowledge, curriculum, pedagogy, epistemology, assessment, and technology with respect to recent national initiatives and instructional techniques impacting on the secondary school mathematics curriculum.

**EDCI 5455. Curricula in Mathematics Education**  
3 credits. Lecture.

Exploration of significant curricula in mathematics education for teachers and supervisors of mathematics. Emphasis is placed on research and development related to content and techniques.

**EDCI 5460. The Teaching and Learning of Mathematics in the Elementary School**  
(EDCI 363) 3 credits. Lecture.

This course will investigate the teaching and learning of mathematics in the elementary school. Emphasis will be placed on issues surrounding content knowledge, curriculum, pedagogy, epistemology, assessment, and technology with respect to national initiatives and instructional techniques impacting elementary school mathematics.

**EDCI 5465. The Teaching and Learning of Mathematics in the Middle School**  
(EDCI 366) 3 credits. Lecture.

This course will investigate the teaching and learning of mathematics in the middle school. Emphasis will be placed on issues surrounding content knowledge, curriculum, pedagogy, epistemology, assessment, and technology with respect to national initiatives and instructional techniques impacting middle school mathematics.

**EDCI 5500. Teaching Science in the Middle and Secondary School**  
(EDCI 354) 3 credits. Lecture.

Materials and advanced methods in the teaching of science in grades 7-12.

**EDCI 5505. Materials and Methods in the Teaching of Elementary School Science**  
(EDCI 374) 3 credits. Lecture.

A systematic examination of major science and curriculum program for the elementary school, the selection and design of materials, the development of teaching techniques.

**EDCI 5550. Problems in the Teaching of Science**  
(EDCI 367) 3 credits. Lecture.

Theories of teaching science with emphasis on studies of research related to current problems.

**EDCI 5555. Environmental Education**  
(EDCI 377) 3 credits. Lecture.

An exploration of state, national, and international environmental issues and instructional approaches for developing student awareness, knowledge, and concern for the environment, K-12. Includes classroom and field study.

**EDCI 5600. Methods for Teaching Foreign Languages in the Elementary Schools**  
(EDCI 318) 3 credits. Lecture.

An introduction to methods of teaching foreign languages in the elementary schools. Includes FLEX, FLES, and immersion approaches.

**EDCI 5605. Second Language Acquisition in the Elementary School-Age Student**  
(EDCI 319) 3 credits. Lecture.

An introduction to current research related to second language acquisition in elementary school-age children, with emphasis on implications for foreign language instruction.

**EDCI 5700. Foundations of Bilingual Education**  
(EDCI 304) 3 credits. Lecture.

Study of the political, social and legal aspects of bilingual education, including principles of second language acquisition.

**EDCI 5705. Curricular Issues in Bilingual Education**  
(EDCI 307) 3 credits. Lecture.

Current approaches, methods and techniques with respect to curricular issues in contemporary bilingual education programs.

**EDCI 5710. Special Topics in Bilingual Education**  
(EDCI 309) 3-6 credits. Lecture.

In-depth study of current topics related to bilingual education programs.

**EDCI 5715. Bilingualism and Second Language Acquisition**  
(EDCI 312) 3 credits. Lecture.

Developmental sequences and theories of first and second language acquisition.

**EDCI 5720. Bilingual Education and Bilingualism**  
(EDCI 313) 3 credits. Lecture.

Current methods, strategies and techniques of reading in the mother tongue (L1); transfer of reading skills into English (L2); and, evaluation and adaptation of L1 and L2 reading materials. Principles of second language acquisition.

**EDCI 5740. Latinos and U.S. Education**  
(EDCI 360) 3 credits. Lecture.

Conditions of schooling Latinos in the U.S. educational system via an historical and economic context, including principles of second language

acquisition. Policy issues and theoretical discussions of underachievement. Relationship between dominant and subordinate cultures and their effect on classroom discourses.

**EDCI 5742. Sheltered English Instruction for English Language Learners**  
(EDCI 397) 3 credits. Lecture.

Current approaches and techniques with respect to academic language development in sheltered environments. This course attempts to disclose the most important issues surrounding content area teaching for English Language Learners (ELLs). Special attention is placed on the teaching of mathematics, science, and literacy in English for second language learners, including second language acquisition and development within the content areas.

**EDCI 5745. International Perspective on Bilingual Education**  
(EDCI 402) 3 credits. Lecture.

Education of speakers of non-dominant languages in comparative and international perspective. Emphasis on issues of educational policy, curricula, teacher education, and evaluation as these relate to the schooling of cultural and linguistic minority populations in different societies.

**EDCI 5750. Language Diversity and Literacy**  
(EDCI 317) 3 credits. Lecture.

Overview of issues and debates concerning the theory and practice of literacy development for non-native English speaking students in the United States. Includes principles of second language acquisition.

**EDCI 5755. Teaching English as a Second Language**  
(EDCI 404) 3 credits. Lecture.

An examination of current research on the acquisition and learning of English as a second language (ESL) in school settings. Critical issues in the application of research on ESL to the bilingual classroom are discussed.

**EDCI 5760. Research in Bilingual Education**  
(EDCI 409) 3 credits. Seminar. Prerequisite: EDCI 5705.

Analysis of research in bilingual education, methods of research and design and implementation of research studies in bilingual education.

**EDCI 5765. Assessment of Bilingualism**  
(EDCI 413) 3 credits. Seminar.

Principles of assessment for bilingual learners, including language proficiency and dominance, (bi)literacy development, and academic content knowledge. Current assessment approaches for bilingual learners in different context (e.g., bilingual, ESL classes) and for various purposes (e.g., screening, placement, evaluation). Principles of second language acquisition.

**EDCI 5770. Advanced Issues in Bilingual Education**  
(EDCI 414) 3 credits. Seminar. Prerequisite: EDCI 5705.

Critical contemporary issues and topics related to bilingual education programs in the United States.

**EDCI 5775. Advanced Issues in Second Language Acquisition**  
(EDCI 421) 3 credits. Seminar.

Advanced clinically-based seminar focusing on research issues and practice in second language acquisition.

**EDCI 5780. Social and Political Context Bilingual Education**  
(EDCI 422) 3 credits. Seminar. Prerequisite: EDCI 5705.

Advanced seminar addressing the social and political context of contemporary bilingual education programs from a critical perspective.

**EDCI 5800. Applied Learning Research for Instructional Leaders**  
(EDCI 305) 3 credits. Lecture.

A study of learning principles and their manifestations in classroom settings; design and application of goals and objectives; instructional methods and programming which complement and extend learning style preferences and collective and individual needs.

**EDCI 5802. Lectures in Education**  
(EDCI 301) 1 credit. Lecture.

A course in which staff members and authorities in education and related fields discuss selected problems.

**EDCI 5804. Curriculum Planning**  
(EDCI 310) 3 credits. Lecture.

Examines teachers' issues and problems from real-life cases with theoretical perspectives and pedagogical methods.

**EDCI 5808. Curriculum Development Processes**  
(EDCI 329) 3 credits. Lecture.

A study of the processes, strategies, and techniques used to bring about planned curriculum development in any educational setting.

†**EDCI 5810. Workshop in Education**  
(EDCI 311) 1-3 credits. Practicum.

Professional personnel to work cooperatively on problems arising out of actual school situations.

**EDCI 5812. Managing and Motivating Students in the Classroom**  
(EDCI 335) 3 credits. Lecture.

Classroom management from the perspective of motivation theory. Whole group, as well as individualized, interventions for increasing students' task-attentiveness and academic interest.

**EDCI 5814. Addressing Individual Needs and Talents in the Heterogeneous Classroom**  
(EDCI 373) 3 credits. Seminar.

Instructional and managerial techniques that can be used in the grade level classroom to meet the individual learning needs and talents of all students.

Strategies for improving the effectiveness of large group, individual and small group instructional practices. Current and promising practices, as well as relevant research.

**EDCI 5815. Teaching the Elementary School Child**

(EDCI 331) 3 credits. Lecture.

Study of the development of the elementary school child, the relationship between theory and practice, balancing traditional expectations with current concerns, and the selection and implementation of successful learning experiences in both school and non-school settings.

**EDCI 5820. Media Literacy in an Information Age**

(EDCI 375) 3 credits. Lecture.

A study of the growing field of media literacy and the media's influence upon our culture and education. Includes major principles, development of media analysis skills, and integration with the school curriculum.

**EDCI 5824. Educational Ethnography**

(EDCI 436) 3 credits. Seminar.

Methodology and content of socio-cultural case studies dealing with education in a variety of cultural contexts.

**EDCI 5825. Enhancing Classroom Curriculum with Computers and Electronic Media**

(EDCI 379) 3 credits. Laboratory.

Effective use of microcomputers and other electronic media to strengthen and enhance classroom instruction in the basic content and skill areas. Emphasis upon specific curriculum applications of technology rather than on its basic operation, mechanics, and programming.

**EDCI 5830. Curriculum Laboratory**

(EDCI 326) 1-6 credits. Practicum.

Open to teachers and administrators seeking practical solutions to curriculum problems in elementary and secondary schools. Reorganization of courses, reorientation of the program of studies, articulation of administrative units, and development of new materials are considered in relation to the local situation. Students make individual studies of their specific problems, and group studies of related problems.

**EDCI 5845. Seminar in International Education**

(EDCI 430) 3 credits. Seminar.

Concentrated study of culture and education in a major geographical region such as Africa, Asia, or Latin America; or cross-cultural studies of educational issues.

**EDCI 5850. Introduction to Curriculum**

(EDCI 325) 3 credits. Lecture.

Philosophy, theory, and practice employed in curriculum development and change.

**EDCI 5855. Elementary School Curriculum**

(EDCI 314) 3 credits. Lecture.

Analysis of the elementary school curriculum. Emphasis on curriculum development and educational alternatives.

**EDCI 5870. Curriculum Theory and Design**

(EDCI 330) 3 credits. Lecture.

Elements and formation of theory and application in the curriculum field.

**EDCI 5875. Multicultural Education**

(EDCI 357) 3 credits. Lecture.

Interrelationships between education and various sociocultural aspects of cultural diversity and cultural pluralism, including language acquisition and diversity.

**EDCI 5880. Contemporary Educational Theories**

(EDCI 432) 3 credits. Seminar.

Examination of the work of selected major contemporary educational theorists, as well as of significant trends and developments in modern education.

**EDCI 5885. Introduction to Critical Pedagogy**

(EDCI 371) 3 credits. Lecture.

Theory and practice in teaching for social justice with an emphasis on issues of class, race, gender and ethnicity.

**EDCI 5890. Educational Linguistics**

(EDCI 315) 3 credits. Lecture.

Overview of the study of language and linguistics, and especially applied linguistics, with emphasis on their implications for classroom teacher. Includes principles of second language acquisition.

**EDCI 5895. Language Ideology and Education**

(EDCI 322) 3 credits. Lecture.

Interrelationship among language, ideology, education and society, including examination of issues of social classes, ethnicity, gender, social context, power, and politics. Also covered are literacy, language prescriptivism and standardization, language policy and discourse in critical perspective. Principles of second language acquisition.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**EDCI 6000. Qualitative Methods of Educational Research**

(EDCI 365) 3 credits. Lecture.

Purposes and nature of qualitative research, including selected techniques for conducting various types of qualitative and naturalistic research in educational settings.

**EDCI 6005. Advanced Methods of Qualitative Research**

(EDCI 437) 3 credits. Lecture.

Field-based methods of collecting data in qualitative research studies in educational settings, coding and analysis of qualitative data, use of computer programs to analyze data, and methods and procedures for ensuring trustworthiness in qualitative research.

**EDCI 6010. Writing for Educational Publications**

(EDCI 380) 3 credits. Lecture.

Designing, writing, editing, and marketing material for professional publication.

**EDCI 6092. Practicum**

(EDCI 460) 1-6 credits. Practicum.

The implementation and application of theory in the student's area of specialization.

**EDCI 6094. Seminar**

(EDCI 410) 1-6 credits. Seminar.

Cooperative study of developments and problems in the student's area of specialization.

**EDCI 6200. Theoretical Foundations of Teaching English**

(EDCI 401) 3 credits. Lecture.

A sociocognitive perspective on teaching the English language arts, including the historical, sociological, linguistic, and psychological foundations of teaching English.

**EDCI 6410. Learning Theories for Mathematics Instruction**

(EDCI 423) 3 credits. Lecture. Prerequisite: EPSY 5510.

This course will examine various learning theories and their influence on mathematics instruction. In particular, this course will be concerned with understanding the processes involved in mathematical thinking, the impact of learning theory on mathematics instruction, expert-novice models of mathematical behavior, and ways to enhance mathematics learning in the classroom.

**EDCI 6415. Research in Mathematics Education**

(EDCI 424) 3 credits. Lecture.

Analysis of research in mathematics education, methods of research, and design and research studies.

**EDCI 6500. Research in Science Education**

(EDCI 418) 3 credits. Lecture.

An analysis of current research in science education. Emphasis on evaluation of research as well as the design and implementation of research.

**EDCI 6855. Sociocultural Theories for Educators**

(EDCI 431) 3 credits. Seminar.

The study of selected sociocultural theories and their application in education

**EDCI 6860. Research in Multicultural Education**

(EDCI 435) 3 credits. Lecture.

Advanced study in the processes and findings of research in multicultural education.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## EDUCATIONAL LEADERSHIP

*Department Head:* Professor Barry G. Sheckley

*Professor:* Schwab

*Associate Professors:* Bell, Cobb, Kehrnhahn, Rong, Saddlemire, Saunders, and Yakimowski

*Assistant Professors:* Donaldson, Grenier, James, Lemons, Mayer, and Tucker

Graduate programs in the Department of Educational Leadership lead to the degrees of Master of Arts and Doctor of Philosophy in the field of Educational Administration and to the degree of Doctor of Education in the field of Educational Leadership. New students are not being admitted at this time to the Ph.D. program in Educational Administration. The Neag School of Education also confers a Sixth-Year Diploma in Professional Education. Students should consult the statement under Education for information pertaining to admission requirements and special facilities available in the Neag School of Education.

The M.A. in in the field of Professional Higher Education Administration with an emphasis in Higher Education and Student Affairs (HESA) is designed to prepare students for professional careers in various higher education and student affairs positions. This full-time, two-year, cohort-based academic program combines traditional instruction with graduate assistantships and practicum experience. Major advisor and program coordinator: S. A. Saunders.

The Sixth-Year Diploma Program in Educational Administration – University of

Connecticut Administrator Preparation Program (UCAPP) – is a special two-year administrator certification program preparing educators for school leadership positions. For additional information, contact the Department Office. UCAPP cohorts consist of students from various geographic regions across the state including: East Hartford, Farmington, Southeastern Connecticut, and Stamford. Advisor: S.K. Tucker. Director: M. Femc-Bagwell.

The Ph.D. in Adult Learning program prepares professionals who have a strong theoretical foundation and empirically validated principles of practice for designing and supporting effective and efficient adult learning. Applications address adult learning and development in all sectors, including education, business, government, non-profit, and community. The M.A. program in Adult Learning also is offered. This program is designed for practitioners responsible for facilitating adult learning and developing systems that support adult learners. Major advisors are S. Bell, R. S. Grenier, M. T. Kehrnhahn, R. W. Lemons, and B. G. Sheckley.

The Ed.D. in Educational Leadership is an inquiry-based program that capitalizes on one of the most powerful learning forums available to full-time professional educators—their work settings. Throughout the program these settings become “laboratories of practice” in which participants inquire actively into problems of practice. The cohort-based program integrates theory, research and practice to enhance the habits of mind that enable educational leaders to accomplish systemic improvements. Classes meet at times designed to accommodate working professionals. Major advisors are S. Bell, C. D. Cobb, M. L. Donaldson, R. S. Grenier, M. C. James, R.W. Lemons, A. P. Mayer, R. L. Schwab, B. G. Sheckley, S. K. Tucker.

The program in the field of Educational Administration with an emphasis in education policy analysis leading to the M.A. and Ph.D. degrees is designed for individuals whose interests are directed toward scholarly research and analysis of education policy issues. **New students are not being admitted to the Ph.D. at this time.** The program is particularly suited for individuals who are interested in careers in academic, governmental, or consulting fields. Ordinarily, students have background experiences in the field of education that are rich in their depth and breadth. Major advisors are C. D. Cobb, M. L. Donaldson, M. C. James, R. W. Lemons, A. P. Mayer, R. L. Schwab, and B. G. Sheckley.

The Department of Educational Leadership offers the Executive Leadership Program which is designed to provide aspiring individuals outstanding preparation for assuming the school superintendency and other central office positions. This cohort-based program is completed within 12-13 months and meets on dates designed to accommodate working professionals. This is a non-degree program that leads to endorsement for the Connecticut 093 (superintendency) certificate. Selected courses are eligible for transfer to UConn's Ed.D. program with the approval of the student's advisory committee. Director: R. M. Villanova.

The M.A. in the field of Professional Higher Education Administration is offered with an emphasis in Higher Education Student Affairs.

**COURSES OF STUDY****EDLR 5001. Lectures in Education**

(EDLR 301) 1 credit. Lecture.

A course in which staff members and authorities in education and related fields discuss selected problems.

**†EDLR 5002. Workshop in Education**

(EDLR 311) 1-6 credits. Lecture.

Professional personnel to work cooperatively on problems arising out of actual school situations.

**EDLR 5015. Teacher Leadership and Organizations**

(EDLR 315) 3 credits. Lecture.

Teachers' role in providing leadership that extends beyond the walls of the individual classroom and includes collaboration with other adults.

**EDLR 5092. Practicum: Administrative Field Experience**

(EDLR 381) 1-6 credits. Practicum. Intended primarily for Sixth-Year students.

This course will provide an opportunity for educators who wish to become administrators of educational organizations to become familiar with the functions and tasks that certified administrators perform.

**EDLR 5094. Seminar**

(EDLR 384) 3 credits. Lecture. Open primarily to Master's and Sixth-Year students.

Analysis of the issues and research in the field of education.

**EDLR 5099. Independent Study in Education**

(EDLR 300) 1-3 credits. Independent Study.

Students requesting this course should have a significant background in education and should present to the instructor problems, well-defined and well laid out for investigation, which hold special interest for them and which will be pursued on the plan of advanced study.

**EDLR 5102. Assessment, Evaluation, and Research in Student Affairs I**

(EDLR 302) 3 credits. Lecture. Open to students enrolled in the Higher Education and Student Affairs master's degree program.

The role of assessment and evaluation to address current student affairs issues in higher education settings. Focus on skill development in problem identification, research question formulation, qualitative design, interview protocol development, and critique and applications of professional literature.

**EDLR 5103. Assessment, Evaluation, and Research in Student Affairs II**

(EDLR 303) 3 credits. Discussion. Prerequisite: EDLR 5102. Open to students enrolled in the Higher Education and Student Affairs master's degree program.

Application of assessment and evaluation research methodologies to address genuine problems in student



affairs contexts. Focus on development of theoretical framework, quantitative methods, reporting results, and formulating recommendations for improving practice and policy.

**EDLR 5105. Structured Group Interventions in Student Affairs**

(EDLR 305) 3 credits. Discussion. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Basic approaches to structured group work in relation to goals, objectives, and group dynamics. Implications of group approaches to the personal and educational development of students and staff in Student Affairs

**EDLR 5107. Resource Management in Student Affairs Administration**

(EDLR 307) 3 credits. Discussion. Open only to students enrolled in the Higher Education and Student Affairs master's degree program or consent of the instructor.

Analysis of higher education resource development and management with an emphasis on issues in student affairs administration; including, financial management and analysis, human resource management, and management of information technology resources.

**EDLR 5108. Leadership Challenges in Higher Education**

(EDLR 308) 3 credits. Discussion. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Application of leadership theory to challenges faced by higher education professionals. By developing critical thinking and problem solving skills, students will learn to identify a crisis, provide leadership for crisis management, and utilize methods of managing communication regarding incidents.

**EDLR 5112. Alcohol and Other Drugs and their Influence on Higher Education**

(EDLR 312) 3 credits. Discussion. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Examination of alcohol and other drug issues in higher education, substance abuse, and modalities of intervention for individual students. Includes current research on the complexity of environmental, cultural, and political issues of alcohol and other drug uses on college campuses.

**EDLR 5113. The Small College Experience**

(EDLR 313) 3 credits. Discussion. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Seminar designed to explore and understand a unique form of Higher Education, the American Small College, from various perspectives including president, faculty, students, and student affairs professionals. Primary emphasis on the small, residential, liberal arts college, though other small college settings will be discussed.

**EDLR 5117. The College Student**

(EDLR 317) 3 credits. Lecture. Open only to

students enrolled in the Higher Education and Student Affairs master's degree program.

Characteristics of today's college students. Student behavior theory. Impact of college on students.

**EDLR 5118. Seminar in Higher Education**

(EDLR 318) 3 credits. Seminar. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Seminar designed to promote the integration of the core curriculum and practitioner experiences of the Master's degree program in Higher Education and Student Affairs and to prepare students for their transitions to a professional position within student affairs upon graduation.

**EDLR 5119. The Law, Ethics, and Decision-Making in Student Affairs**

(EDLR 319) 3 credits. Seminar. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Survey of case law and statutory provisions related to higher education with a focus on student affairs administration. Students will develop an understanding of ethical decision making and its application to relevant student affairs scenarios.

**EDLR 5121. Introduction to Student Services in Higher Education**

(EDLR 321) 3 credits. Open to Students in Professional Higher Education Administration, others with permission.

A survey of student services and personnel functions in higher education, including an examination of philosophies, goals, objectives and procedures.

**EDLR 5122. College Student Development: Programs and Services**

(EDLR 322) 3 credits. Lecture. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

History and philosophy of student personnel work related to contemporary and projected student developmental programs and services. Rights, freedoms and responsibilities of students in relation to the college.

**EDLR 5123. Administration of Student Affairs in Higher Education**

(EDLR 323) 3 credits. Lecture. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

Administration of student affairs and services and applications of student development theory in the college community.

**EDLR 5124. Higher Education in Film**

(EDLR 324) 3 credits. Seminar. Open to students enrolled in the Higher Education and Student Affairs master's degree program, and to others with consent of the instructor.

An exploration of the portrayals of higher education in film, this course will establish a theoretical base for evaluating film and apply the constructs as a means for understanding the college experience. Focus on applications of film as a tool for student learning and programming.

**EDLR 5125. Issues in Student Affairs Administration**

(EDLR 325) 3 credits. Lecture. Open to Students in Professional Higher Education Administration, others with permission.

An examination of issues which affect the new student affairs administrator. Topics vary per semester.

**EDLR 5126. Leading toward a Multicultural Educational Environment**

(EDLR 393) 3 credits. Lecture. Open only to students enrolled in the Higher Education and Student Affairs master's degree program.

American higher education continually struggles with issues of difference, particularly racial, ethnic, gender, ability, religion, sexual orientation, and other cultural differences. Course participants are challenged to reflect on their personal experiences and examine their values, beliefs, and attitudes with regard to multicultural difference as a means to deepen a critical understanding of multicultural issues in higher education.

**EDLR 5201. Influences on Adult Learning**

(EDLR 309) 3 credits. Lecture. Interaction of person and environment. Culture. Role of environment. Situational barriers. Motivation. Self-regulation. Personality. Gender. Life transitions. Self-directed learning.

**EDLR 5202. Workplace Learning**

(EDLR 306) 3 credits. Lecture. Trends in workplace learning and workforce development. Conceptual models of performance improvement and transfer of training. Focus on individual, work team, and organizational variables related to learning, performance, and transfer of training.

**EDLR 5203. The Brain, Experience, and Adult Learning**

(EDLR 304) 3 credits. Lecture. Four learning systems within the brain. Role of experience in learning. Implications for adult learning and professional development programs.

**EDLR 5204. Organizational Learning**

(EDLR 431) 3 credits. Lecture. Group and collective learning in organizational settings, with an emphasis on adaptive and generative learning processes.

**EDLR 5205. Professional Development**

(EDLR 337) 3 credits. Lecture. Using research on how adults learn best and principles of human resource development to implement effective, job-embedded professional development programs. Using professional development to advance organizational goals. Examination of best practices.

**EDLR 5206. Development of Programs for Adult and Human Resource Education**

(EDLR 310) 3 credits. Lecture. Program development for adult learners; emphasis

on collaborative planning, needs assessment, effective learning strategies, transfer of training, evaluation, principles of good practice.

**EDLR 5207. Methods for Facilitating Adult Learning**  
3 credits. Lecture. Recommended preparation: EDLR 5201.

Focuses on principles and practices of adult learning facilitation, including situational and methodological factors that impact how adults learn in conventional and multimedia contexts.

**EDLR 5301. The School Principalship (K-12)**  
(EDLR 391) 3 credits. Lecture.

Roles and functions of the principal, problem solving, decision-making, school culture, curriculum leadership.

**EDLR 5302. Program Evaluation for School Improvement**  
(EDLR 365) 3 credits. Lecture.

Program evaluation issues critical to effective school leadership.

**EDLR 5303. Supervision of Educational Organizations**  
(EDLR 390) 3 credits. Lecture.

Supervision models; teacher selection and induction; teacher evaluation; staff development and organizational change.

**EDLR 5304. Curriculum Laboratory**  
(EDLR 326) 1-3 credits. Lecture.

Open to teachers and administrators seeking practical solutions to curriculum problems in elementary and secondary schools. Reorganization of courses, reorientation of the program of studies, articulation of administrative units, and development of new materials are considered in relation to the local situation. Students make individual studies of their specific problems, and group studies of related problems.

**EDLR 5305. Legal Aspects of Education**  
(EDLR 397) 2 credits. Lecture.

Legal status of public schools; legal rights and responsibilities of administrators, parents, students, school board members, and teachers.

**EDLR 5306. School Leadership and Administration of Educational Organizations**  
3 credits. Lecture.

This course will introduce students to concepts and skills which are fundamental to the successful administration of educational organizations. The overarching goal of the course is to provide pragmatic knowledge which will give students an understanding and appreciation of the complexity of educational organizations. The course will use Bolman and Deal's conceptual framework (multi-frame thinking) which borrows ideas from sociology, management science, psychology, political science as well as social and cultural anthropology.

**EDLR 5307. Contemporary Educational Policy Issues**  
(EDLR 378) 3 credits. Lecture.  
Study of current educational policy issues.

**EDLR 5308. Psychological Foundations of Education**  
(EDLR 432) 3 credits. Lecture.

Learning and related psychological theories and their implications for curriculum, teaching methods, and other aspects of educational practices.

**EDLR 5340. Educational Planning**  
(EDLR 380) 3 credits. Lecture.

An overview of the educational planning process and its relationship to the concepts of systems and futurism. Attention will be given to specific planning models and techniques such as needs assessment, PERT, PPBS, MBO, delphi, ZBB, and cost benefit analysis.

**EDLR 5342. Effective Departmental Leadership**  
(EDLR 389) 3 credits. Lecture.

Concepts and practices required of departmental leaders in today's secondary schools.

**EDLR 5343. Women, Education and Social Change**  
(EDLR 339) 3 credits. Seminar.

Examination of the lives of girls and women as students, teachers and academics. Emergence of teaching as a hierarchically sex-segregated profession. Effect of gender on the status and organization of the profession. Changing women's roles and social ideologies as related to women's educational aspirations, career achievement and leadership.

**EDLR 5344. Time Management and Personal Organization**  
(EDLR 340) 3 credits. Lecture.

Principles and practices of time management. Including interdisciplinary studies relating time usage to organizational behavior and personal effectiveness.

**EDLR 5346. Personnel Evaluation**  
(EDLR 370) 3 credits. Lecture.

Issues critical to the design and implementation of effective personnel evaluation programs.

**EDLR 5347. Improving Teacher Evaluation Practice**  
(EDLR 372) 3 credits. Lecture.

Improving the teacher evaluation skills of principals and department heads through guided practice experiences that allow them to reflect on what they are doing now in light of promising alternatives.

**EDLR 5349. Issues in Teacher Assessment and Evaluation**  
(EDLR 405) 3 credits. Lecture.

Critical review and analysis of current issues and emerging methodologies in teacher assessment and evaluation.

**EDLR 5351. Budgeting and Resource Management**  
(EDLR 350) 3 credits. Lecture.

Analysis of educational budget formats: program, capital, function, objective and zero based; budget planning, procedures, forms, documents, codes; political-economic issues in educational budgeting; case studies of program budgeting and site-based budgeting in education; cost reduction and analysis; resource management research.

**EDLR 5354. Human Resources Administration**  
(EDLR 396) 3 credits. Lecture.

Study of personnel management in education, including current laws, policies, practices and problems such as recruitment, tenure, promotion, retirement; performance evaluation; motivation; salary, benefits, welfare; staff development; data collection; layoff procedures; grievances; contract administration.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(EDLR 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1 - 9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**EDLR 6050. Research Designs in Educational Leadership**

(EDLR 376) 3 credits. Seminar. Program director consent required. Open to students enrolled in doctoral programs offered by the Department of Educational Leadership.

Development of research designs and conceptual rationale for investigative studies in adult learning and educational leadership.

**EDLR 6051. Research Methods in Educational Leadership**

(EDLR 442) 3 credits. Lecture. Open only to students enrolled in Ph.D. programs offered by the Department of Educational Leadership.

Research methods for investigative studies in adult learning and educational leadership.

**EDLR 6052. Qualitative Methods of Educational Research II**

(EDLR 451) 3 credits. Seminar. Prerequisite: EDCI 5302 (or equivalent).

This course is a companion to EDCI 5302, Qualitative Methods of Educational Research. It provides the opportunity for students to more closely examine qualitative methodology and methods to ensure that students are able to synthesize an

analysis of qualitative data. Specifically, students will generate credible units from narrative and visual data and develop categories from the units through comparing, contrasting, aggregating, and ordering data. Students will present findings in a chronological or thematic case example or case history, in an essay formulated around topics or theses, or in an alternative format appropriate to the analysis.

**EDLR 6054. Inquiry and Research in Educational Leadership I: Foundations, Design, and Use**

(EDLR 422) 3 credits. Seminar. Open to students in the Ed.D. program in Educational Leadership.

Explicates knowledge production through systematic inquiry in education, including processes, questions, and strategies used to conduct meaningful research in schools. Explores the intersection of theory and practice with emphasis placed on the critical analysis and interpretation of the research literature to the practice of school leadership.

**EDLR 6055. Inquiry and Research in Educational Leadership I: Implementation, Analysis, and Discovery**

(EDLR 423) 3 credits. Seminar. Open to students in the Ed.D. program in Educational Leadership.

A continuation of Understanding, Inquiry and Research in Educational Leadership I. Elaborates the strategies and tools used to conduct meaningful research in schools with emphasis in the actual conduct of research in school settings. Explores the link between research findings and the improvement of practice.

**EDLR 6092. Practicum**

(EDLR 460) 1-9 credits. Practicum.

The implementation and application of theory in the student's area of specialization.

**EDLR 6094. Seminar**

(EDLR 410) 1-3 credits. Seminar.

Cooperative study of developments and problems in the student's area of specialization.

**EDLR 6201. Strategic Applications of Adult Learning**

(EDLR 445) 3 credits. Seminar. Prerequisites: EDLR 5201, EDLR 5202, EDLR 5203, and EDLR 5204. Open to students in the Adult Learning graduate program.

Case study analysis and live case study consultation to develop innovative approaches to adult learning to address the challenges of employee development in corporate, education, public sector, and private sector settings

**EDLR 6202. Research Seminar in Adult and Vocational Education**

(EDLR 443) 1 credit. Seminar.

Advanced research issues in adult learning.

**EDLR 6301. School District Executive Leadership**

(EDLR 471) 3 credits. Seminar.

Seminar and practicum experiences focusing on leadership and policy issues facing school superinten-

dents, central office administrators, and senior state education agency officials.

**EDLR 6302. School District Policy, Politics, and Governance**

(EDLR 478) 3 credits. Seminar.

Study of educational policy and school governance; the politics of educational administration; reform; finance; and the processes of district policy formulation, implementation, and analysis. Specific school district policy and governance issues are examined.

**EDLR 6303. Data Driven Decision Making for School Improvement and Policy Development**

(EDLR 420) 3 credits. Seminar.

The purpose of this course is to provide school leaders with the knowledge necessary to improve instructional programs and improve policy by relying on data-driven strategies and tools. The course meets in seminar/lab format with students working on data-driven problems, analyses and developing action plans as a result. Students work on several case studies and a major project of personal, professional significance.

**EDLR 6304. Financial and Human Resources Management in Education**

(EDLR 421) 3 credits. Seminar.

Study of human resources development practices in school systems, with emphases on central office and school unit responsibilities for attracting, selecting, developing, evaluating, and retaining competent faculty and staff. This course also includes the study of concepts in school finance and school business management. Attention is given to national, state, and local issues. Emphasis is also given to school support services including transportation, faculty planning and maintenance, food service, and risk management.

**EDLR 6311. Organizational Behavior in Educational Administration**

(EDLR 430) 3 credits. Lecture.

Advanced course focusing on interdisciplinary research about organizations, leadership behavior, and management processes.

**EDLR 6312. Leadership for Teaching and Learning: The Role of the Leader in School Improvement**

(EDLR 424) 3 credits. Seminar.

Explores leadership skills required to improve instruction and student learning in the school and district. Students develop and apply models to address an instruction/achievement issue in practice.

**EDLR 6313. Educational Policy and Politics**

(EDLR 477) 3 credits. Seminar.

Study of educational policy; the politics of educational administration; and the processes of policy formulation, implementation and analysis. Specific educational policy areas are examined.

**EDLR 6314. Legal Issues in Organizational Management**

(EDLR 429) 3 credits. Seminar. Open to students in the Ed.D. program in Educational Leadership.

The legal process and understanding of legal issues in education involving students, teachers, and boards of education.

**EDLR 6320. Micro Theories for Policy Research**

(EDLR 435) 3 credits. Seminar. Instructor consent required.

Theoretical perspectives on policy formulation and implementation. Case examples illuminate the origin, development, and interpretation of policies by various policy actors across a range of contexts.

**EDLR 6321. Evaluation Theory**

(EDLR 457) 3 credits. Seminar. Instructor consent required.

Addresses conceptual underpinnings of contemporary approaches to evaluation. Major theories of evaluation in education policy are examined through a case study approach.

**EDLR 6322. Economics of Education and School Finance**

(EDLR 473) 3 credits. Seminar. Instructor consent required. Open to all graduate students in the Neag School of Education.

Use of economic theory and statistical analysis to explore current issues in education policy. Topics may include school finance, school finance reform, standards, assessment, class size, charter schools, tuition tax credits, and vouchers.

**EDLR 6323. Seminar in the History of K-12 Education Reforms, 1890-Present**

(EDLR 411) 3 credits. Seminar.

Seminar examining the history of K-12 education reforms from the 1890's to the present day.

**EDLR 6460. Collective Bargaining in Education**

(EDLR 406) 3 credits. Lecture.

This course concerns resolving conflict through self-help, negotiations and arbitration, understanding the Teacher Negotiations Law and methods of dealing with impasses under the law. The course also deals with preparing for negotiations by teacher unions and boards of education.

**EDLR 6461. Resources Management. II**

(EDLR 427) 3 credits. Seminar

Students will apply the principles of financial and human resources management to advanced educational leadership positions.

**EDLR 6462. Legal Issues in Human Resources Administration for School Leaders**

(EDLR 425) 3 credits. Seminar.

Provides legal bases for human resources decision-making through reading of primary source materials (statutes, administrative decisions, judicial

decisions) and related materials, and related class discussion. Provides students with practical experience in analysis and advocacy in human resource disputes, through mock negotiations, writing model briefs and conducting mock hearings.

**EDLR 6464. Seminar: Leadership and School Organizations**

(EDLR 472) 3 credits. Seminar.

Study of organizations and leadership from the perspective of the humanities and the social and behavioral sciences.

**EDLR 6465. Educational Administration Issues and Research**

(EDLR 474) 3 credits. Seminar. Prerequisites: EPSY 5605, EPSY 5607, and EPSY 6601.

Designing educational research studies; current topics in school administration. This course ordinarily meets for ten full days for special research activities.

**EDLR 6466. Policies for Improvement: Mobilizing School and Community**

(EDLR 428) 3 credits. Seminar.

Advanced seminar explores perspectives on the policy environment for school improvement. Students identify policy issues, collect data, conduct analyses, and propose actions.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## EDUCATIONAL PSYCHOLOGY

*Department Head:* Professor Hariharan Swaminathan  
*Professors:* Bray, Brown, Karan, Kehle, Leu, O'Neil, Reis, Rogers, and Sugai

*Associate Professors:* Alfano, Britner, Chafouleas, Colbert, Coyne, Gavin, Gubbins, Hannafin, Madaus, McCoach, Pérusse, Siegle, Yakimowski, and Young

*Assistant Professors:* T. Casa, Faggella-Luby, Little, Olinghouse, Sanetti, Schader, Simonsen, Stephens, and Welsh

Graduate study in the Department of Educational Psychology (<http://www.epsy.uconn.edu>) leads to the Master of Arts and the Doctor of Philosophy

degrees in the fields of study of Educational Psychology, Educational Technology, and Special Education. In addition, the Department offers the Sixth-Year Diploma in Professional Education conferred by the Neag School of Education.

**The Field of Educational Psychology.** The M.A. and Ph.D. degrees in Educational Psychology may be taken with concentrations in the areas of Cognition/Instruction; Counselor Education and Counseling Psychology (Ph.D. only); Gifted and Talented Education; Measurement, Evaluation, and Assessment; School Counseling (M.A. only); and School Psychology.

**The Concentration in Measurement, Evaluation and Assessment (MEA)** prepares graduates to become leaders in educational measurement, program evaluation, large-scale and classroom-based assessment practice, and educational statistics and research methods. The program integrates theory and practice to promote the scientific uses of measurement within the field of education and related disciplines. Coursework emphasizes the development of professional competencies within the area of MEA, and focuses on current and emerging topics including instrument development, measurement theory and applications, multilevel modeling, item-response theory, sampling methods, and educational assessment. Faculty support strong student/faculty interactions to promote research excellence and the development of significant contributions to the field. Contact H. Jane Rogers at Unit 2064 for more information.

**The Ph.D. Concentration in Counselor Education and Counseling Psychology** is intended to prepare Counselor Educators. Mandatory bi-monthly seminars including all the program's doctoral students and full-time faculty are an integral part of the program and are intended to promote a mutually supportive community of scholars that are actively addressing critical issues in the field. To build their credentials as future professors, all the program's Ph.D. students are expected to assist the faculty in teaching a minimum of two graduate courses in our master's degree program in school counseling; to make presentations at state, regional, and/or national professional conferences; and to collaborate with faculty and their peers on research studies resulting in publishable manuscripts. Doctoral students are involved in all aspects of our master's program. The mission of the master's program is to prepare professional school counselors to work with students of all age levels with special emphasis on poor and minority youth. It leads to state certification as a school counselor.

The doctoral program includes core academic requirements designed to enhance the students' research skills as well as a variety of specialty tracks from which students may choose the one that best meets their professional interests and career goals. The specialty tracks are in the following areas: (1) program evaluation, (2) qualitative research methodology, (3) primary prevention, (4) gifted and talented education, (5) positive behavioral supports, (6) licensure as a professional counselor, and (7) licensure as a counseling psychologist. Contact O. Karan at Unit 2064 for more information.

**The Concentration in School Psychology** is accredited by the American Psychological Association. The Master's/Sixth Year program also is approved by the National Association of School Psychologists. The program adheres to the scientist-practitioner model of graduate education which assumes that the effective practice of school psychology is based on knowledge gained from established methods of scientific inquiry. Emphasis is on the preparation of competent practitioners who are skilled and dedicated researchers who will contribute to the knowledge base in school psychology. In addition, the program is designed to acquaint students with the diversity of theories and practices of school psychology, allowing the student sufficient intellectual freedom to experiment with different delivery systems and various theoretical bases. The atmosphere is intended to foster student-faculty interaction, critical debate, and respect for theoretical diversity of practice, thus creating a more intense and exciting learning experience. The faculty believe that such an environment encourages and reinforces the student's creativity and intellectual risk-taking that are fundamental in the further development of the professional practice of school psychology. Contact T.J. Kehle at Unit 2064 for more information.

**The Concentration in Cognition/Instruction** links psychological theory with research and educational practice. The program emphasizes learning, cognition, instructional design, research, and theoretical perspectives on new literacies and instruction. Course work typically includes the study of instructional theories and models from cognitive psychology, motivation, emerging technologies and research methods. Additionally, research experiences are encouraged both at the University and in more applied settings. Contact the Graduate Program Coordinator at Unit 2064 or visit <<http://www.education.uconn.edu/departments/epsy/COGN/COGN.cfm>> for additional information.

**The Concentration in Gifted and Talented Education** prepares individuals for leadership roles as gifted education program coordinators, curriculum development specialists, regional or state gifted education agency directors, and for positions as teachers and researchers in higher education settings. The program of study includes course work on strategies and program models for developing student talent, field experiences in school settings, and research investigations that provide worthwhile and creative contributions to the literature. Contact E. J. Gubbins at Unit 3007 for more information.

**The Field of Educational Technology.** The program in Educational Technology emphasizes the study of the use of various media to promote learning and instruction. Special emphasis is placed on research, and development and design of instruction based on the latest instructional technologies. Students completing the program may work in academic or in training settings.

**The Field of Special Education.** The program in general Special Education is an individualized program, containing a number of emphases, including study in teacher education, transition, behavioral disorders, school reform, learning disabilities, literacy, developmental disabilities, and secondary and postsecondary education and services for students with disabilities, among others. Our commitment is to

inspire and prepare professionals in special education to create and broaden opportunities for individuals with disabilities. Students are encouraged to develop their interests in educating learners at risk across a wide range of disabilities incorporating a lifespan perspective. The doctoral program is designed to enhance independent thinking and leadership qualities through an individualized program embedded in a thorough knowledge of theory and the existing literature and culminating in active research to guide, direct, and inform the field. Contact M. Coyne at Unit 2064 for more information.

## COURSES OF STUDY

### **EPSY 5092. Practicum**

(EPSY 381) 1-6 credits. Practicum. Open to master's and Sixth-Year students.

The implementation and application of theory in the student's area of specialization.

### **EPSY 5107. Curriculum Issues in Special Education**

(EPSY 307) 3 credits. Lecture.

Program and curriculum planning for students with moderate to mild disabilities with particular attention given to relating individual education plans to school curricula.

### **EPSY 5108. Instruction for Students with Special Needs in the Mainstream**

(EPSY 308) 3 credits. Lecture.

Focus on planning for and working with students with special needs in schools.

### **EPSY 5113 Language and Literacy for Students with Cognitive Disabilities**

(EPSY 363) 3 credits. Lecture.

### **EPSY 5116. Individual Pupil Assessment**

(EPSY 336) 3 credits. Lecture.  
Diagnosis and prescription for children with special learning and behavioral disabilities, including administration, scoring and interpretation of pupil assessment instruments.

### **EPSY 5119. Policy, Law, and Ethics in Special Education**

(EPSY 369) 3 credits. Lecture.

The impact of policy and law on the professional role of special educators.

### **EPSY 5121. Developmental Foundations of Exceptionality**

(EPSY 331) 3 credits. Lecture.

An exploration of the link between normative theory and research in child development with assessment, understanding, and intervention for children and youth with exceptionalities.

### **EPSY 5123. Instructional Strategies and Adaptations for Students with Special Learning Needs**

(EPSY 333) 3 credits. Lecture.

Principles and practices for the provision of effective instruction for students with special learning needs.

### **EPSY 5127. Administration and Supervision of Special Education**

(EPSY 387) 3 credits. Lecture.

### **EPSY 5135. School-wide Proactive Discipline and Positive Behavior Supports**

3 credits. Lecture. Instructor consent required. Open to students admitted to UCAPP.

The purpose of this course is to give school administrators processes and practices for establishing and sustaining implementation of a systems approach to school-wide proactive discipline and positive behavior support (SWPBS). Emphasis is focused on the establishment, activities, and features of positive behavioral interventions and supports. Four elements will be emphasized: (a) data-based decision making, (b) research-validated practices, (c) meaningful outcomes, and (c) efficient systems.

### **EPSY 5138. Responding to Violence in the Schools**

(EPSY 361) 1 credit. Seminar.

Addresses how incidences of violence in the schools can be prevented, contained, and kept at a minimum with prevention programs, and immediate interventions to contain incidents of violence.

### **EPSY 5140. Transition Planning for Students with Disabilities**

(EPSY 329) 3 credits. Lecture.

An examination of relevant legislation and recommended practices related to person-centered transition planning for students with disabilities in post-school and adult life, including postsecondary education, employment, community participation, and independent living.

### **EPSY 5141. Classroom and Behavior Management for Special Educators**

3 credits. Lecture.

An introduction to Positive Behavior Interventions and Supports (PBIS), including theoretical and empirical support, three-tiered model, and implementation strategies.

### **EPSY 5142. Individualized Positive Behavior Support**

(EPSY 349) 3 credits. Lecture. Prerequisite: EPSY 5141.

Approaches for adapting programs to the behavioral, social and emotional needs of exceptional learners.

### **EPSY 5145. Issues in Postsecondary Disability Services**

(EPSY 330) 3 credits. Lecture.

An examination of issues relating to the assurance of equal educational access for students with disabilities in postsecondary settings.

### **EPSY 5160. Considerations in the Provision of Assistive Technology**

(EPSY 350) 3 credits. Lecture.

Emphasis will be on the consideration of assistive technology in the educational environment and will encompass the scope of activities involved in considering whether assistive technology is needed for a student to receive a free and appropriate education. This course is a required prerequisite for all other course work in the assistive technology emphasis.

### **EPSY 5161. Assistive Technology for Access**

(EPSY 351) 3 credits. Lecture. Prerequisite: EPSY 5160.

This course will provide an introduction to alternate access to the computer as a tool for the performance of educational tasks. Included will be an exploration of alternate and adaptive pointing and keyboard devices as well as software to enhance accessibility and productivity for persons with motor impairment, sensory challenges, and cognitive difficulties. Emphasis in the course will be on assistive technology solutions and applications for persons with significant disabilities in the educational environment.

### **EPSY 5163. Assistive Technology for the Struggling Learner**

(EPSY 353) 3 credits. Lecture. Prerequisite: EPSY 5160.

This course will explore the use of assistive technology tools across a continuum of low to mid to high tech aid in the efficiency, organization, and productivity of the struggling learner.

### **EPSY 5183. Lectures in Education**

(EPSY 301) 1 credit. Lecture.

A course in which staff members and authorities in education and related fields discuss selected problems.

### **EPSY 5187. Clinical Experiences in Integrated Settings**

(EPSY 327) 1-6 credits. Practicum.

An intensive supervised clinical experience that provides opportunities for students to plan and deliver integrated programs for students with and without special needs. A cooperative venture between the School of Education and the Professional Development Centers (public schools).

### **EPSY 5194. Seminar**

(EPSY 384) 3 credits. Seminar. Open to master's and Sixth-Year students.

Analysis of the issues and research in the field of education.

### **EPSY 5195. Workshop in Education**

(EPSY 311) 1-3 credits. Lecture. May be repeated to a maximum of 15 credits.

Professional personnel to work cooperatively on problems arising out of actual school situations.

### **EPSY 5198. Curriculum Laboratory**

(EPSY 326) 1-6 credits. Practicum.

Reorganization of courses, reorientation of the program of studies, articulation of administrative

units, and development of new materials are considered in relation to the local situation. Students make individual studies of their specific problems, and group studies of related problems.

**EPSY 5199. Independent Study in Education**

(EPSY 300) 1-3 credits. Independent Study.

Students requesting this course should have a significant background in education and should present to the instructor problems, well-defined and well laid out for investigation, which hold special interest for them and which will be pursued on the plane of advanced study.

**EPSY 5210. Learning with Technology**

(EPSY 354) 3 credits. Lecture.

Uses a problem-based design format to integrate learning theory and principles with educational technology to develop an integrated lesson plan in a content area. Students select meaningful authentic problems to integrate.

**EPSY 5220. Introduction to Educational Technology**

(EPSY 343) 3 credits. Lecture.

Instructional applications of productivity software and educational technology.

**EPSY 5230. Web-Based Learning**

(EPSY 375) 3 credits. Lecture. Prerequisites: EPSY 5240, EPSY 5220, EPSY 5510, and EPSY 5520.

Design, development, delivery and evaluation of web-based instruction.

**EPSY 5235. Design and Production of Multimedia Presentations**

(EPSY 482) 3 credits. Lecture.

Students will prepare presentations using slides, motion pictures, audiotapes and overhead transparencies; and will explore application of other technological developments to multimedia uses.

**EPSY 5240. Interactive Learning Environments**

(EPSY 317) 3 credits. Lecture. Prerequisites: EPSY 5220 and EPSY 5510.

This course is a broad overview of the interactive learning environments (ILEs) that are being used in Education. It will introduce students to current research in development and implementation of ILEs.

**EPSY 5250. Software Design and Evaluation**

(EPSY 374) 3 credits. Lecture.

This course provides students with the knowledge and experience in design and evaluation of educational software.

**EPSY 5301. Group Processes in Counseling**

(EPSY 302) 3 credits. Lecture.

Experiential and theoretical introduction to group process and dynamics.

**EPSY 5304. Foundations and Contents of School Counseling**

(EPSY 305) 3 credits. Lecture.

Basic philosophical and professional premises of the counseling profession. History of counseling profession, counselor's roles and functions, role of research/theory in counseling, and professional ethics. Individual group, and preventive counseling approaches.

**EPSY 5306. Principles of Career Development in Counseling**

(EPSY 312) 3 credits. Lecture.

Career development and career psychology. Adolescents and adults.

**EPSY 5307. Professional Orientation of School Counseling**

(EPSY 315) 3 credits. Lecture.

Principles and practices of pupil personnel work in educational institutions including all aspects of pupil personnel services; the role of the school counselor as a pupil personnel worker; and as a consultant on teacher-pupil relations.

**EPSY 5308. Counseling: Theory and Practice**

(EPSY 316) 3 credits. Lecture/Laboratory.

Prerequisite: EPSY 315.

Contemporary theories and practices of essential helping skills.

**EPSY 5309. Gender Role Conflict Issues for Helping Professionals**

(EPSY 325) 3 credits. Lecture.

Intensive review of gender role socialization in a workshop setting, emphasizing men's and women's gender role conflicts across the life span. Lectures, readings, discussions, self assessments, and media are used to explicate core concepts and themes.

**EPSY 5313. Multi-Cultural Parent-Professional Alliances**

(EPSY 394) 3 credits. Lecture.

Alliance-building processes between helping professionals and parents. Multi-cultural relationship development.

**EPSY 5314. Appraisal Procedures in Counseling**

(EPSY 415) 3 credits. Laboratory. Prerequisites: EPSY 5306 and EPSY 5602.

Use of instruments for estimating abilities, achievements, interest and personality; interpretation of appraisal procedures in counseling.

**EPSY 5315. Counseling: Advanced Practice**

(EPSY 416) 3 credits. Lecture. Prerequisite: EPSY 5308.

Continuing the work begun in EPSY 316; to strengthen and extend helping skills.

**EPSY 5316. Cross-Cultural Counseling**

(EPSY 429) 3 credits. Lecture. Prerequisites: EPSY 5308 and EPSY 5315.

Theories, skills and practices of counseling with culturally different persons in mental health settings.

**EPSY 5317. Field Work in Counseling and Personnel**

(EPSY 447) 3 credits. Practicum.

Supervised experience in counseling and related practices in schools and agencies with a concurrent supervisory seminar.

**EPSY 5319. School Counseling Internship**

3-6 credits. Practicum. Instructor consent required. This course may be repeated once for a maximum of 12 credits.

Post practicum experience in school counseling under the supervision of a fully trained and certified professional school counselor for the duration of one school year along with an accompanying on-campus seminar. All core courses in the school counseling program must be completed prior to beginning the internship.

**EPSY 5339. Assistive Technology for Curriculum Access**

(EPSY 339) 3 credits. Lecture.

This course will explore the range of assistive technology devices and software for curriculum access from the preschool through secondary environments.

**EPSY 5396. Directed Student Teaching for Students in the Teacher Certification Program for College Graduates**

(EPSY 396) 9 credits. Clinical. Open to students in the Teaching Certification Program for College Graduates, others with permission.

Supervised student teaching in special education.

**EPSY 5402. Individual Differences in Learners**

(EPSY 334) 3 credits. Lecture.

Foundations for individual differences among elementary and secondary school pupils.

**EPSY 5403. Intellectual Assessment**

(EPSY 338) 3 credits. Lecture. Prerequisite: EPSY 342, which may be taken concurrently, and enrollment in the School Psychology program.

Administration of the standard instruments of intellectual assessment and synthesis of the test information into an assessment report.

**EPSY 5404. Pupil Behavior: Studies in Clinical Diagnosis**

(EPSY 314) 3 credits. Lecture.

Diagnosis of school problems, report writing for school purposes, and an analysis of needs for referral.

**EPSY 5405. Applied Behavior Analysis**

(EPSY 358) 3 credits. Lecture.

Introduction to theories and application of behavioral techniques.

**EPSY 5406. Consultation Theories and Practices**

(EPSY 430) 3 credits. Lecture.

Theories and practices of professional consultation with an emphasis on actual interventions in schools, corporations and social service agencies.

**EPSY 5408. Ethics in Educational and Professional Psychology**

(EPSY 395) 3 credits. Lecture.

Explores the nature of professional virtue in psychology and related educational and human service disciplines.

**EPSY 5491. School Psychology Internship**

3-6 credits. Practicum. Instructor consent required. This course may be repeated once for a maximum of 12 credits.

Post practicum experience in School Psychology under the supervision of a fully trained and certified professional School Psychologist for the duration of one school year along with an accompanying on-campus seminar. All core courses in the School Psychology program must be completed prior to beginning the internship.

**EPSY 5510. Learning: Its Implication for Education**

(EPSY 335) 3 credits. Lecture.

Nature and types of learning, transfer of training, motivation, nature of instructional outcomes, with particular attention to individual differences among elementary and secondary school pupils.

**EPSY 5515. Professional Seminar in Cognition and Instruction**

(EPSY 355) 1 credit. Seminar.

A professional seminar designed to present topics, paradigms, models, and theories in the various fields of educational psychology. The current research programs of the graduate faculty in Cognition and Instruction are presented for discussion in a seminar format.

**EPSY 5520. Instructional Design**

(EPSY 356) 3 credits. Lecture.

Overview of the field of instructional design: instructional theories, prescriptive models, instructional strategies, issues and trends as they relate to the comprehensive development of instructional systems.

**EPSY 5530. Theories of Learning, Cognition and Instruction**

(EPSY 359) 3 credits. Lecture.

Behavioral and cognitive psychology as it applies to instruction.

**EPSY 5601. Principles and Methods in Educational Research**

(EPSY 341) 3 credits. Lecture.

Methods of research in education designed for Master's level students.

**EPSY 5602. Educational Tests and Measurements**

(EPSY 342) 3 credits. Lecture.

The development of measurement and evaluation techniques.

**EPSY 5603. Methods of Inquiry**

(EPSY 347) 3 credits. Lecture.

Fundamentals of qualitative and quantitative research in education.

**EPSY 5605. Quantitative Methods in Research I**

(EPSY 309) 3 credits. Lecture.

Quantitative procedures and analysis of computer output including descriptive and inferential statistics through one-way analysis of variance.

**EPSY 5607. Quantitative Methods in Research II**

(EPSY 313) 3 credits. Lecture.

Quantitative procedures and analysis of computer output including factorial analysis of variance, analysis of covariance, and multiple regression.

**EPSY 5610 Applied Regression Analysis for the Education Sciences**

3 credits. Lecture.

Multiple regression analysis and related techniques with applications to research in education. Topics include assumptions and inference; matrix representations; diagnostics and remedial measures; polynomial regression and interaction models; treatment of categorical independent variables, autocorrelation of errors in time series data, problems of missing values and selection bias, and logistic and ordinal regression models.

**EPSY 5613. Multivariate Analysis in Education**

(EPSY 346) 3 credits. Lecture.

An extension of EPSY 5607. Practical emphasis on multiple regression, canonical correlation, multivariate analysis of variance and covariance, discriminant function analysis, and factor analysis.

**EPSY 5621. Construct of Evaluation Instruments**

(EPSY 344) 3 credits. Lecture.

The theory and construction of assessment instruments in the affective domain.

**EPSY 5645. Computer Methods in Educational Research**

(EPSY 345) 2 credits. Laboratory. Prerequisite: EPSY 5605.

Introduction to the UConn mainframe and microcomputers, data preparation and verification, Job Control Language, XEdit procedures, and SPSS-X.

**EPSY 5671. School-Based Systems Interventions**

(EPSY 371) 3 credits. Lecture.

Examination of current professional issues, theoretical models, and research related to the design interventions.

**EPSY 5710. Introduction to Gifted Education and Talent Development**

(EPSY 360) 3 credits. Lecture.

Issues encountered in developing giftedness and talents in students: the nature of exceptional abilities, the history of special provisions, major scientific studies dealing with superior abilities, and contemporary educational systems and models.

**EPSY 5720. Developing Schoolwide Enrichment Programs**

(EPSY 370) 3 credits. Lecture.

An overview of the theory and research behind and components within the Schoolwide Enrichment Model. Practical techniques for implementing the model in classrooms and school districts.

**EPSY 5740. Strategies for Differentiating the Grade Level Curriculum**

(EPSY 373) 3 credits. Lecture.

Instructional and managerial techniques for use within or between classrooms to address learning differences among students. Strategies for improving academic achievement and success of diverse learners. Current and promising practices, as well as relevant research.

**EPSY 5750. Creativity**

(EPSY 365) 3 credits. Lecture.

The identification of creative thinking and problem solving and the development and implications of creativity training materials and teaching strategies.

**EPSY 5760. Improving Students' Thinking Skills**

(EPSY 366) 3 credits. Lecture.

Designed for teachers and administrators who wish to acquire more information about current research, trends and practices within the field of thinking skills instruction. An overview of the field, with special emphasis on research-based practices, major programs, and models for the improvement of thinking skills.

**EPSY 5780. Social and Emotional Components of Giftedness and Talent Development**

(EPSY 368) 3 credits. Lecture.

Review of current research on affective growth and potential adjustment problems of gifted and talented youth. Vocational concerns, self-concept, self-esteem, and the teacher's role in preventing or remediating affective problems related to giftedness.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**EPSY 6103. Grant Writing**

(EPSY 383) 3 credits. Lecture.

The grant procurement process is covered from identifying funding sources through initial grant management with a focus on actually writing a grant proposal.

**EPSY 6194. Doctoral Seminar**

(EPSY 410) 1-3 credits. Seminar.

Cooperative study of developments and problems in the student's area of study.

**EPSY 6220. Video Design for Learning**

(EPSY 484) 3 credits. Lecture.

Advanced principles of the video medium and its application to the learning process, instructional message design and the implementation of existing and emerging video delivery systems.

**EPSY 6230. Advanced Educational Technology**

(EPSY 434) 3 credits. Lecture.

Readings, research and development of instructional materials using applications of advanced educational technology.

**EPSY 6240. Academic Motivation: Theory Research and Practice**

(EPSY 404) 3 credits. Seminar. Prerequisite: EPSY 5510.

The purpose of this course is to examine theory, research and practice related to motivation, particularly the motivation to learn in academic settings. Specifically, the goals of this course are to introduce students to the field of the psychological study of motivation to learn in school settings; to explore the conceptual and practical value of framing of school and learning from a motivational and developmental perspective; to assist students in exploring how motivational theory and research may relate to their own areas of interest and help them in integrating motivational constructs into their research; and for participants to learn from each other and together read interesting new work on motivation to learn (a caring community is the crucible within which learning of enduring value unfolds). This course is designed for graduate students who are studying issues related to motivation to learn in school settings during the first two decades of life.

**EPSY 6301. Advanced Group Processes**

(EPSY 401) 3 credits. Lecture.

Participant/observers in a basic group course. Processing and analyzing of group processes.

**EPSY 6303. Advanced Theories and Techniques in Career Development**

(EPSY 412) 3 credits. Lecture.

An extensive and intensive survey of the major career development theories with an emphasis on the applicability of the theories in psychological career counseling. Models and methods of career counseling will be reviewed and integrated from the different theoretical perspectives.

**EPSY 6469. Single Subject Research in Education**

(EPSY 469) 3 credits. Lecture.

Introductory and advanced content related to features, types, development, and use of "Single Subject Research Designs" to study of interventions and programs for improving the academic and social behavior outcomes for children and youth in schools.

**EPSY 6491. Doctoral Internship in School Psychology**

3 credits. Practicum.

Intensive, one year supervised experience in school psychology setting totalling 1,500 or 2,000 hours of service.

**EPSY 6499. Doctoral Practicum**

(EPSY 460) 1-6 credits. Practicum.

The implementation and application of theory in the student's area of specialization.

**EPSY 6550. Situated Cognition**

(EPSY 418) 3 credits. Seminar. Prerequisites: EPSY 5510, EPSY 5520, and EPSY 5530.

Theory, research and applications of situated cognition and situated learning.

**EPSY 6560. Instructional Psychology**

(EPSY 438) 3 credits. Seminar. Prerequisites: EPSY 5220, EPSY 5530, and EPSY 5602.

An advanced course relating theories of cognition, behaviorism and instructional design. Topics include thinking, problem solving, the development of expertise and both automatic and controlled processing.

**EPSY 6601. Methods and Techniques of Educational Research**

(EPSY 441) 3 credits. Lecture. Prerequisites: EPSY 5601 (or master's level educational research class), and EPSY 5605, and EPSY 5607, OR consent of the instructor.

A survey of the principal methods employed in the investigation of educational problems, including problem formulation, stating hypotheses, sampling, instrument design, types of research methods and design principles.

**EPSY 6611. Logistic and Hierarchical Linear Models**

(EPSY 440) 3 credits. Lecture.

In-depth coverage of specialized topics in educational statistics including logistic regression and hierarchical linear models.

**EPSY 6621. Program Evaluation**

(EPSY 405) 3 credits. Lecture. Prerequisites: EPSY 5605, EPSY 5607, and EPSY 6601.

An overview of quantitative and qualitative procedures used in the evaluation of educational programs. Current trends and practical applications are stressed.

**EPSY 6626. Sampling Designs and Survey Research Methods in Education**

(EPSY 406) 3 credits. Lecture. Prerequisite: EPSY 5607.

Probability and non-probability sampling, single- and multi-stage sampling, sampling errors, design effects, unit-of-analysis concerns, confidentiality/anonymity issues, questionnaire design, interview procedures, item development, question format, ethics.

**EPSY 6635. Measurement in Cognitive Psychology**

(EPSY 439) 3 credits. Lecture.

Review of theory and research related to the measurement of variables in cognitive psychology such as domain knowledge, strategy knowledge, and motivation. Specific emphasis will be placed on the use of statistical theories and tools employed to study the reliability and validity of test scores. These tools include: generalizability theory, factor analysis, item response theory, and multidimensional scaling.

**EPSY 6636. Measurement Theory and Application**

(EPSY 436) 3 credits. Lecture.

An advanced course in measurement and evaluation. The course emphasizes current issues in measurement and the scientific procedures reflected in the literature that suggest alternative solutions to these issues.

**EPSY 6637. Item Response Theory**

(EPSY 437) 3 credits. Lecture.

An advanced course in educational and psychological testing theory. This course emphasizes the principles and processes of the most sophisticated approach to educational test construction and scoring available today.

**EPSY 6770. Curricular Options for High Ability Learners**

(EPSY 459) 3 credits. Lecture.

Curriculum theory and techniques with special attention to the development of instructional materials.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.



## ELECTRICAL ENGINEERING

*Department Head:* Professor Peter Luh

*Professors:* Anwar, Bansal, Bar-Shalom, Enderle, Fox, Jain, Javidi, Pattipati, Taylor, Willett, and Zhu

*Professor-in-Residence:* DeMaria

*Research Professor:* Boggs

*Associate Professors:* Ayers, Chandy, Donkor, and Escabi

*Assistant Professors:* Fei, Gokirmak, Silva, Tehranipoor, L. Wang, and Zhou

The following areas of study and research leading to M.S. and Ph.D. degrees are offered: Electronics and Photonics, and Biophotonics; and Information, Communication, Decision, Biosystems. In addition, areas of emphasis in computer engineering (M.S. and Ph.D.) and nanotechnology (M.S.) are available. Students may also choose to pursue an M.S. degree in Electrical Engineering without a concentration.

The significant involvement of the Department of Electrical and Computer Engineering in interdisciplinary programs, e.g., Biomedical Engineering, is indicative of the broad scope of its basic interests and activities. Admission to one of the programs does not require an undergraduate degree in electrical engineering. It is quite common for graduate students with undergraduate degrees in other fields of engineering or in biology, mathematics, and physics to hold fellowships, assistantships, and part-time instructorships in the Department of Electrical and Computer Engineering. This mixing of faculty and graduate students with a variety of backgrounds integrates diverse ideas into departmental research projects.

Research and education in information, communication, decision, and biosystems include human-machine systems, manufacturing systems, power systems, computer systems, digital and optical signal processing, optical computing, image analysis and processing, optoelectronic neural networks computer-aided design, estimation theory, and stochastic communication and control. Activities in electronics, photonics, and biophotonics include research in diffractive optics, optoelectronics, biophotonics, nanostructure engineering, sensor technology, electro-optics, quantum electronics, semiconductor lasers, semiconductor heterojunctions with application to integrated circuits, VLSI design and testing, electronic materials, antenna design, microwave technology, and high voltage engineering. Separate listings should be consulted for information concerning biomedical engineering as well as for collaborative fields such as computer science and engineering, and materials science.

**Special Requirements for the Ph.D. Program.** Admitted students must submit evidence of capacity for independent study in the form of a master's thesis or comparable achievement.

For information regarding fellowships, assistantships, and part-time instructorships, the applicant should address the chairperson of the Information, Communication, Decision, and Biosystems Graduate Admissions Committee, or the Electronics, Photonics, and Biophotonics Graduate Admissions Committee, depending upon the major

interest of the applicant. The address in both cases is 371 Fairfield Way, Unit 2157, Room 450, Storrs, Connecticut 06269-2157. Further information about the Biomedical Engineering program is available from the Admissions Chair of the Biomedical Engineering field of study, 260 Glenbrook Road, Unit 2247, Storrs, Connecticut 06269-2247.

**Special Facilities.** Departmental facilities include the following research laboratories: Biomedical Instrumentation Laboratory, Cyber Laboratory, Electrical Insulation Research Laboratory, Central Laboratory for Imaging Research, Micro/Opto-electronics Research Laboratory, Nanotechnology Laboratory, Optical Signal Processing/Computing Laboratory, Manufacturing Systems Laboratory, and the Photonics Research Laboratory. These laboratories contain a variety of computers and workstations, interface facilities, a clean room with semiconductor growth and characterization facilities, MBE and MOVPE facilities, and other specialized equipment. Fellowships, assistantships, and part-time instructorships are available. For more information, visit <www.engr.uconn.edu/ece/>.

### COURSES OF STUDY

**Registration restrictions: In addition to the listed prerequisites, approval of the Department head and instructor is required for non-degree students for registration in all courses.**

**ECE 5101. Introduction to System Theory** (ECE 301) 3 credits. Lecture. Recommended preparation: ECE 3101.

Modeling and analysis of linear systems. Introduction to functions of a complex variable. Linear algebra with emphasis on matrices, linear transformations on a vector space, and matrix formulation of linear differential and difference equations. State variable analysis of linear systems. Transform methods using complex variable theory, and time-domain methods including numerical algorithms.

**ECE 5201. Electromagnetic Wave Propagation** (ECE 348) 3 credits. Lecture.

Engineering application of Maxwell's field theory to electromagnetic wave propagation in various media. Reflection, refraction, diffraction, dispersion, and attenuation. Propagation in sea water and in the ionosphere.

**ECE 5211. Semiconductor Devices and Models** (ECE 338) 3 credits. Lecture.

Band theory, conduction in semiconductors, carrier statistics, deep levels, impurities with multiple charge states, heavy doping effects, non-uniform doping. Non-equilibrium processes, carrier scattering mechanisms, the continuity equation, avalanche multiplication, carrier generation, recombination, and lifetime. P-n junctions, non-abrupt junctions, various injection regimes, and device models. Metal semiconductor junctions, current transport mechanisms, and models. BJT, JFET, MESFET, and MOSFET, and device models.

**ECE 5212. Fundamentals of Opto-Electronic Devices** (ECE 339) 3 credits. Lecture.

Absorption and emission mechanisms in direct and indirect semiconductors. Semiconductor optoelectronic devices such as light-emitting diodes, injection lasers, photocathodes, solar cells, and integrated optics.

**ECE 5213. MOS Device and VLSI Fundamentals** (ECE 341) 4 credits. Lecture.

Physics of MOS capacitors and transistors, derivation of V-I relation expressing subthreshold, threshold, and saturation region behavior; short-channel effects in scaled-down transistors; scaling laws; VLSI fabrication technologies; design and layout gates and gate arrays; physics, device layout and design of semiconductor memories including static and dynamic RAMs. Laboratory emphasizes introduction to nonvolatile RAMs; computer aids in VLSI design; schematic capture, SPICE simulation, layout of custom IC's, and VHDL.

**ECE 5225. Electron Device Design and Characterization**

3 credits. Lecture/Laboratory. Instructor consent required. Recommended Preparation: ECE 4211 or equivalent course.

Design and evaluation of micro/nano electronic devices using state-of-the-art computer simulation tools, experimental electrical characterization of semiconductor devices and overview of modern electronic devices such as high-performance MOSFETs, TFTs, solar cells, non-volatile memories, CCDs, thermoelectric power generators. The electronic device (such as nanometer scale field effect transistor) design project will involve use of Synopsys tools to simulate the fabrication process, device simulation and performance evaluation.

**ECE 5231. Fundamentals of Photonics** (ECE 353) 3 credits. Lecture.

Principles of optics including rays, waves, beams, electromagnetics, polarization and statistics. Basic postulates, simple optical components, graded index and matrix optics, monochromatic waves, interference, polychromatic light, Gaussian beams and propagation, diffraction, Fourier transforms, holography, dispersion and pulse propagation, polarizing devices and applications. Concepts of coherence and partial coherence as applied to various light sources in optical experiments and systems.

**ECE 5232. Optoelectronic Devices** (ECE 356) 3 credits. Lecture.

Optoelectronic devices as applied to fiber optic communications, optical switching and interconnects. Semiconductor laser devices, including dc, ac small signal, ac large signal, and noise with emphasis upon analytical models. Vertical cavity devices and technology. Semiconductor optical amplifiers, waveguide and vertical cavity modulators, photodetectors, optical switches, receivers and transmitters. Techniques for OE integration and the relevance of bipolar and field-effect devices for monolithic integration. Technologies for optoelectronic

integration for telecom and datacom optical interconnect. WDM techniques for optical networks.

**ECE 5233. Optical Systems Engineering**  
(ECE 354) 3 credits. Lecture.

Design and analysis of paraxial optical systems, including stable and unstable laser resonators, and the propagation of geometric beams, Gaussian beams, and plane waves through complex optical systems. Topics include ray optics; ray matrices; polarization of light; diffraction theory; the connection between geometrical optics and diffraction; and performance analysis.

**ECE 5234. Optical Waveguides**  
(ECE 355) 3 credits. Lecture.

Propagation of electromagnetic waves in dielectric slab and fiber waveguides as described by geometrical ray optics and normal mode analysis. Integrated optic guides, step and graded index fiber guides. Single mode vs. multimode transmission, coupling, and other system considerations.

**ECE 5301. Engineering Problems in the Hospital**

(ECE 377) 3 credits. Lecture.

Given in collaboration with staff from the University's School of Medicine and from hospitals in Hartford. Aim is to familiarize the student with engineering problems in a modern hospital. Role of the small computer in the hospital; implanted pace-makers; heart catheterization. Students are expected to investigate and solve an engineering problem associated with clinical medicine as a semester project.

†GRAD 5930. Full-Time Directed Studies  
(Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's  
Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

†ECE 6094. Seminar  
(ECE 311) 1 credit. Seminar.

Presentation and discussion of advanced electrical engineering problems.

**ECE 6095. Special Topics in Electrical  
and Systems Engineering**  
(ECE 300) 1-3 credits. Lecture.

Classroom and/or laboratory courses in special topics as announced in advance for each semester.

**ECE 6099. Independent Study in Electrical  
Engineering**  
(ECE 320) 1-6 credits. Independent Study.

Individual exploration of special topics as arranged by the student with an instructor of his or her choice.

**ECE 6101. Linear Multivariable System  
Design**

(ECE 302) 3 credits. Lecture. Prerequisite: ECE 5101.

Observability and controllability. Application of canonic forms in system design. Methods of pole placement. Observer design. Noninteracting multivariable systems.

**ECE 6102. Optimal and Model Predictive  
Control**

(ECE 330) 3 credits. Lecture. Prerequisites: ECE 5101 and ECE 6111.

Optimal Control, including optimization techniques for linear and nonlinear systems, calculus of variations, dynamic programming, the Pontryagin maximum principle, and computational methods. Linear Model Predictive Control, including process models and model prediction methods of state space description, transfer matrix representation, and neural network representation; and optimization methods without and with constraints. Nonlinear Model Predictive Control.

**ECE 6103. Nonlinear System Theory**  
(ECE 331) 3 credits. Lecture. Prerequisite: ECE 5101.

Stability of time-varying nonlinear systems. Liapunov's direct method. Describing functions. Popov's stability criterion. Adaptive control.

**ECE 6104. Information, Control, and  
Games**

(ECE 332) 3 credits. Lecture. Prerequisites: ECE 5101 and ECE 6111.

Problems of static and dynamic optimization where more than one decision maker is involved, each having own payoff and access to different information. Review of elementary decision and control theory, non-cooperative games, cooperative games, bargaining models, differential games, team decision theory, Nash games, Stackelberg games (leader-follower problems). Introduction to large-scale systems and hierarchical control.

**ECE 6105. Man-Machine Systems Analysis**  
(ECE 333) 3 credits. Lecture. Prerequisites: ECE 5101 and ECE 6111.

Role of the human as a decision and control element in a feedback loop. Mathematical models of human control characteristics and instrument monitoring behavior. Effects of human limitations upon overall task performance. Parallel discussion of measurement and experimental techniques. Validation of theoretical results by comparisons with existing human response data.

**ECE 6106. Experimental Investigation of  
Control Systems**

(ECE 334) 3 credits. Lecture. Prerequisites: ECE 6103 and ECE 6111.

A study of experimental techniques and advanced design of control systems.

**ECE 6107. Stochastic Control**

(ECE 363) 3 credits. Lecture. Prerequisite: ECE 5101 or ECE 6111.

Methods of decision-making and control in a stochastic environment. Elements of utility theory. Principle of optimality and deterministic dynamic programming. Stochastic dynamic programming. Control of dynamic systems with imperfect state information. Certainty equivalence and the control's dual effect. Sequential hypothesis testing. Passive and active stochastic adaptive control algorithms. Decentralized control methods.

**ECE 6108. Linear Program and Network  
Flows**

(ECE 364) 3 credits. Lecture. Prerequisite: ECE 5101.

Computational methods for linear programming with special emphasis on sequential and parallel algorithms for Network Flow Problems. Standard and canonical forms of linear programming, revised Simplex methods, basis updates, decomposition methods, duality, shortest paths, minimal spanning trees, maximum flows, assignment problems, minimum cost network flows, and transportation problems.

**ECE 6111. Applied Probability and  
Stochastic Processes**

(ECE 313) 3 credits. Lecture.

Statistical methods for describing and analyzing random signals and noise. Random variables, conditioning and expectation. Stochastic processes, correlation, and stationarity. Response of linear systems to stochastic inputs. Applications.

**ECE 6121. Information Theory**

(ECE 314) 3 credits. Lecture. Prerequisite: ECE 6111.

Basic concepts: entropy, mutual information, transmission rate and channel capacity. Coding for noiseless and noisy transmission. Universal and robust codes. Information-theoretic aspects of multiple-access communication systems. Source encoding, rate distortion approach.

**ECE 6122. Digital Signal Processing**  
(ECE 316) 3 credits. Lecture.

Discrete-time signals and systems. The z-transform. The Discrete Fourier Transform (DFT). Convolution and sectioned convolution of sequences. IIR and FIR digital filter design and realization. Computation of the DFT: The Fast Fourier Transform (FFT), algorithms. Decimation and interpolation. Parametric and nonparametric spectral estimation. Adaptive filtering. Finite word length effects.

**ECE 6123. Advanced Signal Processing**  
(ECE 317) 3 credits. Lecture. Prerequisites: ECE 6111 and ECE 6122.

Wiener filter theory. Linear prediction. Adaptive linear filters: LMS and RLS algorithms, variants, lattice structures and extra-fast implementation. Convergence properties. High resolution spectral estimation. Hidden Markov models, Monte-Carlo methods for signal processing. Multiresolution decomposition and wavelets. Blind methods.

**ECE 6124. Advanced Signal Detection**  
(ECE 365) 3 credits. Lecture.

Focus on discrete-time detection of signals in noise which is not necessarily Gaussian. Topics include: classical Neyman-Pearson and Bayes theory, efficacy and asymptotic relative efficiency; some canonical noise models; quantized detection; narrowband signal detection; distance measures and Chernoff bounds; sequential detection; robustness; non-parametric detection; continuous-time detection and the Karhunen-Loève expansion.

**ECE 6125. Digital Image Processing**  
(ECE 374) 3 credits. Lecture.

Problems and applications in digital image processing, two-dimensional linear systems, shift invariance, 2-D Fourier transform analysis, matrix Theory, random images and fields, 2-D mean square estimation, optical imaging systems, image sampling and quantization, image transforms, DFT, FFT, image enhancement, two-dimensional spatial filtering, image restoration, image recognition, correlation, and statistical filters for image detection, nonlinear image processing, and feature extraction.

**ECE 6126. Optical Information Processing**  
(ECE 366) 3 credits. Lecture.

Two-dimensional signal processing using optical techniques. Topics include: review of two-dimensional linear system theory; scalar diffraction theory, Fresnel and Fraunhofer diffraction; Fourier transforming and imaging properties of lenses; image formation; frequency analysis of optical imaging systems; modulation transfer function; two-dimensional spatial filtering; coherent optical information processing; frequency-domain spatial filter synthesis; holography, Fourier and nonlinear holograms.

**ECE 6141. Neural Networks for Classification and Optimization**  
(ECE 318) 3 credits. Lecture.

This course provides students with an understanding of the mathematical underpinnings of classification techniques as applied to optimization and engineering decision-making, as well as their implementation and testing in software. Particular attention is paid to neural networks and related architectures. The topics include: Statistical Interference and Probability Density Estimation, Single and Multi-layer Perceptions, Radial Basis Functions, Unsupervised Learning, Preprocessing and Feature Extraction, Learning and Generalization, Decision Trees and Instance-based Classifiers, Graphical Models for Machine Learning, Neuro-Dynamic Programming.

**ECE 6142. Fuzzy and Neural Approaches to Engineering**  
(ECE 327) 3 credits. Lecture. Prerequisite: ECE 5101.

Fuzzy sets, applications to fuzzy logic and fuzzy control, and concepts and methodologies for fuzzy optimization. Fundamental models of neural networks, learning rules, and basic recurrent networks for optimization. The integration of fuzzy systems with neural networks. Examples from engineering applications.

**ECE 6143. Pattern Recognition and Neural Networks**  
(ECE 369) 3 credits. Lecture.

Review of probability and stochastic processes. Statistical pattern recognition. Nonlinear signal processing and feature extraction. Correlation filters. Metrics for pattern recognition. Bayesian classifiers. Minimum probability of error processors. Supervised and unsupervised learning. Perception learning methods. Multilayer neural networks. Applications to security and encryption.

**ECE 6151. Communication Theory**  
(ECE 361) 3 credits. Lecture. Prerequisite: ECE 6111.

Design and analysis of digital communication systems for noisy environments. Vector representation of continuous-time signals; the optimal receiver and matched filter. Elements of information theory. Quantization, companding, and delta-modulation. Performance and implementation of common coherent and non-coherent keying schemes. Fading; intersymbol interference; synchronization; the Viterbi algorithm; adaptive equalization. Elements of coding.

**ECE 6152. Wireless Communication**  
(ECE 368) 3 credits. Lecture. Prerequisites: ECE 6122 and ECE 6151.

Introduces basic concepts in wireless communication and networks with emphasis on techniques used in the physical layer of current and future wireless communication systems. Covers channel modeling, modulation, spread spectrum techniques, multiuser communication theory, wireless network protocols, and current cellular and PCS systems. Special topics in equalization and array signal processing are included.

**ECE 6161. Modern Manufacturing System Engineering**  
(ECE 322) 3 credits. Lecture.

Issues and methods in modern manufacturing systems. Integrated product and process development. Design for quality, on-line quality control and improvement, reliability during product development, and design for testability. Computer-aided production management, production planning and scheduling, and optimization-based planning and coordination of design and manufacturing activities. Targeted toward students, professional engineers, and managers who want to have an impact on the state-of-the-art and practice of manufacturing engineering, and to improve manufacturing productivity

**ECE 6211. Antenna Theory and Applications**  
(ECE 349) 3 credits. Lecture.

Analysis and synthesis of antenna systems including electric- and magnetic-dipole, cylindrical, helical, reflector, lens, and traveling-wave antennas. Theory of arrays including patterns, self and mutual impedances.

**ECE 6212. Microwave Techniques**  
(ECE 346) 3 credits. Lecture.

A theoretical analysis of microwave components, systems, and measuring techniques. Scattering matrix

analysis is applied to microwave devices having two or more ports.

**ECE 6221. Transport in Semiconductors**  
(ECE 352) 3 credits. Lecture. Prerequisite: PHYS 5401.

Topics include theory of energy bands in crystals; carrier scattering; the Boltzman equation and its approximations; low field transport; high field effects; transport in heterojunctions; quantum effects; and Monte Carlo simulation.

**ECE 6222. Advanced Semiconductor Devices**  
(ECE 351) 3 credits. Lecture.

Fundamental properties of heterostructures, strained-layer superlattices, NIPI structures, multiple quantum well, quantum wire, and quantum dot structures. Operation, modelling of the electrical characteristics, design, and applications of HBT, HEMT, and resonant tunneling devices. Second-order effects in submicron MOSFETs and MESFETs.

**ECE 6231. Advanced Optoelectronics**  
(ECE 350) 3 credits. Lecture. Prerequisite: ECE 5212.

Review of optoelectronic devices and integrated circuit (IC) technologies (analog and digital); logic gates; self-electro-optic devices (SEEDs), microlasers, Fabry-Perot (F-P) etalons and optoelectronic IC (OEICs); modulators: F-P modulators (absorptive and refractive), spatial light modulators (SLMs) and their applications; bistable devices; bistable laser amplifiers, resonant tunneling transistor lasers, and polarization bistability; optical interconnects; architectural issues and optical processors based on S-SEED, optical neural networks, and other devices.

**ECE 6232. Nonlinear Optical Devices**  
(ECE 358) 3 credits. Lecture. Prerequisite: ECE 5231.

Wave propagation in nonlinear media, generation of harmonics in optical materials, optical parametric processes, stimulated emission and scattering processes. Device modeling and application of fiber and semiconductor lasers, optical amplifiers and modulators. Electro-optic, acousto-optic, and magneto-optic devices. Soliton generation and propagation.

**ECE 6241. Electronic Materials**  
(ECE 340) 3 credits. Lecture. Prerequisite: ECE 4211 or MSE 5313.

Physical and electronic properties, and device applications of disordered materials including amorphous semiconductors, liquid crystals, bubble-memory magnetic materials. Applications of amorphous semiconductors including xerography and solar cells.

**ECE 6242. VLSI Fabrication Principles**  
(ECE 337) 3 credits. Lecture.

Semiconductor materials and processing, emphasizing compound semiconductors, optoelectronic materials, shallow devices, and fine-line structures. Semiconductor material properties; phase diagrams; crystal growth and doping; diffusion;

epitaxy; ion implantation; oxide, metal, and silicide films; etching and cleaning; and lithographic processes.

**ECE 6243. Nanotechnology**

(ECE 345) 3 credits. Lecture.

Nanoelectronic and optoelectronic devices: Quantum confinement in 1D, 2D and 3D (quantum wells, wires, and dots) structures; density of states and carrier density in low-dimensional structures; fabrication methodology for quantum wire transistors and lasers; single-electron transistors/tunneling devices; growth and characterization of nanostructured materials with grain sizes in the range of 10-50 nm. Organic monolayers: Langmuir-Blodgett monolayers, Self-Assembled monolayers, Multi-layer structures, technological applications of organic thin films.

**ECE 6244. Nanotechnology - II (Laboratory Course)**

(ECE 347) 3 credits. Lecture/Laboratory. Instructor consent required.

Growth and characterization of carbon nanotubes using vapor phase nucleation; Growth of cladded quantum dots using liquid and/or vapor phase techniques; Characterization using AFM and TEM and Dynamic scattering techniques; Nano-device processing highlighting E-Beam lithography, and self assembly techniques; Project work involving fabrication of devices including LEDs, FETs and memristors, detectors and sensors using quantum dots and nanotubes/wires.

**ECE 6247. Dielectric and Magnetic Materials Science**

(ECE 307) 3 credits. Lecture.

The macroscopic and microscopic views of dielectric and magnetic materials. Theories of spontaneous polarization and magnetization. Applications of anisotropic materials. Non-linear dielectrics at radio and optical frequencies. Superconductivity and superconducting magnets.

**ECE 6301. Biomedical Instrumentation I**

(ECE 370) 3 credits. Lecture. Prerequisite: ECE 6111.

Origins of bioelectric signals; analysis and design of electrodes and low-noise preamplifiers used in their measurement. Statistical techniques applied to the detection and processing of biological signals in noise, including the treatment of nerve impulse sequences as stochastic point processes. Methods of identifying the dynamic properties of biosystems.

**ECE 6302. Biomedical Imaging**

(ECE 378) 3 credits. Lecture.

Fundamentals of detection, processing and display associated with imaging in medicine and biology. Topics include conventional and Fourier optics, optical and acoustic holography, optical and digital image enhancement, ultrasonography, thermography, isotope scans, and radiology. Laboratory demonstrations will include holography and optical image processing.

**ECE 6303. Advanced Ultrasonic Imaging Technique**

(ECE 379) 3 credits. Lecture. Prerequisite: ECE 6302.

Introduction to advanced techniques of ultrasonic image formation for biomedical applications. Introduction to acoustic wave propagation. A,B,C,M and Doppler ultrasonic imaging modes. Interaction of ultrasound with biological tissues. Acoustical holography. Ultrasonic transducer design and calibration. Transducer arrays. Ultrasound detection modes. Laboratory demonstrations will include Schlieren visualization of ultrasound fields and transducer calibration techniques.

**ECE 6304. Biomedical Instrumentation Laboratory**

(ECE 373) 3 credits. Laboratory.

Experimental investigation of electrodes, transducers, electronic circuits, and instrumentation systems used in biomedical research and in clinical medicine.

**ECE 6305. Medical Imaging Systems**

(ECE 380) 3 credits. Lecture. Also offered as BME 6420.

Medical imaging principles and systems of x-ray, ultrasound, optical tomography, magnetic resonance imaging, positron emission tomography. The students are required to have the courses of instrumentation, signal analysis using Fourier Transform and Laplace transform. Students are also required to have advanced mathematics on differential equations and matrix calculations.

**ECE 6311. Communication and Control in Physiological Systems**

(ECE 372) 3 credits. Lecture.

Processing, transmission, and storage of information in nerve systems. Mechanisms of neuro-sensory reception, coding and signal-to-noise ratio enhancement. Analysis of invertebrate and vertebrate visual systems. Neural spatio-temporal filters in feature extraction and pattern recognition. Analysis of control systems and regulators associated with vision: e.g., gaze control, accommodation, pupil area, and intra-ocular pressure.

**ECE 6421. Advanced VLSI Design**

(ECE 359) 3 credits. Lecture. Recommended preparation: ECE 3302 and ECE 3421 (or equivalent).

Advanced concepts of circuit design for digital VLSI components in state of the art MOS technologies. Emphasis is on the circuit design, optimization, RTL design, synthesis, and layout of either very high speed, high density or low power circuits and systems for use in applications such as micro-processors, signal and multimedia processors, memory and periphery. Other topics include challenges facing digital circuit designers today and in the coming decade, such as the impact of scaling, deep submicron effects, interconnect, signal integrity, power distribution and consumption, and timing.

**ECE 6431. Advanced Computer Networks and Distributed Processing Systems**

(ECE 335) 3 credits. Lecture. This course and CSE 5300 may not both be taken for credit.

Design and evaluation of distributed computer communication and processing systems. Case studies,

development of suitable queuing and other models to describe and evaluate design problems such as capacity assignment, concentration and buffering, network topology design, routing, access techniques, and line control procedures.

**ECE 6432. VLSI Design Verification and Testing**

3 credits. Lecture.

Introduction to the concepts and techniques of VLSI (very large scale integration) design verification and testing, details of test economy, fault modeling and simulation, defects, automatic test pattern generation (ATPG), design for testability (DFT), scan and boundary scan architectures, built-in self-test (BIST) and current-based testing. State-of-the-art tools are used for ATPG, DFT, test synthesis and power analysis and management.

**ECE 6433. Stochastic Models for the Analysis of Computer Systems and Communication Networks**

(ECE 336) 3 credits. Lecture. Prerequisite: ECE 6111.

Continuous and discrete-time Markov chains and their applications in computer and communication network performance and reliability evaluation. Little's theorem and applications; review of stochastic processes; simple Markovian queues; open, closed, and mixed product-form networks; computational algorithms for closed and mixed product form networks; flow-equivalence and aggregation; M/G/1 queue with vacations and applications to time-division and frequency-division multiplexing; reservations and polling; multi-access communication; reliability and performability models of computer systems.

**ECE 6435. Advanced Numerical Methods in Scientific Computation**

(ECE 357) 3 credits. Lecture. Prerequisite: ECE 5101.

Development, application and implementation of numerically stable, efficient and reliable algorithms for solving matrix equations that arise in modern systems engineering. Computation of matrix exponential, generalized inverse, matrix factorizations, recursive least squares, eigenvalues and eigenvectors, Lyapunov and Riccati equations.

**ECE 6437. Computational Methods for Optimization**

(ECE 329) 3 credits. Lecture. Prerequisite: ECE 5101.

Computational methods for optimization in static and dynamic problems. Ordinary function minimization, linear programming, gradient methods and conjugate direction search, nonlinear problems with constraints. Extension of search methods to optimization of dynamic systems, dynamic programming.

**ECE 6439. Estimation Theory and Computational Algorithms**

(ECE 362) 3 credits. Lecture. Prerequisites: ECE 5101 and ECE 6111.

Estimation of the state and parameters of noisy dynamic systems with application to communications

and control. Bayesian estimation, maximum-likelihood and linear estimation. Computational algorithms for continuous and discrete processes, the Kalman filter, smoothing and prediction. Nonlinear estimation, multiple model estimation, and estimator Kalman, multiple model estimation, and estimator design for practical problems.

†GRAD 6930. **Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†GRAD 6950. **Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†GRAD 6960. **Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

GRAD 6998. **Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

GRAD 6999. **Dissertation Preparation**  
(GRAD 499) Non-credit.

## ENGINEERING

*Dean:* Professor Mun Choi  
*Associate Dean for Research and Graduate Education:*  
Professor A. F. Mehdi Anwar

**Master of Engineering Degree Program.** The School of Engineering, in addition to the master's and doctoral degree programs described elsewhere in this *Catalog*, offers the M. Engr. degree with areas of concentration in: Civil and Environmental Engineering, Chemical Engineering, Computer Science and Engineering, Electrical and Computer Engineering, Materials Science and Engineering, and Mechanical Engineering.

The M. Engr. degree is designed to meet the needs of practicing engineering professionals who are employed full-time. Work toward this degree program can be completed on-site at company or at other convenient locations. Distance learning is available in select areas. The required curriculum consists of 28 graduate credits and completion of a project.

In addition to the general admission requirements of the Graduate School, the following also are required: verbal, quantitative, and analytical scores from the Graduate Record Examinations; evidence of demonstrated competence in the discipline, including but not limited to undergraduate research or field experience; and, whenever possible, a personal interview by a potential graduate advisor.



The courses listed below are of common interest to students in various engineering disciplines and is taught by faculty from the various departments within the School of Engineering. Other engineering courses are listed under the sponsoring departments. Reference should be made to the offerings of the Departments of Chemical Engineering, Civil and Environmental Engineering, Computer Science and Engineering, Electrical and Systems Engineering, Mechanical Engineering, and Metallurgy and Materials Engineering and to the interdisciplinary offerings in applied mechanics, biomedical engineering, environmental engineering, fluid dynamics, and polymer science.

### COURSES OF STUDY

ENGR 5300. **Special Topics in Engineering**  
(ENGR 300) 1-6 credits. Lecture.

Classroom and/or laboratory course in special topics as announced in advance for each semester.

ENGR 5311. **Professional Communication and Information Management**  
(ENGR 311) 3 credits. Lecture.

Development of the advanced communication skills as well as information management required of engineers and engineering managers in industry, government, and business. Focus on (1) the design and writing of technical reports, articles, proposals and memoranda that address the needs of diverse

organizational and professional audiences; (2) the preparation and delivery of organizational and technical oral and multimedia presentations and briefings; (3) team building skills with an emphasis on communications; and (4) knowledge management.

ENGR 5312. **Engineering Project Planning and Management**

(ENGR 312) 3 credits. Lecture.

This course provides a methodology for managing engineering projects. Topics include project lifecycle, strategic planning, budgeting, and resource scheduling. Course work also includes work estimating, evaluating risk, developing the project team, project tracking and performing variance analysis. Case studies are used as class and homework assignments to focus the class on the topics presented.

## ENGLISH

*Interim Department Head:* A. Harris Fairbanks  
*Director of Graduate Studies:* Gregory M. Colón Semenza

*Professors:* Anselment, Barreca, Benson, Biggs, Bloom, Comprone, Dulack, Eby, Franklin, Harris, Hasenfratz, Higonnet, Hogan, Hollenberg, Jones, MacLeod, Makowsky, Marsden, Meyer, Miller, Murphy, Peterson, Pickering, Sonstroem, and Wilkenfeld

*Associate Professors:* Bercaw Edwards, Breen, Brown, Coundouriotis, Cramer, Cutter, Deans, Fairbanks, Hart, Hufstader, Jambeck, Kneidel, Lynch, Mahoney, Manning, Pelizzon, Phillips, Recchio, Roden, Sánchez-Gonzalez, Semenza, Shaw, Shea, Smith, Storhoff, Tilton, and Winter

*Assistant Professors:* Bailey, Bedore, Burke, Bystrom, Campbell, Carillo, Duane, Gorkemli, King'oo, Litman, Salvant, Schlund-Vials, Tony, and Van Alst

The Department of English (Web site: <[www.english.uconn.edu](http://www.english.uconn.edu)>) offers courses in English language and composition theory, criticism, and literature written in English. Special research projects and courses of study in comparative literature, medieval studies, American studies, and linguistics are available in course sequences administered cooperatively with other departments. Comparative literature courses of study are conducted in cooperation with the Department of Modern and Classical Languages. The Medieval Studies Program is conducted in cooperation with the language department and the Departments of Art, Dramatic Arts, History, and Philosophy. The area of concentration in American Studies is offered in cooperation with the Departments of History, Political Science, and Sociology.

English courses numbered in the 5000's series normally are broad studies of literary schools, periods, and topics and are open to both doctoral and master's candidates. Enrollment is limited to ten students. Seminars are numbered in the 6000's series and are designed primarily for doctoral students, although they are open to a limited number of master's candidates. Enrollment in the seminars is limited to eight students. Independent study is available under English 6000, a reading course normally open only to doctoral candidates.

**Admission to the M.A. and Ph.D. Programs.** All applications for admission, together with letters, personal statement, writing sample and the Graduate Record Examination scores (for both General and Subject tests) should reach Storrs **by January 15 to be competitive for teaching assistantships and fellowships.** There is no special application for teaching assistantships.

**The M.A. Program.** Students pursuing the M.A. in English must complete thirty credits of course work—including ENGL 5100, 5150, and 5160—and a written examination, which is taken in January of the second year of study; the examination is designed to test critical ability and awareness of literary history and theory. Typically, the M.A. program takes two years to complete.

**The Ph.D. Program.** Ordinarily, the plan of study is expected to contain twenty four credits of full-time graduate course work beyond the master's degree. Before writing the dissertation, students take a series of preliminary examinations in selected literary subject areas and write a dissertation proposal.

**Special Facilities.** Library collections include "little magazines" and alternative press publications, the Charles Olson archives, and extensive Short Title Catalogue holdings. The English Department sponsors the Connecticut Writing Project, a program for teachers at all levels throughout the State. Funds endowing the Department's Aetna Professorship in Writing make possible a variety of innovative courses as well as prizes for outstanding student essays. Student creativity is encouraged in the yearly Wallace Stevens Poetry Prize competition, judged by a leading poet in a special presentation at Storrs. Faculty edit the journals *The Eighteenth Century: Theory and Interpretation*, *LIT*, and *MELUS* (Multi-ethnic Literature of the United States). Recent distinguished Visiting Professors have included Andrew Gurr, Derek Pearsall, and James Simpson.

### COURSES OF STUDY

#### ENGL 5100. Theory and Teaching of Writing

(ENGL 300) 3 credits. Lecture. Open to graduate students in English, others with permission.

An exploration of the relationship between the theories and practice of writing, with attention given to recent classroom practices in composition.

#### ENGL 5120. Approaches to Literature

(ENGL 301) 3 credits. Lecture. Open to graduate students in English, others with permission.

An introduction to practical criticism. The nature of literature; the use of biography, psychology, and other background subjects in literary criticism; problems in literary history and analysis.

#### ENGL 5150. Advanced Research Methods

(ENGL 305) 1 credit. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

An introduction to advanced research in the humanities. History of and recent developments in humanities-based research; the use of electronic databases and traditional material resources; the collection and organization of materials; the formulation of an argument; the forms of professional academic writing.

#### ENGL 5160. Professional Development in English

(ENGL 306) 2 credits. Practicum. Open to graduate students in English and Medieval Studies, others with permission.

Advanced training in such activities as dissertation writing, attending conferences, publishing book reviews and scholarly articles, and seeking employment in academe. Includes practical instruction on revising a seminar paper for publication.

#### ENGL 5200. Children's Literature

(ENGL 303) 3 credits. Lecture. Open to graduate students in English, others with permission.

A study of Children's Literature from the aesthetic, historic, psychological and sociological points of view. Major themes and genres. Standards of literary criticism.

#### ENGL 5220. History of the English Language

(ENGL 308) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

The development of the sounds, forms, order, and vocabulary of Standard English; an introduction to the methods of modern descriptive linguistics, and to the application of linguistic fact and theory to the teaching of English.

#### ENGL 5240. The Bible as Literature

(ENGL 304) 3 credits. Lecture. Open to graduate students in English, others with permission.

A study of major themes and literary characteristics of writing from the Hebrew Bible and New Testament. The Bible's relevance to modern literary criticism.

#### ENGL 5270. Modern Poetry: Problems Critical Analysis

(ENGL 379) 3 credits. Lecture. Open to graduate students in English, others with permission.

#### ENGL 5280. Modern Drama

(ENGL 389) 3 credits. Lecture. Open to graduate students in English, others with permission

#### ENGL 5310. Old English

(ENGL 309) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

A study of the language and literature of pre-conquest England.

#### ENGL 5315. Medieval Literature

(ENGL 315) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

A study of medieval literature, exclusive of Chaucer.

#### ENGL 5318. Chaucer

(ENGL 310) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

#### ENGL 5320. Shakespeare

(ENGL 330) 3 credits. Lecture. Open to graduate students in English, others with permission

#### ENGL 5323. Renaissance Drama

ENGL 323) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

#### ENGL 5325. Renaissance I: 1485-1603

(ENGL 325) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 5326. Seventeenth-Century Literature** (ENGL 326) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 5329. Milton** (ENGL 329) 3 credits. Lecture. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 5330. Restoration and Eighteenth Century Literature** (ENGL 335) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5335. Later Eighteenth Century Literature** (ENGL 336) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5340. Romantic Literature** (ENGL 337) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5345. Studies in Victorian Literature** (ENGL 338) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5350. Modern British Writers** (ENGL 360) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5360. Irish Literature** (ENGL 365) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5410. American Literature to 1776** (ENGL 340) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5420. American Literature 1776-1865** (ENGL 341) 3 credits. Lecture. Open to graduate students in English, others with permission.

**ENGL 5430. American Literature 1865-1914** 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 5440. American Literature since 1914** 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 5500. Literary Criticism** (ENGL 371) 3 credits. Lecture. Open to graduate students in English, others with permission.  
A study of the major documents of literary criticism and theory from Plato and Aristotle to the present.

**ENGL 5530. World Literature in English** (ENGL 350) 3 credits. Lecture. Open to graduate students in English, others with permission.  
Selected works of colonial and post-colonial

literature from Africa, South Asia, the Caribbean, Australia, New Zealand, Canada, etc.

**ENGL 5550. Rhetoric and Composition Theory** (ENGL 385) 3 credits. Lecture. Open to graduate students in English, others with permission.  
Classical and contemporary rhetorical theory, current research in composition.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)** (GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research** (GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research** (GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)** (GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation** (GRAD 399) Non-credit.

**ENGL 6000. Independent Study** (ENGL 400) 1-6 credits. Independent Study.  
A reading course normally open only to doctoral candidates.

**ENGL 6200. Seminar in Children's Literature** 3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.  
Major authors, themes, or literary movements in American or British children's literature.

**ENGL 6260. Seminar in Modern Fiction** (ENGL 480) 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 6270. Seminar in Modern Poetry** (ENGL 479) 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 6290. Seminar in Non-Fiction Prose** (ENGL 483) 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 6310. Seminar in Beowulf** (ENGL 406) 3 credits. Seminar. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 6312. Seminar in Old Irish** 3 credits. Seminar. Open to graduate students in English and Medieval Studies, others with permission. With a change in content, this course may be repeated for credit.  
Language and literature of Medieval Ireland.

**ENGL 6313. Seminar in Old Norse** 3 credits. Seminar. Open to graduate students in English and Medieval Studies, others with permission.  
Old Norse language and literature.

**ENGL 6315. Seminar in Medieval Literature** (ENGL 415) 3 credits. Seminar. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 6320. Seminar in Shakespeare** (ENGL 430) 3 credits. Seminar. Open to graduate students in English, others with permission. May be repeated for a total of six credits with a change in content.

**ENGL 6325. Seminar in Renaissance Literature** (ENGL 423) 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.

**ENGL 6330. Seminar in Eighteenth-Century Literature** (ENGL 432) 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.

**ENGL 6340. Seminar in Romantic Literature** (ENGL 435) 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.

**ENGL 6345. Seminar in Victorian Literature** (ENGL 436) 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.

**ENGL 6360. Seminar in Irish Studies** 3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.  
Major authors, movements, or themes in Irish literature.

**ENGL 6400. American Ethnic Literature** 3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.

**ENGL 6420. American Literary Movements** 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.  
Introduction to a particular American literary movement.

**ENGL 6450. Special Topics in American Literature** 3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.

**ENGL 6500. Seminar in Literary Theory** (ENGL 471) 3 credits. Seminar. Open to graduate students in English, others with permission.

## ENVIRONMENTAL ENGINEERING

*Program Director:* Professor Amvrossios Bagtzoglou  
*Professors:* Cetegen, Clausen, Miller, Noll, Robbins, Segerson, Strasser, Torgersen, Willig, Warner, and Yang

*Associate Professors:* Abboud, Anagnostou, Liu, MacKay, Parnas, and Wang

*Assistant Professors:* Anyah, Bushey, Chrysochoou, Cui, Gebremichael, Li, McCutcheon, Seth, Srivastava, Wang, and Zhou

Environmental Engineering is an interdisciplinary field concerned with the scientific and technological aspects of environmentally related processes and systems. Environmental engineers play a critical role in assessing the impacts of existing contamination problems, devising strategies for managing polluted ecosystems, developing new guidelines for the treatment and disposal of wastes, and modifying manufacturing and other activities to minimize the generation of pollutants. Environmental engineers apply scientific principles to these areas in order to improve environmental quality, to protect public health, and to promote the advancement of sustainable development.

The Environmental Engineering graduate program emphasizes the mastery of fundamental scientific and socioeconomic principles. Graduate education in Environmental Engineering provides students with a sound foundation in basic engineering concepts, and the technological training and research expertise necessary to apply these concepts to the solution of a variety of problems.

Environmental Engineering degree programs are offered as an interdisciplinary Field of Study through the School of Engineering. Because of Environmental Engineering's broad scope and association with other University departments and research institutes, it offers a wide range of academic focus areas based in the natural and engineering sciences. We offer three focus areas of study: (i) biogeochemical processes (BGC), (ii) atmospheric processes (ATM), and (iii) hydrogeosciences engineering (HGS). Active research areas include:

- biochemical and physiochemical processes in environmental systems,
- combustion,
- environmental geophysical techniques,
- environmental interfacial processes,
- groundwater modeling and remediation,
- vadose zone hydrology,
- surface hydrological processes and land atmosphere interactions,
- pollution prevention, and
- environmental biotechnology

The graduate program offers Master of Science and Doctor of Philosophy degrees in Environmental Engineering. Student plans of study are flexible, comprehensive in nature, and are designed to meet the needs of the individual student.

**Admission to Degree Programs.** In addition to the basic admission requirements of the Graduate School, applicants must submit Graduate Record Examination scores with their application. Sound undergraduate preparation in science and/or

engineering is required for entrance to the degree programs. Admission is offered on a competitive basis to highly qualified individuals who show promise for distinguished professional and/or academic careers. Limited remedial coursework for non-engineering prospective students is required. For more details, please visit our website at <<http://www.engr.uconn.edu/environ>>.

**The M.S. Program.** There are no special requirements for admission to the master's program beyond those of the Graduate School. Most entering students have an accredited engineering degree or have taken preparative engineering course work. Selection of the Plan A (thesis) or the Plan B (non-thesis) option is made after consultation with the advisory committee. The primary objective of the master's program is to develop the students' understanding of the subject matter either through an emphasis on research (Plan A) or through a comprehensive understanding of a more general character (Plan B).

**The Ph.D. Program.** Admission to the doctoral program is based upon a careful assessment of the student's potential for significant, creative research in Environmental Engineering. There are no special requirements for admission to the doctoral program beyond those of the Graduate School. The student's plan of study is arranged in consultation with an advisory committee. Doctoral students must pass a general examination by the end of the second year of study.

**Facilities.** Students in the Environmental Engineering program have access to numerous state-of-the-art laboratories and facilities through the School of Engineering and associated University departments and institutes. These resources include: the Biotechnology Center, the Center for Biochemical Toxicology, the Center for Environmental Health, the Combustion/Air Pollution Laboratory, the Center for Environmental Sciences and Engineering, the Environmental Processes Laboratory, the Geographic Information Systems Institute, the Hydraulics Laboratory, the Institute of Water Resources, the Marine Sciences Institute, the Pollution Prevention Research & Development Center, and the Unit Operations Laboratory.

The mission of the Center for Environmental Sciences and Engineering (CESE) is to develop technology-based solutions to existing and emerging environmental concerns – particularly regarding the management of hazardous wastes and the advancement of pollution prevention technologies. CESE contains well equipped analytical chemistry and environmental chemistry laboratories focused on methods development and advanced analyses.

Graduate students within the School of Engineering also have access to a wide range of computing facilities. A laboratory of Unix-based SUN computers including Sun Workstations and Sun SparcStations is available to students in the environmental field. Peripheral hardware includes line and laser printers, image scanners, slide makers and large plotters. The School of Engineering also houses a series of computing laboratories containing IBM PC and Apple Macintosh computers. Large scale computing facilities are available through the University mainframe system and the School of Engineering's supercomputer facility.

**ENGL 6530. Seminar in World Literature**  
3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.

Major authors, movements, or themes in world literature written in English.

**ENGL 6550. Seminar in Rhetoric and Composition Theory**

(ENGL 485) 3 credits. Seminar. Open to graduate students in English, others with permission. This course may be repeated for a total of six credits with a change in content.

**ENGL 6575. Seminar in Women and Literature**

(ENGL 475) 3 credits. Seminar. Open to graduate students in English and Medieval Studies, others with permission.

**ENGL 6600. Creative Writing Workshop**

(ENGL 484) 3 credits. Seminar. Open to graduate students in English, others with permission.

**ENGL 6700. Seminar in Major Authors**

(ENGL 496) 3 credits. Seminar. Open to graduate students in English, others with permission. May be repeated for a total of nine credits with a change in content.

**ENGL 6750. Special Topics in Language and Literature**

(ENGL 497) 3 credits. Seminar. Open to graduate students in English, others with permission. With a change in content, this course may be repeated for credit.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)

(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research

(GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.



**COURSES OF STUDY**

Environmentally relevant courses are offered by a number of departments. In addition, visiting professors and adjunct faculty routinely offer graduate courses in their areas of expertise.

**ENVE 5094. Seminar in Environmental Sciences and Engineering**

(ENVE 400) 0 credits. Seminar. Also offered as CE 5394.

Extended discussions on presentations contributed by staff, students and outside speakers. A certificate of completion will be issued from the Environmental Engineering Program.

**ENVE 5210. Environmental Engineering Chemistry - I**

(ENVE 300) 3 credits. Lecture. Also offered as CE 5210.

Quantitative variables governing chemical behavior in environmental systems. Thermodynamics and kinetics of acid/base coordination, precipitation/dissolution, and redox reactions.

**ENVE 5211. Environmental Engineering Chemistry - II**

(ENVE 301) 3 credits. Lecture. Also offered as CE 5211.

Environmental organic chemistry: ideal and regular solution thermodynamics; linear free energy relations; estimation of vapor pressure, solubility, and partitioning behavior, abiotic organic compound transformations; chemical fate modeling.

**ENVE 5220. Transportation and Air Quality**

(ENVE 305) 3 credits. Lecture. Also offered as CE 5220.

Mobile source emissions models in theory and practice. Regulatory framework. Emissions control technology. Field and laboratory measurement techniques. Roadway dispersion modeling. Current topics in mobile source emissions.

**ENVE 5221. Transport and Transformation of Air Pollutants**

(ENVE 343) 3 credits. Lecture. Also offered as CE 5221.

Transport and deposition of gaseous and aerosol pollutants; chemical formation and reactions of oxidants and acidic compounds.

**ENVE 5230. Advanced Soil Chemistry**

(ENVE 303) 3 credits. Lecture.  
Physical chemical characteristics of soil minerals and soil organic matter, and their reactivity with compounds present in the aqueous and vapor phase. Topics include: modern spectroscopic surface analyses, soil organic matter and its interactions with metals, redox reactions, solubility, derivation of ion-exchange equations, and kinetics of soil reactions.

**ENVE 5240. Biodegradation and Bioremediation**

(ENVE 306) 3 credits. Lecture. Also offered as CE 5240.

Biochemical basis of the transformation of key organic and inorganic pollutants; quantitative description of kinetics and thermodynamics of pollutant transformation; impact of physicochemical and ecological factors on biotransformation.

**ENVE 5250. Ground Water Assessment and Remediation**

(ENVE 320) 3 credits. Lecture. Also offered as CE 5253.

Quantitative evaluation of field data in assessing nature and extent of groundwater contamination. Subsurface control and remediation. Case studies.

**ENVE 5251. Environmental Physicochemical Processes**

(ENVE 321) 3 credits. Lecture. Also offered as CE 5250.

Reactor dynamics, applications of interfacial phenomena and surface chemistry, processes for separation and destruction of dissolved and particulate contaminants. Scholarly reviews.

**ENVE 5252. Contaminant Source Remediation**

(ENVE 323) 3 credits. Lecture. Also offered as CE 5252.

Regulatory framework. Soil clean-up criteria. Treatment technologies: soil vapor extraction, solidification - stabilization, soil washing - chemical extraction, hydrolysis - dehalogenation, thermal processes, bioremediation. Risk analysis.

**ENVE 5253. Combustion and Air Pollution Engineering**

(ENVE 340) 3 credits. Lecture. Also offered as ME 5346.

Review of thermodynamics and chemical equilibrium. Introduction to chemical kinetics. Studies of combustion processes, including diffusion and premixed flames. Combustion of gases, liquid, and solid phases, with emphasis on pollution minimization from stationary and mobile systems. Air pollution measurement and instrumentation.

**ENVE 5254. Industrial Waste Management and Regulation**

(ENVE 324) 3 credits. Lecture.

Origin and characteristics of industrial wastes. Engineering methods for solving industrial waste problems.

**ENVE 5270. Advanced Environmental Engineering Laboratory**

(ENVE 302) 3 credits. Lecture/Laboratory.

Analysis of water and waste water. Experimental laboratory and plant investigation of water, wastewater and industrial waste treatment processes.

**ENVE 5310. Environmental Transport Phenomena**

(ENVE 310) 3 credits. Lecture. Also offered as CE 5310.

Movement and fate of chemicals: interfacial processes and exchange rates in environmental matrices.

**ENVE 5311. Environmental Biochemical Processes**

(ENVE 322) 3 credits. Lecture. Also offered as CE 5251.

Major biochemical reactions; stoichiometric and kinetic description; suspended and attached growth modeling; engineered biotreatment systems for contaminant removal from aqueous, gaseous, and solid streams; process design.

**ENVE 5320. Environmental Quantitative Methods**

(ENVE 432) 3 credits. Lecture. Also offered as CE 5320. This course and NRME 5605 may not both be taken for credit.

Topics on natural resources and environmental data analysis: random variables and probability distributions, parameter estimation and Monte Carlo simulation, hypothesis testing, simple regression and curve fitting, wavelet analysis, factor analysis; formulation and classification of optimization problems with/without constraints, linear programming; models for time series; solution of ordinary differential equations with Laplace transforms and Euler integration; solution of partial differential equations with finite differences; basics of modeling.

**ENVE 5330. Probabilistic Methods in Engineering Systems**

(ENVE 304) 3 credits. Lecture. Also offered as CE 5330.

Common probabilistic models used in engineering and physical science design, prediction, and operation problems; derived distributions, multivariate stochastic models, and estimation of model parameters; analysis of data, model building and hypothesis testing; uncertainty analysis.

**ENVE 5340. Environmental Systems Modeling**

(ENVE 311) 3 credits. Lecture. Also offered as CE 5340.

Modeling pollutants in natural surface waters. Advective, dispersive, and advective-dispersive systems. Modeling water quality, toxic organic and heavy metals pollution.

**ENVE 5370. Environmental Monitoring**

(ENVE 314) 3 credits. Lecture. Also offered as CE 5370.

Introduction to complexities and challenges associated with acquisition of information on environmental processes and characteristics of natural systems. Hands-on experience with selection of measurement strategy and sensing technology; sampling network and protocol design; and deployment, acquisition and interpretation of measurements in natural systems.

**ENVE 5381. Subsurface Contaminant Transport Modeling**

3 credits. Lecture. Also offered as CE 5381.

Fate and transport of contaminants in groundwater. Convection, dispersion, adsorption, and biological and radioactive decay. Field scale modeling. Galerkin finite elements. Application to field sites.

**ENVE 5810. Hydrometeorology**

(ENVE 385) 3 credits. Lecture. Also offered as CE 5810.

Global dynamics of aquatic distribution and circulation. Hydrologic cycle, atmospheric circulation, precipitation, interception, storage, infiltration, overland flow, distributed hydrologic modeling, and stream routing.

**ENVE 5811. Hydroclimatology**

(ENVE 313) 3 credits. Lecture. Also offered as CE 5811.

This course focuses on the physical principles underlying the spatial and temporal variability of hydrological processes. Topics include atmospheric physics and dynamics controlling the water/energy budgets; global water cycle, its dynamics, and causes of variability/changes; occurrence of drought and flood; climate teleconnections and their hydrological application; hydrological impact of global changes; quantitative methods in hydroclimatic analysis.

**ENVE 5812. Ecohydrology**

3 units. Lecture. Also offered as CE 5812.

This course focuses on the interactions between ecological processes and the water cycle, emphasizing the hydrological mechanisms underlying various terrestrial ecological patterns and the ecological properties controlling the hydrologic and climatic regimes. Topics include conceptual understanding of hydrological cycle over vegetated land, quantifying and modeling flux exchanges in the soil-vegetation-atmosphere continuum, case studies on the hydrological impact of land use land cover changes, ecosystem response to environmental changes, and vegetation-climate feedback at the regional and global scales.

**ENVE 5820. Unsaturated Flow and Transport**

(ENVE 315) 3 credits. Lecture. Also offered as CE 5820.

Modern approaches to water flow and solute transport in partially-saturated porous media including media characterization (review); unsaturated flow in porous media (governing equations, hydraulic functions, numerical and analytical solution methods); solute transport in unsaturated media (convection dispersion, transfer functions, solutions); modeling and observational scales; coupled water flow and solute transport (model applications); special topics (preferential flow, effects of spatial variability, stochastic aspects of flow and transport, gas exchange and transport measurement methods).

**ENVE 5821. Vadose Zone Hydrology**

(ENVE 316) 3 credits. Lecture. Also offered as CE 5821.

Theoretical and experimental elements of primary physical and hydrological properties of porous media and processes occurring in partially-saturated soils. Practical experience in measurement and interpretation of hydrological information and methods of analysis for vadose-zone related environmental problems.

**ENVE 5830. Groundwater Flow Modeling**

(ENVE 388) 3 credits. Lecture. Also offered as CE 406.

Basics of modeling with Finite Difference and Finite Element Methods. Modeling flow in saturated and unsaturated zones. Model calibration and validation. Parameter estimation. Treatment of heterogeneity. Basic geostatistics. Modeling surface-groundwater interactions. Application to field sites.

**ENVE 5840. Open Channel Hydraulics**

(ENVE 384) 3 credits. Lecture. Also offered as CE 5840.

Unsteady, nonuniform flow; energy and momentum concepts; flow control; de St. Venant equations; unsteady flow modeling of channels and natural rivers.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**ENVE 6210. Advanced Combustion**

(ENVE 341) 3 credits. Lecture.

Review of thermodynamic properties, transport properties, conservation equations of multicomponent reacting gas. Introduction to chemical kinetics. Classification of combustion waves. Deflagrations, detonations and diffusion flames. Ignition phenomena, droplet and spray combustion and some aspects of turbulent combustion.

**ENVE 6810. Advanced Fluid Mechanics I**

(ENVE 382) 3 credits. Lecture. Also offered as CE 6810.

Dimensional analysis; vector analysis, circulation and vorticity; irrotational motion and velocity potential; two-dimensional flow and stream function; complex variable theory; conformal mapping; airfoils; sources and sinks; free streamline flow; water waves; three-dimensional flow.

**ENVE 6811. Advanced Fluid Mechanics II**

(ENVE 383) 3 credits. Lecture. Also offered as CE 6811.

Turbulent boundary layer. Dimensional analysis. Free shear flows. Flows in pipes and channels. Boundary layers on smooth and rough surfaces.

**ENVE 6820. Hydraulic Machinery and Transients**

(ENVE 386) 3 credits. Lecture. Also offered as CE 6820.

Pumps and turbines. Surging, water hammer, cavitation, hydraulic machinery for hydroelectric plants, water supply, irrigation, and river navigation.

**ENVE 6821. Hydraulic Structures**

(ENVE 387) 3 credits. Lecture. Also offered as CE 6821.

River regulation and development. Hydroelectric plants, storage and turbines, canals, locks, and penstocks, dams, regulation of power, flood control, navigation and irrigation.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## FLUID DYNAMICS

Fluid dynamics is concerned with the engineering aspects of fluid mechanics in the broadest sense. It encompasses fundamental theory of perfect and viscous flows, compressible and heated flows, combustion, magnetohydrodynamics and plasma jets, free-surface flows in oceans and natural water courses, laminar and turbulent flows, and the vast number of practical applications which make fluid motions useful.

**The Ph.D. Program.** The student's plan of study is arranged in consultation with his or her advisory committee to develop competence in fluid dynamics. Since it is possible to emphasize theoretical, applied or experimental research, the student must develop a balance within his or her program consonant with his or her stated objectives. The remaining courses should be of an interdisciplinary nature from the departments in geological, biological, and marine sciences, engineering, chemistry, mathematics, physics, and others which the student and the committee feel are pertinent to the student's program.

About half the total credits should be taken in courses oriented toward the engineering aspects of fluid dynamics. The remainder of the program should consist of related courses preferably in two or more supporting areas considered appropriate in the student's objectives. These may include any courses in solid mechanics, including continuum mechanics, elasticity, plasticity, vibrations and structural or soil mechanics; also any courses in thermodynamics, heat transfer, power plants, process dynamics or reaction kinetics. Related courses in electrical engineering could include those in field theory, networks, computer science, and systems. Fundamental studies in chemistry, mathematics, physics, and statistics constitute an important part of the related course work.

This program is the joint responsibility of the Departments of Civil Engineering and Mechanical Engineering. Inquiries concerning the program may be addressed to these departments.

## GEOGRAPHY

*Department Head:* Professor Jeffrey P. Osleeb  
*Professors:* Berentsen, E. Cromley, R. Cromley, Hanink, and MacKinnon

*Associate Professors:* Cooke and Vias  
*Assistant Professors:* Atkinson-Palombo, Daniels, Seth, Trumbull, and Zhang

The Department of Geography offers a program leading to the M.A. and Ph.D. degrees. The master's program provides study of the theory and methods of analysis of human and physical features of the earth's surface. Students take a small number of core courses in research methods and design, and select an area of specialization for the remainder of their course work. Examples of common specializations include GIScience and computer graphics, geomorphology, environmental management and planning, and urban and regional analysis. Other specializations in areas of the faculty's expertise are possible. Students, working with their advisors, have a good opportunity to select courses which best fit their intellectual interests and professional needs.

Candidates for the M.A. in Geography may pursue either Plan A, completion of 25 credits of course work (including no more than six credits of independent study/research), at least nine credits of Thesis Research (GRAD 5950), and a thesis, including its oral defense; or Plan B, completion of thirty one credits of course work (including no more than six credits of independent study/research), a scholarly research paper, and a comprehensive final examination assessing mastery of the field and the ability to integrate the knowledge acquired. All M.A. students must complete a core curriculum that includes: one methods course, either GEOG 5500 (Fundamentals of GIScience) or GEOG 5600 (Spatial Data Analysis); GEOG 5000 (Research Design); and the one credit Proseminar (GEOG 5010). Students with an exceptional background may, with the approval of their advisor, replace the methods course with an alternative advanced methods course.

The Ph.D. in Geography requires a minimum 24 credits of course work (including no more than six credits of independent study/research) beyond the Master's degree, along with the completion and defense of a dissertation. All Ph.D. students must complete a core curriculum that includes one methods course, either GEOG 5500 (Fundamentals of GIScience) or GEOG 5600 (Spatial Data Analysis); GEOG 5000 (Research Design); and GEOG 6000 (Development of Geographic Thought). In exceptional cases, equivalent graduate courses may be substituted with the approval of a student's advisory committee. Other required courses for the Ph.D. include one 6000 level Geography seminar (not including GEOG 6000), a one-credit teaching practicum course (GEOG 6800), a one credit Proseminar course (GEOG 5010), at least six credits of course work from a related field outside the department, and at least 15 credits of Dissertation Research (GRAD 6950 - not included in the 24 credit requirement).

As the student completes the required coursework, a general examination with both written and oral sections is administered. Doctoral degree students must also submit and present a dissertation proposal for approval by the department, and defend the finished dissertation in a departmental colloquium.

The Department recommends that applicants for admission to the graduate program have a strong

background in Geography or a related discipline. Students must submit GRE scores and international applicants must also supply TOEFL scores.

**Graduate Certificate in Geographic Information Systems.** The Certificate Program is designed to recognize completion of a focused set of courses for graduate students and other professionals seeking expertise in the field of Geographic Information Systems (GIS). GIS are computer systems for integrating and analyzing spatial data. These systems, and the science behind their development and use, are the topics covered in the required coursework. GIS and related technologies are used in a wide range of applications in the public and private sectors. The elective coursework provides students with the opportunity for graduate study in fields where GIS are used.

The Certificate is earned upon the completion of twelve credits of coursework beyond the B.A. or B.S. degree. Students in the Certificate Program are required to complete Geography 5500 and Geography 5510, plus additional courses in Geography or a related field. The additional courses must be taken at the graduate (5000 or 6000) level. A student's program of study for the Certificate may include only one course numbered Geography 5810. Students develop a program of study with the assistance and approval of the Certificate Program Coordinator. To earn the Certificate, a student must pass all courses counted toward the Certificate with a grade of B- or better in each course and an overall GPA for the 12 credits of 3.0 or greater. All coursework for the Certificate must be completed at the University of Connecticut.

Application to the GIS Certificate Program is made through the Graduate School of the University of Connecticut. Students applying for admission to or already enrolled in a graduate degree program in Geography or another field of study at the University of Connecticut may apply for admission to the Certificate Program. Non-degree students may also apply for the program. All students applying for admission to the Certificate Program must have a B.A. or B.S. degree from an accredited institution. Official transcripts and a personal statement of interest in the program must be submitted with the application. Information on the Graduate Certificate in Geographic Information Systems can be obtained from Graduate Certificate Program Coordinator, Department of Geography Unit 4148, University of Connecticut, Storrs, Connecticut 06269-4148.

**Special Facilities.** The program is supported both by in-house facilities and external contacts. The department maintains a full range of graphics laboratories. These include laboratories equipped with NT workstations, laser printers, plotters, and digitizers as well as regular computer terminals and printers linked to the University's Computer Center and well equipped microcomputer lab. These facilities are complemented by research and practicum opportunities in a wide range of external agencies with whom collaborative relations have been established by means of the department's experience with internship programs.

### COURSES OF STUDY

**GEOG 5000. Research Design**  
(GEOG 311) 3 credits. Seminar.

A survey of research methods in geography. Topics include spatial sampling, hypothesis construction and testing and geographic modeling.

**GEOG 5010. Geography Proseminar**  
(GEOG 310) 1 credit. Seminar. Open only to graduate students in Geography.

Presentation by geography faculty of current research topics.

**GEOG 5020. Fundamental Geographic Concepts for Educators**  
(GEOG 350) 3 credits. Lecture.

Basic geographic concepts critical for effective teaching in the K-12 environment. Development of materials/curricula for the classroom.

**GEOG 5100. Location Analysis**  
(GEOG 333) 3 credits. Lecture.

Issues and approaches in location analysis. Topics include location theory and models, impacts of locational choice, systems analysis, evaluation of service areas, land use allocation, accessibility and locational conflict. Implications for planning and public policy.

**GEOG 5110. Regional Development and Policy**

(GEOG 334) 3 credits. Seminar.

A study of theory and practice in regional development and planning. Emphasis on evaluation of regional problems and public policies designed to resolve them, with a primary focus on the United States.

**GEOG 5120. Economic Geography of Environmental Issues**

(GEOG 337) 3 credits. Seminar.

Seminar on theory and applications of economic geography to environmental issues. Location theories and spatial interaction models are considered from local to international scales of analysis.

**GEOG 5130. Transportation Geography**

(GEOG 335) 3 credits. Lecture. Open to graduate students in Geography, others with permission.

Discussion of transportation rate establishment, transportation models for predicting transportation flows, the impact of transportation on the location of economic activities and the planning of transportation facilities in cities.

**GEOG 5140. Geographical Analysis of Social Issues**

(GEOG 380) 3 credits. Seminar.

Focus on geographical perspectives toward research on selected social issues, with an emphasis on methods of behavioral analysis and relevant social geographical concepts such as social space, activity spaces and time-space budgets, and diffusion.

**GEOG 5150. Interactive Cartographics in Geographic Information Systems**

(GEOG 302) 3 credits. Lecture.

Interactive programming for the display of spatial data and the design of computer generated maps.

**GEOG 5190. Advanced Economic Geography**  
(GEOG 384) 3 credits. Seminar.

Problems involved in analyzing spatial variations

of selected economic variables. Emphasis on location theory with view toward integrating geographic viewpoint and economic concepts.

**GEOG 5210. Planning and Land Use**  
(GEOG 374) 3 credits. Lecture.

Contrasting approaches to planning, with an emphasis on legal and political issues in communities and organizations.

**GEOG 5290. Advanced Urban Geography**  
(GEOG 383) 3 credits. Seminar.

Analysis of social and economic patterns within urban areas, with emphasis on individualized research. The implications for planning are stressed.

**GEOG 5310. Advanced Fluvial Geomorphology**

(GEOG 330) 3 credits. Lecture. Not open to students who have passed GEOG 3310.

Research methods for analyzing fluvial forms and processes. Theoretical discussion of factors controlling open-channel flow, sediment transport, channel morphology, adjustments of rivers to environmental changes and human impacts. River management and restoration strategies. Requires one weekend field trip.

**GEOG 5380. Advanced Environmental Restoration**

(GEOG 387) 3 credits. Seminar.

Research issues relating to restoration of natural environments including rivers, wetlands, coastal areas, grasslands and forests. Theoretical discussions of restoration ecology, as well as applied discussions of management and engineering concerns. History of environmental restoration; relevant policy debates; specific case studies of river, wetland, coastal, grassland, and forest restoration.

**GEOG 5390. Advanced Physical Geography**  
(GEOG 385) 3 credits. Seminar.

Problems involving the application of physical processes in our changing environment.

**GEOG 5500. Fundamentals of Geographic Information Science**

(GEOG 301) 3 credits. Lecture.

An introduction to the theory and methods for representing, acquiring, storing, manipulating, displaying, and analyzing geographic features in relation to the surface of the earth.

**GEOG 5510. Application Issues in Geographic Information Systems**

(GEOG 303) 3 credits. Lecture. Prerequisite: GEOG 5500 or GEOG 4500C.

The study of operational and management issues in geographic information systems (GIS). Ways in which traditional planning and management theories and techniques can be implemented in GISs are examined. Topics include problems of data exchange standards, implementation of GIS in an institutional setting including benchmarking a GIS, applications of GIS in various fields, social impacts and legal aspects of GIS. Practical work includes analytical exercises using GIS culminating in an application project.

**GEOG 5600. Spatial Data Analysis**  
(GEOG 342) 3 credits. Seminar.

Univariate statistics focused on the use of spatial statistics, including geostatistics in geographical research. Problems specific to spatial data analysis are addressed.

**GEOG 5610. Spatial Statistics and Modeling**

(GEOG 343) 3 credits. Seminar. Prerequisite: GEOG 5600.

Advanced study in the methods and practice of multidimensional statistics and spatial modeling.

**GEOG 5620. Computer Applications in Spatial Analysis**

(GEOG 382) 3 credits. Lecture.

An advanced seminar in the design of computer programs for solving problems in spatial analysis. Students receive a thorough knowledge of FORTRAN and related graphic subroutine libraries necessary to implement individual projects.

**GEOG 5700. Contemporary Europe: A Geography**

(GEOG 354) 3 credits. Lecture.

An introduction to the peoples, countries, and landscapes of Europe (excluding the republics of the former U.S.S.R.). Emphasis on the economic, political, and social forces both maintaining national identities and shaping a united Europe.

**GEOG 5710. Geography of Latin America**  
(GEOG 355) 3 credits. Lecture.

Advanced integrative study of physical, historical, social, political and economic geography of Latin America. Particular emphasis on patterns, processes and problems of spatial economic change in the region.

**GEOG 5810. Special Problems in Geography**  
(GEOG 325) 1-6 credits. Independent Study.

**GEOG 5890. Internship in Geography**  
(GEOG 315) 1-6 credits. Practicum.

A fieldwork internship program under the direction and supervision of the geography staff. Students will be placed in agencies or industries where their academic training will be applied. One 8-hour work day per week (or its equivalent) for the host agency during the course of the semester will be necessary for three academic credits. A written report will be required.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1 - 9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**GEOG 6000. Themes in Geographic Thought**  
(GEOG 413) 3 credits. Seminar.

Examination of the historical development of geography since the early nineteenth century. Emphasis on the last century of intellectual developments that have led to the emergence of contemporary geography as a research discipline.

**GEOG 6500. Locational Models and Spatial Systems**

(GEOG 401) 3 credits. Seminar.

Study of the locational models used to examine the arrangement of human and physical systems in space.

**GEOG 6510. Locational Methods and Spatial Systems**

(GEOG 402) 3 credits. Seminar.

Study of the locational methods used to examine the arrangement of human and physical systems in space.

**†GEOG 6800. Practicum in College Teaching in Geography**

(GEOG 415) 1 credit. Practicum. Prerequisite: Graduate status in Geography.

Guided development of college-level instruction. Drafting of course objectives, selection of texts, development of course and lecture outlines, selection of grading mechanisms, and incorporating feedback for improvement of instruction.

**GEOG 6810. Advanced Topics in Spatial Analysis**

(GEOG 403) 3 credits. Seminar.

**GEOG 6820. Advanced Topics in Regional Analysis**

(GEOG 404) 3 credits. Seminar.

**GEOG 6830. Advanced Topics in Population Geography**

(GEOG 405) 3 credits. Seminar.

**GEOG 6840. Advanced Topics in Urban Geography**

(GEOG 406) 3 credits. Seminar.

**GEOG 6850. Advanced Topics in Geography of Public Policy**

(GEOG 407) 3 credits. Seminar.

**GEOG 6860. Advanced Topics in Economic Geography**

(GEOG 408) 3 credits. Seminar.

**GEOG 6870. Advanced Topics in Physical Geography**

(GEOG 409) 3 credits. Seminar.

**GEOG 6880. Advanced Topics in Environmental Geography**

(GEOG 410) 3 credits. Seminar.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## GEOLOGICAL SCIENCES

*Program Director:* Professor Pieter T. Visscher  
*Professors:* Civco, Cormier, Joesten, McBrearty, Noll, Robbins, Thorson, Torgersen, and Visscher  
*Associate Professors:* Byrne, Crespi, Liu, MacKay, Meyer, Noll, and Schultz  
*Assistant Professors:* Bush, Day-Lewis, Dupraz, and Wang

Programs leading to M.S. or Ph.D. degrees in the Geological Sciences are offered.

Programs are designed to provide each student with a broad background in the physical sciences and with the specialization necessary for careers in geology, geophysics, and environmental geoscience.

Research opportunities are available in most of the traditional subdisciplines, including hydrogeology, geochemistry, marine geology, sedimentation, exploration geophysics, geomorphology, glacial geology, structural geology, mineralogy, petrology, geobiology, biogeochemistry, seismology, paleontology, and others.

Graduate research is often supported by the U.S. Geological Survey, the U.S. Environmental Protection Agency, the National Science Foundation, the Connecticut Department of Environmental Protection, and other government agencies. Students also benefit from program collaborations with the Center for Environmental Science and Engineering (CESE), the Electron Microscopy Center, the Institute of Water Resources, Marine Sciences Institute, Institute of Materials Science, the Center for Environmental Health, and the Transportation Research Institute, among others. Scientists from outside the University frequently serve on graduate student advisory committees. Most graduate students in residence receive financial support. As Graduate Assistants, they either help support the teaching mission or assist with faculty research that is supported by external funds.

In addition to applicants with a Bachelor's degree in geoscience, applicants with undergraduate degrees in related disciplines are encouraged to apply, provided that they have a broad undergraduate background in the physical and life sciences or engineering. Students with degrees in the agricultural sciences, environmental management, and science education also are encouraged to apply. Students with an undergraduate degree in mathematics may wish to apply for admission to pursue study in geophysics.

Students working toward an M.S. degree have the option of following either Plan A (with thesis) or Plan B (non-thesis). Together with their graduate advisory committee, each student develops an individualized plan of study that is tailored to meet their needs and objectives. Students pursuing the Plan B option may do so either full-time or part-time.

**Special Facilities.** Equipment and facilities available for graduate student research include: fully automated electron microprobe, automated X-ray fluorescence equipment, optical emission and infrared absorption spectrographic instruments, gas chromatograph, single crystal and powder X-ray diffraction equipment, high pressure-high temperature experimental petrology laboratory, sedimentation laboratory, power auger, water-level monitoring gauges, field gas chromatograph, field

flame ionization and photoionization detectors, full range of equipment for field water quality sample collection and analysis; geophysical equipment including a three component broadband digital seismograph, magnetometer, gravimeter, refraction seismograph, electrical resistivity unit, terrain conductivity meter, global positioning system, electronic total station, and extensive computing facilities including SUN workstations. The facilities of the Marine Sciences Institute (research vessels, ultra clean analytical chemistry laboratory), the Institute of Materials Science (transmission electron microscope, automated single-crystal x-ray diffractometer), the Center for Environmental Science and Engineering (Analytical Chemistry Laboratory), and the Computer Applications and Research Center also are available to graduate student research.

## COURSES OF STUDY

### GSCI 5000. Geoscience Core Course

(GEOL 301) 3 credits. Lecture. Required of all first year graduate students in Geosciences.

Exposes students to a solid background in a variety of topics related to integrative geosciences, emphasizing interdisciplinarity. Development of speaking skills through oral presentations, and writing skills through preparation and defense of large, interdisciplinary grant proposals.

### GSCI 5050. Special Problems in Geology

(GEOL 305) 1-6 credits. Independent Study. May be repeated for credit up to six times with a change of content.

Advanced study and research in geology.

### GSCI 5110. Sediment Transport

(GEOL 372) 3 credits. Lecture.

The mechanics of sediment transport with particular emphasis on the processes governing transport in coastal and estuarine areas. Initiation of motion for cohesive and noncohesive materials, bed and suspended load transport, bed forms, sediment-flow interactions modeling considerations.

### GSCI 5210. Glacial Processes and Materials

(GEOL 323) 3 credits. Lecture/Laboratory.

Reconstruction of former glaciers and the interactive processes leading to the character and distribution of unconsolidated surface materials in glaciated regions. Techniques for interpreting subsurface unconsolidated materials.

### GSCI 5310. Advanced Structural Geology

(GEOL 317) 3 credits. Lecture/Laboratory.

Application of finite and incremental strain analyses using advanced geometric techniques. This course integrates field studies of deformed rocks with theoretical understanding and quantitative analysis.

### GSCI 5320. Advanced Plate Tectonics

(GEOL 371) 3 credits. Lecture.

The course introduces students to techniques used in analyzing plate motions on a sphere, including poles of rotation and instantaneous and finite motions. The

course integrates geologic data and analytical techniques with a rigorous understanding of plate motions and provides students with a global understanding and appreciation of the Earth

### GSCI 5410. Igneous Petrology

(GEOL 314) 4 credits. Lecture/Laboratory.

Introduction to igneous rocks, physical and chemical principles governing their formation. Fluid mechanics of magmas, heat transfer, thermodynamics, phase equilibria, isotope geochemistry, and the relation of magmatism to plate tectonics. Optical microscopy, x-ray fluorescence, and electron microprobe analysis. Prepare a paper suitable for publication in a scientific journal.

### GSCI 5420. Metamorphic Petrology

(GEOL 315) 3 credits. Lecture/Laboratory

Interpretation of mineralogical, chemical, and textural features of metamorphic rocks in terms of the physical conditions and dynamic processes operating in the Earth's crust. Thermodynamic description of phase equilibria in fluid-rock systems. Kinetics, mass and energy transport in metamorphic processes. Petrographic and x-ray analytical techniques.

### GSCI 5510. Applied Geophysics for Geologists and Engineers

(GEOL 328) 3 credits. Lecture.

Introductory survey of surface and borehole geophysical methods and their application to hydrogeologic, environmental monitoring, and geotechnical engineering studies. Laboratory involves geophysical field measurement, data reduction and geologic interpretation.

### GSCI 5520. Exploring and Engineering Seismology

(GEOL 377) 3 credits. Lecture/Laboratory.

Theory of elasticity applied to wave propagation: equations of motion; reflection and refraction of elastic waves; velocity analysis and fundamental petrophysics; and principles of detecting subsurface interfaces and structures.

### GSCI 5530. Applied and Environmental Geophysics

(GEOL 378) 3 credits. Lecture/Laboratory.

Potential theory (gravity, static electricity and magnetic fields), electromagnetic coupling, Maxwell's equations; electromagnetic wave propagation; principles of detection of subsurface interface and structures by geophysical methods.

### GSCI 5550. Physics of the Earth

(GEOL 374) 3 credits. Lecture.

The composition, structure, and dynamics of the earth's core, mantle, and crust inferred from observations of seismology, geomagnetism, and heat flow.

### GSCI 5560. Fundamentals of Planetary Science

(GEOL 376) 3 credits. Lecture.

Evolution of the solar system, celestial mechanics, tidal friction, internal composition of planets, black-body radiation, planetary atmospheres.

### GSCI 5680. Applied Geologic Mapping

(GEOL 312) 6 credits. Practicum.

Advanced surveying and techniques of 3D mapping using electronic total stations, GPS and Geodetic-grade GPS instrumentation. Environmental field geophysics; GPR, resistivity, seismic, magnetic and microgravity surveys. Petrologic, geochemical and geophysical core logging for geotechnical and exploration applications. Field sampling for assay and environmental geochemistry. Detailed geological outcrop mapping. Mine and subsurface geologic mapping.

### GSCI 5710. Advanced Hydrogeology

(GEOL 355) 3 credits. Lecture.

Transport processes in groundwater systems. Mathematical methods in groundwater hydrology. Water quality and resource evaluation.

### GSCI 5720. Groundwater Modeling

(GEOL 356) 3 credits. Lecture/Laboratory.

Numerical techniques for modeling flow and contaminant transport in groundwater systems. Model design, calibration, visualization, verification and sensitivity analysis. Application to field sites.

### GSCI 5790. Field Methods in Hydrogeology

(GEOL 357) 1-6 credits. Lecture/Laboratory.

Field methods associated with ground water and contamination assessments.

### †GRAD 5930. Full-Time Directed Studies (Master's Level)

(GRAD 397) 3 credits.

### †GRAD 5950. Master's Thesis Research

(GRAD 395) 1 - 9 credits.

### †GRAD 5960. Full-Time Master's Research

(GRAD 396) 3 credits.

### GRAD 5998. Special Readings (Master's)

(GRAD 398) Non-credit.

### GRAD 5999. Thesis Preparation

(GRAD 399) Non-credit.

### GSCI 6130. Seminar in Paleontology

(GEOL 342) 1-6 credits. Seminar. May be repeated twice to a maximum of 6 credits with change of content.

Readings and discussions on recent advances in paleontology and paleobiology.

### GSCI 6330. Seminar in Structural Geology

(GEOL 352) 3 credits. Lecture.

Readings and discussion of recent advances in structural geology.

### GSCI 6340. Seminar in Tectonics

(GEOL 353) 3 credits. Lecture.

Readings and discussions of recent advances in tectonics.

### GSCI 6510. Fundamentals of Seismology

(GEOL 365) 3 credits. Lecture.

Theory of elasticity applied to wave propagation; equations of motion; reflection and refraction of elastic waves; wave propagation in homogeneous media; surface waves.

**GSCI 6520. Advanced Seismology**  
(GEOL 370) 3 credits. Lecture. Prerequisites: MATH 5410 and MATH 5411, which may be taken concurrently.

Elastic wave propagation in plane layered media; seismogram synthesis by ray parameter integration, ray approximations, and mode summation; earthquake source representations.

**GSCI 6530. Geophysical Inverse Theory**  
(GEOL 375) 3 credits. Lecture.

Fitting geophysical model parameters to data. Topics include model uniqueness, resolution, and error estimation.

**GSCI 6540. Seminar in Geophysics**  
(GEOL 369) 1-6 credits. Seminar.

Readings and discussions of recent advances in geophysics.

**GSCI 6550. Special Topics in Geophysics**  
(GEOL 400) 1-6 credits. Seminar.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## GRADUATE SCHOOL COURSES

**GRAD 5900. Special Topics in Graduate Education**  
(GRAD 300) 1-3 credits. Lecture.

†**GRAD 5910. Responsible Conduct in Research**  
(GRAD 310) 1 credit. Lecture.

The core principles pertaining to responsible conduct in research are covered through extensive use of case studies, along with readings and classroom instruction. Different sections of the course utilize case studies that emphasize discipline-specific issues. Satisfactory completion is based on participation in the discussions and completion of a case study presentation.

**GRAD 5915. Summer Institute in College Instruction.**  
3 credits. Lecture/Laboratory. Instructor consent required.

Required core course of the Graduate Certificate Program in College Instruction, intended for doctoral students in the early stages of their graduate careers. Course objectives include competencies in instruction, classroom management, use of technology, assessment and evaluation, and other pedagogical best-practices. The course is offered in residential format over a two week period in May.

†**GRAD 5924. Part-Time Curricular Practical Training**  
(GRAD 381) 1-3 credits. Practicum. Instructor and Graduate School consents are required.

This course is used by those International students whose Major Advisor has defined a part-time internship as an integral part of their plan of study. Credits are variable, based on hours of intended internship (*1 credit* - fewer than 10 hours per week; *2 credits* - 10 to 15 hours per week; *3 credits* - 15 to 20 hours per week). The student will receive course credit to apply towards the degree and will be graded as either satisfactory (S) or unsatisfactory (U) by his/her advisor, who will serve as the primary instructor. The individual course objectives will be established by the major advisor. The student will be responsible to register for additional course work to maintain full-time status. Since this course denotes a part-time commitment, the student may hold a graduate assistantship while taking this course.

†**GRAD 5925. Full-Time Curricular Practical Training**  
(GRAD 380) 3 credits. Practicum. Instructor and Graduate School consents are required.

This course is used by those International students whose Major Advisor has defined a full-time (21 to a maximum of 40 hours per week) internship as an integral part of their plan of study. The student will receive course credit to apply toward the degree and will be graded as either satisfactory (S) or unsatis-

factory (U) by his/her advisor, who will serve as the primary instructor. The individual course objectives will be established by the major advisor. No other courses may be taken concurrently. Since this course denotes a full-time commitment, students may not hold graduate assistantships while taking this course.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits. Practicum.

This course denotes that the student is participating in a full-time internship, field work experience, or other course of off-campus study required as part of the student's Master's program. No other courses may be taken concurrently.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits. Thesis Research.

This course is associated with the research efforts of students pursuing a Plan A master's degree, and may be used to meet the nine-credit Master's research requirement.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits. Thesis Research.

This course is to be used by those students who have completed all courses on the plan of study and who are performing master's level research on a full-time basis. It may contribute to meeting the nine credit Master's research requirement. No other courses may be taken concurrently. In the summer, this is a 12-week (Summer 4) course. Since this course denotes a full time commitment, students may not hold graduate assistantships while taking this course.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) 0 credits. Special Readings. To be used by master's students who are not enrolled in a thesis (Plan A) track.

This is a non-credit course for which master's degree students must register in cases where their regular program of course work for credit has been interrupted and they are not otherwise registered. International students should consult with the Graduate School prior to registering for this course.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) 0 credits. Thesis Research. Open only to graduate students enrolled in Plan A master's degree programs.

This is a non-credit course to be used to maintain registered status by Plan A master's students who have completed their coursework and who are not registered for any other credit-bearing course. International students should consult with the Graduate School prior to registering for this course.

†**GRAD 6930. Full-Time Directed Studies**  
(GRAD 497) 3 credits. Practicum. Open only to doctoral students.

This course denotes that the student is participating in a full-time internship, field work experience, or other course of off-campus study required as part of the student's doctoral program. No other courses may be taken concurrently.

## HISTORY

### GRAD 6949. International Exchange Research

(GRAD 492) 1 credit. Research.

### †GRAD 6950. Doctoral Dissertation Research

(GRAD 495) 1-9 credits. Dissertation Research. Open only to doctoral students.

This course is associated with the research efforts of students pursuing a doctoral degree, and may be used to meet the fifteen-credit doctoral research requirement.

### †GRAD 6960. Full-Time Doctoral Research

(GRAD 496) 3 credits. Dissertation Research. Open only to doctoral students.

This course is to be used by those students who have completed all courses on the plan of study and who are performing doctoral level research on a full-time basis. It may contribute to meeting the fifteen credit doctoral research requirement. No other courses may be taken concurrently. In the summer, this is a 12-week (Summer 4) course. Since this course denotes a full time commitment, students may not hold graduate assistantships while taking this course.

### GRAD 6998. Special Readings (Doctoral)

(GRAD 498) 0 credits. Special Readings. Open only to doctoral students.

This is a non-credit course for which doctoral students must register in cases where their regular program of course work for credit has been interrupted and they are not otherwise registered. International students should consult with the Graduate School prior to registering for this course.

### GRAD 6999. Dissertation Preparation

(GRAD 499) 0 credits. Dissertation Research. Open only to doctoral students.

This is a non-credit course to be used to maintain registered status by doctoral students who have reached candidacy for the doctoral degree and who are not registered for any other credit-bearing course. International students should consult with the Graduate School prior to registering for this course.

*Department Head:* Professor Shirley A. Roe  
*Professors:* Brown, Buckley, Clark, Clifford, Costigliola, Davis, Goodheart, Gross, Kane, Lansing, Shoemaker, Silvestrini, Spalding, and Waller  
*Associate Professors:* Azimi, Baldwin, Blatt, Caner, Cygan, Dayton, Dintenfass, Gouwens, Meyer, Ogbar, Olson, Omara-Otunnu, Overmyer-Velázquez, Rozwadowski, Schafer, Wang, and Watson  
*Assistant Professors:* Campbell, Gilligan, Kane, Lansing, McKenzie, Pappademos, Vernal, and Woodward

The Department of History offers study leading to the degrees of Master of Arts and Doctor of Philosophy. Master's students have flexibility in selecting courses in accordance with their interests and professional goals. Doctoral students may undertake work in four broad areas: medieval European, early modern and modern European, United States, and Latin American history. Students also have the opportunity to enroll in related courses offered by other departments.

**Admission to the M.A. Program.** Three letters of recommendation, preferably from members of the academic profession, along with a writing sample and personal statement from the applicant, are required. Graduate Record Examinations scores on the General Tests also are required. Applicants wishing to begin the program in the fall semester must submit their applications and all supporting documents before April 15; applicants for financial aid should submit all materials by January 15. Applicants wishing to begin in the spring semester must submit their applications before November 1. Applicants are expected to have adequate preparation (a minimum of twenty-one credits of history above the freshman level, including courses in both United States and European history), an average of at least B in undergraduate history courses, and preparation in related fields of the social sciences and humanities.

**Departmental Requirements for the Ph.D.** Students who have a master's degree in history, or are working for one, and whose graduate work shows sufficient promise may apply for admission to the doctoral program, submitting a transcript of at least one semester's work at the master's level. All applicants for admission to the doctoral program follow the same procedures for admission as required of an applicant to the master's program. New doctoral students are expected to begin full-time study during the year for which they are admitted.

Students pursuing the doctorate with an area of concentration in medieval or modern European history must demonstrate their reading competence in two European languages. Students in United States and Latin American history as well as those emphasizing modern British history must demonstrate reading competence in at least one foreign language. Additional competency may be required by the major advisor, depending on the student's research area.

Applicants admitted with a master's degree are expected to submit evidence of proficiency in at least one foreign language early in their first semester of

work. The entire language requirement must be completed before a student takes the general examination.

A doctoral student in history must complete a minimum of one year of full-time study in residence beyond the master's degree, consisting of two consecutive semesters of a full-time graduate program (i.e., 24 credits of course work or the equivalent) at the Storrs campus. A graduate assistant, whose academic program proceeds at half the rate of the full-time student, fulfills the residence requirement with two years of such service.

Other requirements, particularly regarding the areas for the general examination, are described in the pamphlet, Graduate Programs in History, which may be obtained from the Department.

**Special Facilities.** The Homer Babbidge Library has in the past few years greatly expanded its materials in United States, Latin American, and European history. The Dodd Center, which houses the Archives and Special Collections Department of the Babbidge Library as well as the Oral History Center, has extensive holdings. These include the Hispanic History and Culture Collections (with Spanish and Latin American newspapers, and a unique Puerto Rican collection); the Alternate Press Collection, and the Nuremberg Trial papers (within the Thomas J. Dodd papers). The Department also has access to the library and facilities of the Munson Institute for Maritime History at Mystic Seaport. In addition to these resources, several major libraries and archives within a one-hundred-mile radius of the University are accessible for research purposes.

**Web Site and E-mail.** *Web page*—[www.history.uconn.edu](http://www.history.uconn.edu); *e-mail*—[histadm1@uconnvm.uconn.edu](mailto:histadm1@uconnvm.uconn.edu).

## COURSES OF STUDY

### HIST 5101. Introduction to Historical Research

(HIST 401) 3 credits. Seminar.

Introduction to the sources and methods of professional historians. Finding primary sources (qualitative and quantitative), evaluating them for accuracy and usefulness, organizing data, and writing exercises based on the sources. Students must produce a proposal (fully annotated) for a major research paper to be written in the subsequent semester.

### HIST 5102. Historical Research and Writing

(HIST 402) 3 credits. Independent Study.

A research seminar for students in the M.A. and Ph.D. programs in history.

### HIST 5103. Teaching History

3 credits. Seminar.

A survey of the pedagogy and practice of history teaching, designed to prepare advanced graduate students for careers in colleges and universities, museums, and other educational settings. Seminar will explore the contemporary landscape of higher education; debates over the liberal arts and the place of history in the curriculum; diversity in the classroom; and challenges of designing syllabi, preparing and delivering lectures, leading discussions, advising and evaluating.



**HIST 5140. Introduction to Historical Museum Work I**

(HIST 340) 3 credits. Lecture.

A study of historical agencies and museums. Laboratory work and field trips are included.

**HIST 5141. Introduction to Historical Museum Work II**

(HIST 341) 3 credits. Lecture.

A study of historical agencies and museums. Laboratory work and field trips are included.

**HIST 5142. Administration of Archives and Manuscripts**

(HIST 391) 3 credits. Seminar/Practicum.

An overview of the history and development of the American archival profession, including basic archival theory and methodology. Emphasizes principles of collection, organization, and reference service for historical manuscripts and archives.

**HIST 5143. Advanced Practice in Archival Management**

(HIST 392) 3 credits. Seminar. Prerequisite: HIST 391.

Advanced practice in archival management, such as appraisal, records management, access, and public programs. Application of archival principles through specific projects relating to processing, appraisal, public outreach, and reference service.

**HIST 5195. Special Topics in History**

(HIST 302) 3 credits. Seminar.

**HIST 5199. Independent Study in History**

(HIST 300) 3 credits. Independent Study.

**HIST 5201. Theories of History**

(HIST 342) 3 credits. Seminar.

The principles and problems underlying the study of history; and a survey of the history of historical writing and of various schools of historical interpretation.

**HIST 5205. Collaborative Colloquium**

(HIST 328) 3 credits. Lecture.

Comparative/collaborative study of topics in different areas and/or periods.

**HIST 5215. Special Topics in the History of Science**

(HIST 307) 3 credits. Seminar. May be repeated for credit with a change in content.

**HIST 5218. Historical Conceptions of Race and Science**

(HIST 352) 3 credits. Seminar.

Historical examination of the interplay between concepts of race and scientific naturalism as they emerged in the eighteenth, nineteenth, and twentieth centuries. Attention also paid to political and social contexts.

**HIST 5227. Topics in Imperialism**

(HIST 327) 3 credits. Seminar.

**HIST 5235. The Making of the African Diaspora**

(HIST 346) 3 credits. Seminar. This course may be repeated to a maximum of six credits.

Theory and practice of African Diaspora history. Recent theoretical debates and cases of African Diaspora studies and history including: politics, culture, resistance; community formation; slavery; pan-africanism; transnationalism; black internationalism; African and black consciousness; Diaspora theory; gender, race, and class analyses.

**HIST 5276. War and Revolution in the Twentieth Century**

(HIST 376) 3 credits. Seminar.

**HIST 5316. Topics in Medieval History**

(HIST 316) 3 credits. Seminar.

**HIST 5370. Western Europe in the Fifteenth and Sixteenth Centuries**

(HIST 370) 3 credits. Seminar.

**HIST 5373. Europe in the Seventeenth Century**

(HIST 373) 3 credits. Lecture.

**HIST 5374. Europe in the Eighteenth Century**

(HIST 374) 3 credits. Seminar.

**HIST 5410. The French Revolution**

(HIST 310) 3 credits. Seminar.

An intensive study of the intellectual, social, economic, political, and military events of the period and of their impact upon the world, as well as upon French history.

**HIST 5412. Nineteenth Century France**

(HIST 311) 3 credits. Seminar.

**HIST 5423. State and Society in Europe since 1800**

(HIST 323) 3 credits. Seminar.

Relationship between social change and state formation in Western Europe from c. 1800 to the mid-20th century; industrialization, class, social identities, nationalism, and imperialism.

**HIST 5424. Europe in the Nineteenth and Twentieth Centuries**

(HIST 324) 3 credits. Seminar.

**HIST 5425. Social and Intellectual History of Europe in the Nineteenth and Twentieth Centuries**

(HIST 325) 3 credits. Seminar.

**HIST 5451. Topics in Russian History**

(HIST 351) 3 credits. Seminar.

**HIST 5454. Topics in Central European History, 1790-1918**

(HIST 326) 3 credits. Seminar.

**HIST 5456. Germany in the Nineteenth and Twentieth Centuries**

(HIST 356) 3 credits. Seminar.

**HIST 5462. Topics in Modern British History**

(HIST 362) 3 credits. Seminar.

**HIST 5470. Topics in Italian History**

(HIST 366) 3 credits. Seminar.

**HIST 5475. Histories of the Body: European Perspectives since 1500**

3 credits. Seminar.

Historical and interdisciplinary approaches to the study of the body and the European imagination since 1500. Topics include: representations of health and illness; the body as a site of law and sovereign power; sexed bodies; the body in social and political theory; the government of life and death; race and ethnicity.

**HIST 5510. Topics in Colonial American History**

(HIST 334) 3 credits. Seminar

**HIST 5515. The American Revolution**

(HIST 331) 3 credits. Seminar.

**HIST 5520. United States in the Early National Period and the Age of Jackson, 1787-1840**

(HIST 338) 3 credits. Seminar.

**HIST 5525. Society and Culture in the Civil War Era, 1830-1880**

(HIST 335) 3 credits. Seminar.

The social, economic, political and cultural forces, including gender, race, and class, that shaped the Civil War and its aftermath.

**HIST 5530. United States in the Age of Reform, 1877-1924**

(HIST 347) 3 credits. Seminar.

**HIST 5535. The United States from the 1920s to the 1960s**

(HIST 348) 3 credits. Seminar.

**HIST 5540. Topics in American Social and Cultural History, 1600-1876**

(HIST 337) 3 credits. Seminar.

Major themes in the recent scholarship of social and cultural history: community and communication; family and gender; race, class, and industrialization; religion; and slavery.

**HIST 5543. Social Change in 19th Century America**

(HIST 355) 3 credits. Seminar. Instructor consent required.

Major sources of social change in 19th-century United States, including legacy of the American Revolution; fate of Native America; rural society; slavery; industrialization; immigration; class formation; race; the impact of Civil War and Reconstruction.

**HIST 5545. Topics in New England History**

(HIST 330) 3 credits. Seminar.

**HIST 5550. Topics in American Family History**

(HIST 345) 3 credits. Seminar.

**HIST 5555. Topics in the History of American Women**

(HIST 333) 3 credits. Seminar.

**HIST 5560. Topics in the History of American Foreign Relations**

(HIST 349) 3 credits. Seminar.

**HIST 5565. Topics in the History of Urban America**

(HIST 336) 3 credits. Seminar.

**HIST 5570. Topics in Black History**

(HIST 339) 3 credits. Seminar.

**HIST 5575. American Maritime History**

(HIST 332) 3 credits. Seminar.

A study of the development of American mercantile enterprise from colonial times and its relationship to American political, economic, and cultural history. The course includes lectures, readings, and extensive use of the facilities at Mystic Seaport. It is given at Mystic Seaport under the joint auspices of the University of Connecticut and the Frank C. Munson Institute of American Maritime Studies.

**HIST 5576. Seminar in American Maritime Studies**

(HIST 390) 3 credits. Seminar.

A seminar involving reading and research on selected topics in American maritime studies. Open only to students who have previously taken HIST 5575 or to advanced students who are concurrently enrolled in HIST 5575. This course is given at Mystic Seaport under joint auspices of the University of Connecticut and the Frank C. Munson Institute of American Maritime History.

**HIST 5610. Empire, Nations, and Migration: History of Latino/as in the United States**

(HIST 354) 3 credits. Seminar.

The seminar explores the history of these diverse Latino/a populations in the United States, beginning with the nineteenth century wars that brought large portions of Mexico under U.S. control, and tracing the major waves of migration from Mexico, the Caribbean, and Central America. The course is divided into two sections, each with its own internal logic and progression. The first examines the historical origins of the broad, inter/trans-national and -disciplinary field of Latino studies and its relationship to its historiography. The second section examines political, economic, social, and cultural themes that transcend national and intercultural boundaries.

**HIST 5621. Topics in Latin American History**

(HIST 381) 3 credits. Seminar.

**HIST 5622. The Historical Literature of Latin America**

(HIST 382) 3 credits. Seminar.

**HIST 5630. The Historical Development of the Caribbean**

(HIST 388) 3 credits. Seminar. This course may be repeated to a maximum of six credits.

Theories and case studies of Caribbean history. Recent theoretical debates and cases of Caribbean history including: economy, politics, culture, community formation; political mobilization; slavery and emancipation; nation and state formation; law; immigration and emigration; intellectual traditions; gender, race, and class analyses.

**HIST 5836. Topics in Twentieth-Century China**

(HIST 386) 3 credits. Lecture.

**HIST 5837. East Asian History**

(HIST 387) 3 credits. Lecture.

Topics in modern Chinese and Japanese history with emphasis on Chinese thought and politics.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## HUMAN DEVELOPMENT AND FAMILY STUDIES

*Department Head:* Professor Ronald M. Sabatelli*Associate Department Head for Graduate Studies:*

Associate Professor Preston Britner

*Associate Department Head for Undergraduate Studies:*

Associate Professor Jane Goldman

*Professors:* S.A. Anderson, Blank, Harkness, Rigazio-DiGilio, Robinson, Sabatelli, Super, and Wisensale*Associate Professors:* Asencio, Britner, Garey,

Goldman, Mulroy, Sheehan, and Weaver

*Assistant Professors:* Adamsons, S.R. Anderson,

Bellizzi, Brown, Donorfio, Farrell, Forman, and

Tambling

Graduate courses and research opportunities are offered leading to the Master of Arts degree and Doctor of Philosophy degree in Human Development and Family Studies. Available study areas include, but are not restricted to, child and adolescent development, adult development and aging (gerontology), family systems and relations, and marriage and family therapy. Courses are offered in early childhood, adolescence, gerontology, life span development, psychosocial and cognitive development, marital and family interaction, family policy, family life education, and marriage and family therapy.

Students' individual programs of study may be developed in conjunction with faculty in related areas and include offerings from departments and schools throughout the University. Graduate students are encouraged to elect supervised fieldwork and research projects in nearby community agencies.

Students studying marital and family therapy are required to complete clinical practicums in the Humphrey Center for Individual, Couple, and Family Therapy and in selected mental health and family therapy agencies. Such study is designed to fulfill the academic requirements needed to achieve Connecticut licensure and clinical membership in the American Association for Marriage and Family Therapy, which requires twelve continuous months of practicum placement. Students studying marital and family therapy at the doctoral level must have completed the necessary Master's level prerequisites before taking advanced course work and fulfilling the required 9-12 month internship in an approved agency.

**Admission to the M.A. Program.** It is desirable for applicants to have a fundamental background in the social sciences and a basic understanding of research procedures. Application forms should be obtained from and be returned directly to the Graduate Admissions Office. In addition, applicants must present results of the General Test of the Graduate Record Examinations (GRE), a personal statement describing themselves and their reasons for pursuing a degree in Human Development and Family Studies, and at least three letters of recommendation to the Graduate School, University of Connecticut, 438 Whitney Road Extension, Unit 1006, Storrs, Connecticut 06269-1006.

**Admission to the Ph.D. Program.** A prospective student must hold a bachelor's or master's degree from a college or university of approved standing. It is desirable, but not mandatory, that the applicant's previous work include

undergraduate or graduate study in the areas of Human Development and Family Studies or related behavioral and social science. Applicants must show promise of superior achievement in research. Application forms should be obtained from and returned directly to the Graduate Admissions Office. In addition, applicants must submit the results of the General Test of the Graduate Record Examinations (GRE), personal statement describing themselves and their reasons for pursuing a doctorate in Human Development and Family Studies, professional writing samples, and at least three letters of recommendation from members of the academic profession. These materials should be sent directly to the Graduate School, University of Connecticut, 438 Whitney Road Ext, Storrs, CT 06269-1006. Complete applications and all supporting documents must be received no later than January 15. Students ordinarily are admitted to the program to start classes in the fall semester.

**Special Facilities.** The department has a number of centers and facilities for basic and applied research in HDFS. It includes five centers: the Center for Applied Research in Human Development, the Child Development Laboratories, the Center for Marital and Family Therapy, the Center for Study of Culture, Health, and Human Development, and the Ronald and Nancy Rohner Center on Interpersonal Acceptance and Rejection.

The Center for Applied Research in Human Development (CARHD) is a joint venture with the Cooperative Extension System. Its purpose is to provide assistance to state and community based agencies in the development, delivery, and evaluation of human service programs. The CARHD strives to create a supportive relationship with its clients and offers assistance at every level of the evaluation process. Technical assistance is provided by graduate students and faculty. The Center is also a research training facility. It offers opportunities for graduate students to learn about the research and publication process under the mentorship and guidance of experts in the field of human development, family studies and applied research.

The Child Development Laboratories (CDL) offer full-day and half-day programs for children who are typically developing or needing specialized educational experiences from age six weeks to five years of age. The CDL's mission is to train students who will be working with young children, facilitate faculty and student research in child development, and serve as a model center for providing quality care and education programs for young children. The CDL's laboratories provide facilities for observation, research, student projects, and field placements for the HDFS and other departments at the University.

The Humphrey Center for Individual, Couple, and Family Therapy is a training facility for graduate intern therapists enrolled in the Master's Program for Marriage and Family Therapy in Human Development and Family Studies. The Center offers a range of therapeutic services which are available to university faculty, staff and their families, undergraduate or graduate students, and any individual or family living in the greater northeastern Connecticut area. These services include individual therapy, family therapy, marital or relationship therapy, and therapy for parenting or child-related problems. The Center also offers seminars for mental health professionals, family life enrichment programs, and support and therapy groups. Consultation services and on-site training are

available to other departments within the University, as well as to outside community agencies.

The Center for the Study of Culture, Health, and Human Development (CHHD) is a resource for faculty and graduate students from various disciplines including Allied Health, Anthropology, Education, Human Development and Family Studies, Nursing, Nutritional Sciences, Pediatrics, and Psychology. Focusing on the scientific understanding and active promotion of healthy human development in its cultural context, the Center houses several major research projects and manages the university-wide Graduate Certificate in Culture, Health, and Human Development.

The Ronald and Nancy Rohner Center for the Study of Interpersonal Acceptance and Rejection is a collaborative enterprise with the School of Social Work. Its mission is to conduct basic and applied research on the dynamics and consequences of interpersonal acceptance-rejection, with special emphasis on the parent-child relationship. Collaborative research with scholars around the world is a hallmark of the Center's activities.

In addition to the centers, the Department of Human Development and Family Studies is the locus for programming and resources specifically targeted to students and faculty across the Storrs campus interested in gerontology. It coordinates gerontology education programs, research, and service activities and offers a graduate certificate in Gerontology. This certificate program is open to students in masters or doctoral programs in a wide range of academic disciplines. Professionals working in the field of aging who have satisfactorily completed an undergraduate degree program also may apply to the certificate program. Students enrolled in HDFS M.A. and Ph.D. programs with an emphasis on adult development and aging will typically complete the certificate during their course work. Also, the department houses a resource room on gerontology.

Space for applied activities is housed in the Human Development Center (HDC). The HDC affords students and faculty observation and video taping facilities in its laboratories, therapy, and testing rooms. It also provides opportunities for conducting community-based program evaluation and data analysis services.

## COURSES OF STUDY

**HDFS 5000. Independent Study in Human Development and Family Relations** (HDFS 300) 1-6 credits. Independent Study. May be repeated to a maximum of 12 credits with a change in content.

Advanced study for qualified students who present suitable projects for intensive, independent investigation in human development and family relations.

**HDFS 5001. Seminar** (HDFS 301) 1 credit. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Seminar in professional orientation to the field of human development and family relations.

**HDFS 5002. Special Topics in Human Development and Family Studies** (HDFS 302) 1-3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission. With a change of topic, students may enroll up to four times for a maximum of 12 credits.

In-depth investigation of a recent issue of human development and family studies.

**HDFS 5003. Research Methods in Human Development and Family Studies I** (HDFS 303) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Family and human development procedures, research experience related to analyzing interpersonal interaction and developmental processes.

**HDFS 5004. Research Methods in Human Development and Family Studies II** (HDFS 305) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Advanced family and human development research methods; research design and underlying methodological issues in analyzing interpersonal interaction and developmental processes.

**HDFS 5005. Qualitative Research Methods in Human Development and Family Studies**

(HDFS 304) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisite: HDFS 5003.

Philosophical bases of qualitative research in the social sciences; developing qualitative strategies; including: existential-phenomenological, intensive interviews, participant observation, and textual analysis.

**HDFS 5007. Current Issues in Human Development and Family Studies** 1-2 credits. Seminar. Open to graduate students in Human Development and Family Studies; others with permission. May be repeated for credit with a change of topic to a maximum of 12 credits.

Focused presentation and discussion of an aspect of theory or methods related to advancing the field of human development and family studies.

**HDFS 5010. Practicum in University Teaching of Human Development and Family Studies** (HDFS 308) 3 credits. Practicum.

Supervised teaching of undergraduate courses in HDFS.

**HDFS 5020. Culture, Health and Human Development** (HDFS 370) 3 credits. Seminar.

Introduction to current interdisciplinary approaches to the study of human development and health in the context of culture. An overview of theoretical approaches; presentations of current research by invited speakers, focusing on how to

combine disciplinary perspectives and methods in order to build a new integrative science of health and development across and within cultures.

**HDFS 5030. Research Practicum**

(HDFS 306) 1-6 credits. Practicum. May be repeated to a maximum of 24 credits.

Supervised research in Family Studies.

**HDFS 5031. Culture, Health and Human Development Project**

(HDFS 371) 3 credits. Seminar. This course may be repeated to a maximum of six credits.

Group discussion and guidance through planning, implementation, and write-up of a publishable research project in fulfillment of a core requirement for the Graduate Certificate in Culture, Health, and Human Development.

**HDFS 5088. Supervised Field Work in Family Development**

(HDFS 388) 1-6 credits. Clinical. Instructor consent required.

Work in a community agency related to the field of family development.

**HDFS 5101. Infant and Toddler Development**

(HDFS 326) 3 credits. Lecture.  
Contemporary theories and research on infant and toddler development; evaluation of prevention and intervention programs designed to address contemporary social issues.

**HDFS 5102. Early and Middle Childhood Development**

(HDFS 327) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others by permission.

Theory and research related to early and middle childhood as a developmental period. Focus will be on topics such as executive functioning and cognitive development, language and literacy development, peer relations, gender roles, aggression, and prosocial behaviors, as well as on prevention and intervention programs designed to address contemporary social issues facing children and their families.

**HDFS 5103. Adolescent Development**

(HDFS 386) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Adolescent development; understanding the various forces related to adolescent behavior.

**HDFS 5110. Families, Communities, and Positive Behavior Supports**

(HDFS 310) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies and related fields, and (with permission) to upper level undergraduates and those enrolled in the Honors Program.

Analysis of theory, research, systems, and curricula in Positive Behavior Supports (PBS) with emphasis on family and community partnerships. Interventions for problem behavior are examined across context and perspective.

**HDFS 5115. Cultural Issues in Child Development**

(HDFS 381) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

An examination of the cognitive, social, and emotional development of children from a cultural perspective. Emphasis placed on infancy, socialization, theories of cognitive development, and schooling.

**HDFS 5130. Current Topics in Early Childhood Education**

(HDFS 330) 1-6 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission. With a change of topic, may be repeated once for credit.

In-depth investigation of a current issue in early childhood education (e.g., emergent literacy, diversity), with focus on recent research and application to classroom practice. Includes classroom observation and laboratory observation.

**HDFS 5215. Models and Concepts of Lifespan Human Development**

(HDFS 315) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission

Overview of approaches to understanding human development across the lifespan. Emphasis on models that cross disciplinary boundaries to explore development in social and cultural contexts.

**HDFS 5216. Advanced Seminar in Theories of Human Development**

(HDFS 384) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Theoretical positions influencing the field of human development and empirical evaluation of these positions.

**HDFS 5240. Aging: Personality and Social Interaction**

(HDFS 340) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Patterns of adjustment to aging; continuity versus change in personality, role changes, and family relations of the elderly.

**HDFS 5242. Aging in the Family**

(HDFS 342) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Theory, research and social issues affecting older families, developmental changes within aging families which impact on patterns of social interaction and support.

**HDFS 5244. Housing for the Elderly**

(HDFS 344) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Housing types, adaptive accommodations, and emerging patterns of choice occurring in American society during middle-age and late adulthood; effects

of economic and social changes as related to decision making by individuals about private and public living arrangements; design of research and evaluation methodology.

**HDFS 5247. Social Gerontology**

(HDFS 347) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Societal aspects of aging, including the social psychological concomitants of adjustments, changing roles, and systems of social relationships.

**HDFS 5248. Adaptation and Development in Adulthood**

(HDFS 348) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Young adulthood through middle-age with particular attention on transition episodes; stability and change in adult personality with attention to familial and other social relationships.

**HDFS 5250. Close Relationships**

(HDFS 393) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Formation, maintenance, and dissolution of close relationships across the life span; relationships like courtship, marriage, parent-child, and friendships.

**HDFS 5269. Gender Role Transitions and Conflicts Over the Lifespan**

(HDFS 369) 3 credits. Lecture.

The identification and study of men's and women's gender role transitions and conflicts over the lifespan using psychosocial theory. Developmental stages and tasks are critically analyzed using psychological, sociological, multicultural, and gender role theories and research.

**HDFS 5277. Human Sexuality**

(HDFS 377) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Human sexual behavior and attitudes.

**HDFS 5310. Patterns and Dynamics of Family Interaction**

(HDFS 391) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Readings and research concerning the family, stressing interpersonal processes and communication.

**HDFS 5311. Theories of Family Development**

(HDFS 395) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Concepts and theories in the area of family development.

**HDFS 5320. Special Issues in Family Development**

(HDFS 380) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Theory, research and practice applied to special issues in human development and family relations over the life span.

**HDFS 5321. Seminar on Parent-Child Relations in Cross-Cultural Perspective** (HDFS 383) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission.

Research and theory regarding the antecedents and effects of major dimensions of parental behavior on child development in the U.S.A. and cross-culturally, parental warmth, control, punishment, and their interactions.

**HDFS 5340. Prevention, Intervention, and Public Policy** (HDFS 331) 3 credits. Seminar.

Survey course of the theory, practice and science of primary prevention of human problems. Prevention concepts and case studies are presented. Students give analysis and critique of course content and develop personal and professional perspectives on prevention practice and possible social policy initiatives.

**HDFS 5341. Gender Role Issues for Helping Professionals** (HDFS 325) 3 credits. Lecture.

Intensive review of gender role socialization in a workshop setting, emphasizing men's and women's gender role conflicts across the life span. Lectures, readings, discussions, self assessments, and media are used to explicate core concepts and themes.

**HDFS 5342. Parent Education**

(HDFS 387) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Planning, implementation, and evaluation of parent education programs for individuals and groups. Development and use of materials for such programs.

**HDFS 5545. Aging Policy and Programs** (HDFS 345) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Existing programs at Federal, State, and Community levels as currently deployed under various Titles of the Older Americans Act, Social Security, Medicare, and Medicaid; program objectives, scope, costs, and levels of delivery as they relate to identified needs of present and future groups of the elderly; use of policy-determining data and program evaluation methodologies.

**HDFS 5751. Foundations of Marriage and Family Therapy**

(HDFS 351) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission.

Theoretical foundations of marriage and family therapy; basic principles of therapy, interactional patterns of marital dyads and families under stress; professional and ethical issues relevant to the practice of marriage and family therapy.

**HDFS 5752. Building Cultural, Contextual, and Integrative Competencies in Marriage and Family Therapy I**

2 credits. Seminar. Instructor consent required. Co-requisite: HDFS 5751.

Conceptual and applied learning and community immersion experiences that address the cultural, contextual, and integrative competencies considered necessary to serve effectively as marriage and family-therapy scientist/practitioners in today's intercultural society.

**HDFS 5754. Marriage Therapy**

(HDFS 354) 3 credits. Seminar. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisite: HDFS 5751 which can be taken concurrently.

Marital interaction and therapy. Theory and technique of contemporary therapeutic approaches.

**HDFS 5756. Family Therapy**

(HDFS 356) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisite: HDFS 5751 which can be taken concurrently.

Contemporary clinical conceptualizations of family interaction, major contributions to the development of family therapy as a unique discipline. Issues and problems commonly confronted in conducting family therapy.

**HDFS 5757. Building Cultural, Contextual, and Integrative Competencies in Marriage and Family Therapy II**

2 credits. Seminar. Instructor consent required. Co-requisite: HDFS 5756.

Conceptual and applied learning and community immersion experiences that address the cultural, contextual, and integrative competencies considered necessary to serve effectively as marriage and family-therapy scientist/practitioners in today's intercultural society.

**HDFS 5759. Case Seminar in Marriage and Family Therapy**

(HDFS 359) 3 credits. Seminar. Prerequisites: HDFS 5751 and either HDFS 5754 or HDFS 5756. HDFS 5762 should be taken concurrently.

Specialized professional issues and professional problems in the practice of marriage and family therapy. Case material.

**HDFS 5761. Introduction to Clinical Practice and Professional Issues**

(HDFS 361) 3 credits. Lecture/Clinical. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisite: HDFS 5751 which can be taken concurrently.

Clinical practice in the Center for Marital and Family Therapy and in approved clinical training centers. Classwork and supervised clinical practice required. Professionalism, ethics, confidentiality, therapeutic techniques, and procedures required for clinical practice.

**HDFS 5762. Practicum in Marriage and Family Therapy**

(HDFS 362) 1-6 credits. Practicum. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisites: HDFS 5761 and either HDFS 5754 or HDFS 5756. May be repeated to a maximum of 24 credits.

Supervised group experience in marriage and family therapy related to clinical practice in the Center for Marital and Family Therapy or other approved clinical training centers.

**HDFS 5763. Individual Supervision in Marriage and Family Therapy**

(HDFS 363) 1-6 credits. Independent Study. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisites: HDFS 5761 and either HDFS 5754 or HDFS 5756. May be repeated to a maximum of 24 credits.

**HDFS 5764. Clinical Assessment and Practice**

(HDFS 364) 3 credits. Seminar.

Diagnosis and treatment of dysfunctional marital and family relationship patterns, nervous and mental disorders; major family therapy assessment methods and instruments.

**HDFS 5790. Theories and World Views Informing Marriage and Family Therapy**

(HDFS 390) 3 credits. Lecture.

Underlying theories and conceptualizations informing marriage and family therapy.

†GRAD 5930. Full-Time Directed Studies (Master's Level)

(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research (GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research

(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)

(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation

(GRSD 399) Non-credit.

**HDFS 6710. Family Therapy Research**

(HDFS 410) 3 credits. Lecture. Open to graduate students in Human Development and Family Studies, others with permission. Prerequisite: HDFS 5003.

Family therapy research methods; research design and methodological issues in analyzing treatment interventions, family interaction processes, and change.

**HDFS 6720. Family Therapy Supervision** (HDFS 420) 3 credits. Seminar.

Major models and methods of marriage and family therapy supervision; ethical and legal responsibilities faced by marital and family therapy supervisors. Development of perceptual, conceptual, and executive skills needed to supervise and train practitioners in the field of marriage and family therapy.

## HUMAN RIGHTS COURSES

**HDFS 6730. Advanced Family Therapy**  
(HDFS 430) 3 credits Seminar. Prerequisites: HDFS 5751 and HDFS 5756.

Current trends and issues in the field of family therapy; integration of clinical theory, research, and practice.

**HDFS 6895. Internship in Marital and Family Therapy**  
(HDFS 495) 1-6 credits. Clinical.

Nine to twelve month period of full-time clinical experience in a cooperating institution. Open only with consent of instructor to students of advanced standing in marital and family therapy. Offered at approved clinical training centers. The student assumes a full range of professional responsibilities associated with practice of marital and family therapy. Minimum of 500 hours of direct client contact and receipt of 100 hours of supervision.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

**HRTS 5005. Special Topics in Human Rights**

3 credits. Seminar. With a change of topic, students may enroll up to three times for a maximum of 9 credits.

In-depth investigation of an issue in human rights research.

**HRTS 5301. Contemporary Debates in Human Rights**

(HRTS 301) 3 credits. Seminar. Instructor consent required.

Key debates in human rights will introduce students to the main modern debates in the academic field of human rights. It is interdisciplinary in scope, including recent intellectual contributions from philosophy, law, political science, sociology, anthropology, literature and history. It will address a number of central issues and questions, including the normative philosophical foundations of human rights, whether human rights are universal or relative, whether human rights can be held collectively, and the justifications for women's rights and cultural rights.

**HRTS 5390. Economic Rights**

(HRTS 390) 3 credits. Seminar. Instructor consent required. Also offered as ECON 5128 and POLS 5390.

Economic rights include the right to an adequate standard of living, the right to work, and the right to basic income guarantees for those unable to work. These rights are grounded in international law - particularly in the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights. This class will explore the conceptual bases, measurement, and policy applications of economic rights. Specific topics will include: child labor, the right to development, non-governmental initiatives, and the institutionalization of economic rights (e.g., constitutionalization versus statutory implementation versus discretionary policies).

## INTERNATIONAL STUDIES

*Interim Executive Director:* Associate Extension Professor Elizabeth Mahan

*Emiliana Pasca Noether Professor of Italian History:* Professor John Davis

*UNESCO Chair for Human Rights:* Associate Professor Amii Omara-Otunnu

*Professors:* Aschkenasy, Benson, Berentsen, Berthelot, Boster, Boyer, Bravo-Ureta, Buckley, Celestin, Chazdon, Cosgel, Costigliola, Dalmolin, Dechant, Erickson, Fernandez, Gomes, Gordon, Guénoun, Handwerker, Healy, Langlois, Linnekin, López, Masciandaro, McBrearty, Roe, Schensul, Sheckley, Silander, Silvestrini, Spalding, Stephens, Talvacchia, Wilson, and Zirakzadeh

*Associate Professors:* Bouchard, Chinchilla, Coundouriotis, Dintenfass, Gouwens, Greeley, Kimenyi, Kingstone, Lefebvre, Loss, Mahan, Martinez, McNeece, Overmyer-Velázquez, Pardo, Phillips, Randolph, Reyes, Schafer, Scruggs, Seda Ramirez, Snyder, Sterling-Folker, Travis, Vias, Von Hammerstein, Watson, and Weidauer

*Assistant Professors:* Bayulgen, Caner, Casamayor-Cisneros, Gaztambide-Geigel, Gilligan, Hertel, Kane, Lansing, Libal, Pappademos, Rojas, Turcotte, Venator Santiago, and Vernal

Study is offered leading to the degree of Master of Arts in the field of International Studies. Students may pursue a general program emphasis or pursue one of the following areas of concentration: European Studies, Italian History and Culture, or Latin American Studies. Offered also is a dual program which combines the master's degree in International Studies with the Master of Business Administration degree.

**The M.A. in International Studies.** The master's degree program is available in two plans: Plan A requires a minimum of 21 credits of course work plus a thesis; Plan B requires 30 credits of course work plus a comprehensive exam. Course work must be distributed over three academic disciplines. Students are required to demonstrate proficiency in appropriate languages adequate both for conversation and research. Scores from the General Test of the Graduate Record Examination and three letters of recommendation are required for admission. As each program (European Studies, Italian History and Culture, Latin American Studies, and the general program) has additional guidelines regarding required and elective courses, language proficiency, and comprehensive examinations, to fully understand program requirements students must contact area studies Centers or the Office of International Affairs.

Information concerning the European Studies and Italian History and Culture concentrations may be obtained from Professor John Davis, Director, Center for European Studies (Unit 1182). Information regarding the Latin American concentration may be obtained from Dr. Mark Overmyer-Velázquez, Director of the Center for Latin American and Caribbean Studies (Unit 1161). Information concerning other areas of emphasis may be obtained from the Associate Executive Director of the Office of International Affairs (Unit 1182).

**M.A. in International Studies and M.B.A.** The dual M.A. and M.B.A. degree program consists of 72 credits of course work distributed between International Studies and Business Administration. The M.B.A. portion of the program consists of 42 credits in business, plus fifteen credits of electives. The M.A. portion of the program comprises 30 credits of course work, of which 15 credits count as electives in the M.B.A. portion.

The M.A. program is available in two plans: Plan A requires a minimum of 21 credits of course work, plus a nine credit thesis; Plan B requires 30 credits of course work, plus a comprehensive examination. M.A. students must also demonstrate language proficiency sufficient for conversation and to conduct research in an appropriate second language. Students in the M.A. program select either an area of concentration or an interdisciplinary field of study as the focus of their work.

When completing the application form, applicants to the joint M.A. in International Studies and M.B.A. must indicate clearly as Degree Sought that pursuit of the "Dual M.A. in International Studies and M.B.A. Program" is intended. Applicants are expected to provide three letters of recommendation and scores from both the Graduate Management Admissions Test (GMAT) and from the General Test of the Graduate Record Examinations (GRE).

For information about the M.B.A. program, students should write to the Director of the M.B.A. Program, School of Business Administration (Unit 1041-041MBA).

**Special Facilities.** The Centers for European Studies and Latin American and Caribbean Studies encourage and promote programs and multidisciplinary research in their respective areas.

Concerning the study of Latin America, library resources are especially strong for the study of Mexico, the Southern Cone, and the Caribbean. The Thomas J. Dodd Research Center has a number of special collections that are particularly strong in relation to the area studies programs. The Latin American Survey Data Bank in the Roper Center for Public Opinion Research maintains and acquires historical and current national-level surveys from throughout the region.

The Latin American Studies programs at the University of Connecticut, Brown University, the University of Massachusetts, Amherst, and Yale University constitute the Latin American Studies Consortium of New England. Consortium partners arrange occasional faculty exchanges. Students in all four programs may use the libraries of other Consortium members without charge, and may attend classes at the other universities.

The Center for European Studies coordinates small funded exchanges of graduate students between the University of Connecticut and German universities.

## COURSES OF STUDY

### International Studies

#### INTS 5000. Seminar in International Studies

(INTS 301) 3 units. Seminar.

This seminar combines the various disciplines that constitute International Studies into three core

units: (1) Social sciences; (2) Humanities; and (3) Development Studies (development economics and administration). Area Studies faculty from relevant departments will conduct the individual seminar sessions. The seminar has three goals: (1) to introduce concepts and theoretical issues of the fields in each of the core units; (2) to introduce research approaches and the formulation of research questions in each of the core units; and (3) to help students develop analytical thinking and writing skills in an interdisciplinary context. These goals form the basic structure of the three units and will be met through a combination of reading, discussion, short papers, presentations, and research exercises. Library research and on-line resources are also covered.

#### INTS 5110. Independent Study

(INTS 310) 1-6 credits. Independent Study.

Instructor consent required. May be repeated to a maximum of 15 credits with a change of content.

### African

#### AFRI 5000. Seminar in African Studies

(AFRI 301) 3 credits. Seminar.

Interdisciplinary introduction to graduate level study of Africa.

#### AFRI 5105. Special Topics in African Studies

(AFRI 305) 1-9 credits. Seminar.

#### AFRI 5110. Independent Study

(AFRI 300) 1-9 credits. Independent Study.

### European

#### ES 5105. Independent Study in European Studies

(ES 300) 1-6 credits. Independent Study.

### Latin American

#### LAMS 5000. Seminar in Latin American Studies

(LAMS 390) 3 credits. Seminar.

Interdisciplinary introduction to graduate level study of Latin America.

#### LAMS 5105. Special Topics

(LAMS 300) 3 credits. Seminar. This course may be repeated to a maximum of 12 credits.

#### LAMS 5110. Independent Study

(LAMS 310) 1-6 credits. Independent Study.

Instructor consent required. May be repeated to a maximum of 15 credits with a change of content.

#### LAMS 5560. Seminar on Latin American Business

(LAMS 360) 3 credits. Lecture.

Latin American business practices and operations. U.S. and transnational business in Latin America.

#### LAMS 5570. Latin American Popular Culture

(LAMS 370) 3 credits. Seminar.

Culture, subcultures, and culture industries in Latin America. Conditions which affect the mass production, dissemination and reception of entertainment products. Reading knowledge of Portuguese or Spanish required.

#### LAMS. 5890 Latin American Studies Project

(LAMS 380) 3 credits. Independent Study.

Independent, interdisciplinary research project culminating in a written paper, developed by the student under the supervision of a committee consisting of a first and second reader. The first reader will be the major advisor on the project. This course is intended to be the capstone course for the master's degree, to be taken after all other course requirements are completed.

### All Areas

#### †GRAD 5930. Full-Time Directed Studies (Master's Level)

(GRAD 397) 3 credits.

#### †GRAD 5950. Master's Thesis Research

(GRAD 395) 1 - 9 credits.

#### †GRAD 5960. Full-Time Master's Research

(GRAD 396) 3 credits.

#### GRAD 5998. Special Readings (Master's)

(GRAD 398) Non-credit.

#### GRAD 5999. Thesis Preparation

(GRAD 399) Non-credit.

## JUDAIC STUDIES

*Director:* Professor Arnold Dashefsky  
*Associate Director:* Professor Stuart Miller  
*Professor:* Aschkenasy  
*Associate Professor:* S. Johnson

*Adjunct Professors:* Freund, Kassow, and Lang  
*Adjunct Associate Professors:* Berkovitz, Elukin, and Kiener,

Interdisciplinary work leading to the degree of Master of Arts in Judaic Studies is offered by the Departments of English, History, Modern and Classical Languages, and Sociology. This degree is administered by the Center for Judaic Studies and Contemporary Jewish Life, which is housed in the Thomas J. Dodd Research Center. Since the program in Judaic Studies is intended to provide a synthesis of broad areas of Jewish culture and thought as a basis for constructive research in specialized aspects of Jewish civilization, students normally are required to include in their programs courses offered by the supporting departments.

**Admission to the Degree Program.** The Judaic Studies Admissions Committee considers applications for admission to the master's program. An undergraduate major in the area is not necessarily required, but, before admission, students must show evidence of adequate preparation.

**The M.A. Program.** Work leading to the degree of Master of Arts in Judaic Studies may be undertaken either with Plan A (with thesis) or Plan B (without thesis). In either case, course work in Judaic Studies is to be distributed among several departments, and the student's advisory committee is composed of representatives of these departments. The M.A. degree is offered in consortial relationship with the University of Hartford and draws on faculty from neighboring colleges and universities.

**Courses of Study.** Course offerings and faculty are listed under Judaic Studies and Hebrew as well as the cooperating and supporting departments referred to above: English, History, Modern and Classical Languages and Sociology. The Committee for Judaic Studies organizes a number of colloquia featuring staff members and visiting lecturers and encourages graduate students to attend. Two years of college-level Hebrew language instruction (or its equivalent) is required in order to receive the Master's degree.

**Support.** Stipends are available through the Center for Judaic Studies and Contemporary Jewish Life.

### COURSES OF STUDY

**JUDS 5300. Topics in Biblical Studies** (JUDS 300) 3 credits. Lecture. With a change in content, this course may be repeated to a maximum of six credits.

Topics in the historical, literary and philosophical study of the Bible with special emphasis on current methodological issues.

**JUDS 5301. Hebrew Wisdom Literature** (JUDS 301) 3 credits. Seminar. Also offered as Hebrew 301.

Systematic examination of classical wisdom texts in the Hebrew Bible and Rabbinic Literature focusing on their contribution to world ethical literature. Taught in English.

**JUDS 5303. Religion of Ancient Israel** (JUDS 303) 3 credits. Lecture.

Significant aspects of the religion of ancient Israel: The God-human relationship, the origins of good and evil, law and covenant, kingship, prophecy, ritual and morality, repentance and redemption. Taught in English.

**JUDS 5305. Bible and Archaeology** (JUDS 305) 3 credits. Lecture.

Chronological and cultural structure of the Ancient Near East from the third millennium (3000 BCE) through the beginnings of the Byzantine period (4th century CE) with an emphasis upon the textual information presented by the Bible.

**JUDS 5311. History and Literature of Talmudic Palestine**

(JUDS 311) 3 credits. Seminar.

A discussion of select topics and texts pertaining to religious, social, and political currents in Talmudic Palestine. Taught in English.

**JUDS 5313. Israel and the Ancient Near East**

(JUDS 313) 3 credits. Lecture.

History, literature, religion and archaeology of the Ancient Near East emphasizing the role Israel played within the context of Mesopotamia and Egyptian history and culture.

**JUDS 5315. Ancient Jewish Fictions** (JUDS 315) 3 credits. Lecture.

Hellenistic Jewish Literature in the context of ancient fictions.

**JUDS 5325. Seminar on the Holocaust: Philosophical and Historical Issues**

(JUDS 325) 3 credits. Seminar. Prerequisite: at least 6 credits of Judaic Studies graduate courses

Study of philosophical and historical issues related to the occurrence and analysis of the Holocaust.

**JUDS 5343. Seminar on American Jewry** (JUDS 343) 3 credits. Seminar.

Applications of sociological theory and methods to the analysis of American Jewry.

**JUDS 5351. Seminar on Modern Jewish Philosophy**

(JUDS 351) 3 credits. Seminar. Prerequisite: at least 6 credits of Judaic Studies graduate courses.

Study of the principal issues and figures in Jewish philosophy from the Enlightenment to the present. Topics considered include the nature (and possibility) of Jewish philosophy, the concepts of God, nature, and the world, the status of religious knowledge, law and practice, the concept of election in relation to the people and land of Israel. Thinkers to be considered and read include Moses Mendelssohn, Solomon Maimon, S.R. Hirsch, Hermann Cohen, Franz Rosenzweig, Ahad Ha'am, Martin Buber, Emanuel Levinas, A.J. Heschel, and Joseph Soloveitchik.

**JUDS 5353. Modern European Jewish History**

(JUDS 353) 3 credits. Lecture.

Selected topics in Modern European Jewish History between the Enlightenment and the establishment of the State of Israel.

**JUDS 5355. Topics in Jewish Ethics** (JUDS 355) 3 credits. Lecture.

Topics in Jewish ethics as reflected in literature and history, including social ethics, political ethics, economic and business ethics, sexual ethics, medical and bioethics, and others.

**JUDS 5390. Independent Study** (JUDS 390) 3 credits. Independent Study.

**JUDS 5397. Special Topics in Judaic Studies**

(JUDS 397) 3 credits. Seminar.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)** (GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research** (GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research** (GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)** (GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation** (GRAD 399) Non-credit.



## KINESIOLOGY

*Dean:* Professor Thomas C. DeFranco

*Department Head:* Professor Carl M. Maresh

*Professors:* Armstrong, Bohannon, Denegar, Kraemer, and Pescatello

*Associate Professors:* Bruening, D. Casa, Fink, Kinsella-Shaw, VanHeest, Volek, and Zito

*Clinical Associate Professor:* Leavitt

*Assistant Professors:* Bhat, Bubela, Burton, Joseph, and Mazaerolle

*Adjunct Professor:* Lieberman

*Adjunct Associate Professor:* Nindl

The Department of Kinesiology in the Neag School of Education offers graduate programs leading to the degrees of Master of Arts and Doctor of Philosophy in the field of Kinesiology and to the Doctor of Physical Therapy degree (D.P.T.). All information concerning the D.P.T. degree program can be found in this *Catalog* under the heading *Physical Therapy*. All students should consult the statement under Education for information pertaining to admissions requirements.

The majority of graduate courses given during the academic year are taught afternoons or in the evenings. Full-time master's degree students must attend at least one summer session to accumulate in one calendar year the minimum of 30 credits required for graduation. Master's degree programs emphasizing exercise science are two-year programs and require a master's thesis.

### COURSES OF STUDY

#### **EKIN 5085. Research Project in Sport Management and Sociology**

(EKIN 396) 1-6 credits. Independent Study.

Instructor consent required. Restricted to master's students in Kinesiology (sport management and sociology emphasis) who have completed all course work toward the degree and are in the final semester.

This course will require students to develop and present a semester-long research project in an area of sport management and sociology.

#### **EKIN 5091. Internship**

(EKIN 390) 6 credits. Practicum.

The application and implementation in a work situation of theories and practices related to the student's area of specialization.

#### **EKIN 5094. Seminar**

(EKIN 384) 3 credits. Seminar.

Issues and research in the biological and social science fields.

#### **EKIN 5099. Independent Study**

(EKIN 300) 1-6 credits. Independent Study.

#### **EKIN 5300. Management of Sport Services**

(EKIN 308) 3 credits. Lecture.

Management processes and practices involved in operating sport organizations.

#### **EKIN 5310. Sport Marketing**

(EKIN 312) 3 credits. Lecture.

This course examines the application of marketing principles to collegiate and professional sport, event promotions, and commercial and public organizations.

#### **EKIN 5315. Sport in Society**

(EKIN 381) 3 credits. Lecture.

The structure and function of sport as an institution, including issues and controversies involving gender, race, and intercollegiate, professional, and children's sports.

#### **EKIN 5320. Psychological Aspects of Sport**

(EKIN 382) 3 credits. Lecture.

The behavioral variables that affect an individual's performance in sport.

#### **EKIN 5325. Legal Aspects of Sport**

(EKIN 377) 3 credits. Lecture.

Tort law principles specific to sport, fitness and recreational activities.

#### **EKIN 5330. Analysis of Amateur Sport**

(EKIN 315) 3 credits. Discussion.

This course will acknowledge the complexity and scope of the sport industry while addressing all segments of amateur sport including, intercollegiate athletics, youth sport, and community sport and recreation.

#### **EKIN 5335. Analysis of Professional Sport**

(EKIN 314) 3 credits. Discussion.

This course will acknowledge the complexity and scope of the sport industry while specifically addressing professional sport.

#### **EKIN 5340. Sport Facility and Event Management**

(EKIN 388) 3 credits. Lecture.

This course will examine all aspects of the management of sport facilities and events, including development, planning, staffing, operations, and evaluation.

#### **EKIN 5345. Theory and Methods of Research**

(EKIN 301) 3 credits. Lecture.

Theoretical and empirical foundations of quantitative and qualitative research in sport and leisure science including research design, implementation and statistical analysis.

#### **EKIN 5500. Research Techniques and Experimental Designs in Exercise Science**

(EKIN 350) 3 credits. Lecture.

This course will give the student an understanding of research designs and methods in exercise science when examining different research topics related to human, animal and cell culture models.

#### **EKIN 5507. Exercise Prescription for Special Populations**

3 credits. Lecture. Instructor consent required.

An in-depth examination and application of the principles of exercise prescription in preventive medicine. Students will advance their knowledge in prescribing exercise for special populations that include groups with overweight and obesity; and cardiovascular, pulmonary, metabolic, and musculoskeletal diseases and conditions. In addition, normal populations with special considerations will be discussed including children and adolescents, older adults, and pregnancy among others.

#### **EKIN 5510. Exercise Metabolism**

(EKIN 360) 3 credits. Lecture.

Influence of aerobic and anaerobic exercise on energy metabolism and the utilization of nutrients, as viewed from the perspectives of physiology, a variety of sports, heredity, maturation, and disease.

#### **EKIN 5512. Preventing Sudden Death in Sport**

3 credits. Seminar.

This course provides an in-depth examination of the causes of sudden death in the athletic/exercise environment. The most current evidence-based guidelines pertaining to the prevention, recognition, and treatment of these conditions will be explored and discussed.

#### **EKIN 5515. Scientific Presentations**

(EKIN 364) 3 credits. Lecture.

Skills required for: writing scientific articles/abstracts, reviewing manuscripts, and presenting results at scientific meetings.

#### **EKIN 5518. Service Learning through Sport and Physical Activity**

(EKIN 375) 3 credits. Practicum.

This is a service learning course that requires both classroom participation and community involvement.

#### **EKIN 5520. Scientific Instrumentation**

(EKIN 366) 3 credits. Lecture.

Scientific instruments in the Human Performance Laboratory. Development of skills necessary to perform analyses on these instruments.

#### **EKIN 5525. Laboratory Analytical Techniques**

(EKIN 367) 3 credits. Laboratory. Open only to graduate students in Kinesiology.

Analytical methods utilized in exercise science laboratories.

#### **EKIN 5530. Physiology of Stressful Environments**

(EKIN 368) 3 credits. Lecture.

Exercising and resting responses/adaptations/illnesses to high altitude, cold, hyperbaric, polluted, and zero gravity environments. The acute and chronic effects of electromagnetic radiation fields and sleep deprivation will also be studied.

**EKIN 5533. Current Research and Issues in Athletic Training**

(EKIN 316) 3 credits. Seminar.

Acquaint students of athletic training with the recent research in the field, the components of conducting and publishing research in this field, and preparation for research endeavors at the graduate level. Also, we will cover relevant issues/policies/laws related to athletic training that are currently being regionally or nationally debated, discussed, and/or implemented.

**EKIN 5534. Advanced Clinical Care in Sports Medicine**

(EKIN 394) 3 credits. Seminar.

A discussion/lecture-based class designed to explore advanced topics for graduate students in athletic training. The class is designed to further students' knowledge and skills regarding "hot" topics within the athletic training profession.

**EKIN 5535. Biomechanical Analysis of Sport Performance**

(EKIN 378) 3 credits. Lecture.

Quantitative research in sport motion, two-dimensional and three-dimensional analysis, kinematic and kinetic analysis, instrumentation (videography, computer systems).

**EKIN 5550. Children and Physical Activity**

(EKIN 355) 3 credits. Lecture.

Overview of systems physiology for pediatric individuals. The impact of physical activity and chronic training will be evaluated.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**EKIN 6094. Seminar**

(EKIN 410) 1-6 credits. Seminar.

Cooperative study of developments and problems in the student's area of specialization.

**EKIN 6300. Organizational Theory in Sport**

(EKIN 404) 3 credits. Discussion. Instructor consent required. Open only to doctoral students.

This course will expose students to some critical areas of management and the theories associated with these areas.

**EKIN 6310. Organizational Behavior in Sport**

(EKIN 405) 3 credits. Seminar. Instructor consent required. Open only to doctoral students.

The course is a discourse on theories related to behavior of individuals and groups in sport and exercise organizations.

**EKIN 6315. Current Research in Sport Management**

(EKIN 406) 3 credits. Discussion. Instructor consent required. Open only to doctoral students.

This course is focused on research in the field of sport management. Each week one or more researchers will present their completed work, studies in progress, or proposed research.

**EKIN 6320. Advanced Sport Sociology**

(EKIN 416) 3 credits. Lecture.

Advanced topics in sport sociology and sport psychology with special emphasis on those models and theoretical perspectives that are associated with generating significant research in the area.

**EKIN 6425. Special Topics in Health and Wellness across the Lifespan**

(EKIN 425) 3 credits. Seminar.

An in-depth examination of health issues across the lifespan. The health issues addressed will involve perspectives from social and behavioral health science, occupational and environmental health science, and/or public health policy.

**EKIN 6450. Exercise Endocrinology**

(EKIN 445) 3 credits. Lecture.

Overview of cellular endocrinology with a focus on the impact of acute and chronic exercise on these systems.

**EKIN 6500. Exertional Heat Stroke**

(EKIN 311) 3 credits. Seminar.

An in-depth examination of pathophysiology, prevention, recognition, treatment, and return to play considerations for exertional heat stroke, with a secondary emphasis on all exertional heat illnesses.

**EKIN 6505. Teaching Strategies to Enhance Learning for Health Fitness and Sport Professionals**

3 credits. Lecture.

The course provided students with a "hands-on" approach to the translation of learning theories and styles and the principles of curriculum development, design and assessment into the practice of activities that enhance learning for health fitness and sport professionals.

**EKIN 6510. Physiology of Human Performance**

(EKIN 393) 3 credits. Lecture.

Selected physiological principles related to exercise stress, including related laboratory experience.

**EKIN 6512. Advanced Resistance Training Physiology**

(EKIN 391) 3 credits. Lecture.

Provides students with an in-depth overview of the physiological mechanisms mediating the different exercise prescriptions in resistance training.

**EKIN 6520. Thermal Physiology**

(EKIN 362) 3 credits. Lecture.

Detrimental effects which exercise in the heat and dehydration have on: cardiovascular function, strength, endurance, fluid-electrolyte balance, disposition, and heat tolerance.

**EKIN 6525. Muscle Physiology in Exercise and Sport**

(EKIN 392) 3 credits. Lecture.

Structural, morphological and biochemical changes in muscle with exercise and training.

**EKIN 6550. Body Weight Regulation and Exercise**

(EKIN 455) 3 units. Lecture.

Overview course of factors impacting body weight, including neuroendocrine control of metabolism and body weight. The role of physical activity in the maintenance of body weight is also considered.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

# LINGUISTICS

*Department Head:* Associate Professor William Snyder

*Professors:* Bobaljik, Boskovic, Calabrese, Lillo-Martin, and van der Hulst

*Associate Professor:* Sharvit

*Assistant Professors:* Gajewski and Wurmbrand

The Department of Linguistics offers study leading to the degrees of Master of Arts and Doctor of Philosophy, emphasizing theoretical research in syntax, semantics and phonology and experimental research in child language acquisition.

**Admission Requirements.** All applicants must submit a sample research paper (such as a thesis or term paper) written in English. It is strongly recommended that this paper be on a topic in linguistics. This research paper and three letters of recommendation are to be sent directly to the Department of Linguistics.

Application forms for admission may be obtained by writing to the Graduate Admissions Office.

Suitable undergraduate major fields include linguistics, cognitive science, computer science, languages, mathematics, philosophy, and psychology. Applicants are required, however, to have completed some prior course work in formal generative grammar.

**Special Facilities.** Resources for experimental research in child language acquisition include the excellent facilities at the University's Child Development Laboratories, as well as the Department's own Psycholinguistics Laboratory. Federal research grants to faculty members, and a long-standing association with Haskins Laboratories in New Haven, Connecticut, also provide significant research opportunities for doctoral students.

## COURSES OF STUDY

### LING 5010. Research Seminar in Language and Psychology

(LING 305) 1 credits. Seminar. Open to graduate students in Linguistics, others with permission. Also offered as PSYC 5500.

### LING 5110. The Acquisition of Syntax

(LING 323) 3 credits. Seminar. Prerequisite: LING 5510.

Relationship between the syntax of children's language and linguistic theory.

### LING 5120. Readings and Research in Acquisition

(LING 333) 3 credits. Seminar. Prerequisite: LING 5110.

Lectures and discussion of classic and current articles in first language acquisition; presentation of ongoing student research.

### LING 5310. Phonology I

(LING 308) 3 credits. Seminar. Open to graduate students in Linguistics, others with permission.

The analysis of sound patterns in languages within a generative framework: distinctive features, segmental and prosodic analysis, word formation, the theory of markedness.

### LING 5320. Phonology II

(LING 309) 3 credits. Seminar. Prerequisite: LING 5310.

The analysis of sound patterns in languages within a generative framework: distinctive features, segmental and prosodic analysis, word formation, the theory of markedness.

### LING 5410. Semantics I

(LING 301) 3 credits. Seminar. Open to graduate students in Linguistics, others with permission.

The bases of formal models of syntax and semantics. Compositionality; quantification; Logical Form.

### LING 5420. Semantics II

(LING 370) 3 credits. Seminar. Prerequisite: LING 5410.

Theories of meaning and reference. Formal treatment of meaning in a generative grammar.

### LING 5510. Syntax I

(LING 321) 3 credits. Seminar. Open to graduate students in Linguistics, others with permission.

Transformational analysis within a Chomskyan framework; deep structure, surface structure, universal conditions on the form and application of transformational rules.

### LING 5520. Syntax II

(LING 322) 3 credits. Seminar. Prerequisite: LING 5510.

Transformational analysis within a Chomskyan framework; deep structure, surface structure, universal conditions on the form and application of transformational rules.

### LING 5799. Directed Reading in Linguistics

1-6 credits. Independent Study. With a change of content, this course may be repeated to a maximum of 12 credits.

### †GRAD 5930. Full-Time Directed Studies (Master's Level)

(GRAD 397) 3 credits.

### †GRAD 5950. Master's Thesis Research

(GRAD 395) 1-9 credits.

### †GRAD 5960. Full-Time Master's Research

(GRAD 396) 3 credits.

### GRAD 5998. Special Readings (Master's)

(GRAD 398) Non-credit.

### GRAD 5999. Thesis Preparation

(GRAD 399) Non-credit.

### †LING 6010. General Exam Workshop

(LING 411) 1-3 credits. Seminar. Recommended preparation: three semesters of full-time course work

in Linguistics. Open to graduate students in Linguistics, others with permission.

Weekly forum for second- and third-year doctoral students to present and receive feedback on their research for General Examination papers. Regular presentations and participation in discussions required.

### †LING 6020. Professional Methods

(LING 412) 1 credit. Seminar.

Practice in writing abstracts for academic conferences. Preparation for academic job market: C.V.s, letters of application, interviews, job talks. Previous completion of three semesters of full-time graduate course work in Linguistics recommended. Open to graduate students in Linguistics, others with permission.

### LING 6040. Structure of a Selected Language

(LING 351) 3 credits. Seminar. Prerequisites: LING 5310 and LING 5510.

Phonological and syntactic problems of a given language.

### LING 6050. Field Methods in Linguistics

(LING 306) 3 credits. Seminar. Prerequisites: LING 5310 and LING 5510.

Collection and analysis of linguistic data from native consultants.

### LING 6060. Historical Linguistics

(LING 340) 3 credits. Seminar. Prerequisites: LING 5320 and LING 5520.

Introduction to the theories and techniques of studying linguistic change. The comparative method of reconstructing languages. Internal reconstruction. Rule change.

### LING 6110. Methods in Acquisition

(LING 332) 3 credits. Seminar. Prerequisite: LING 5110.

Experimental methods for first language acquisition research.

### LING 6120. Topics in Acquisition

(LING 334) 3 credits. Seminar. Prerequisite: LING 5110.

Current topics in first language acquisition research.

### LING 6160. Second Language Acquisition

(LING 335) 3 credits. Lecture.

Current research on theories of second language acquisition. Differences between first and second language development, including views on the availability of universal grammar. Linguistic input and the effect of age of immersion in a second language. Research methodologies and their validity will be discussed. Pedagogical implications derivable from this research will be addressed. Student research component.

### LING 6210. Morphology

(LING 341) 3 units. Lecture. Prerequisite: LING 5310 or 5510, or consent of the instructor.

Introduction to morphological analysis and to the methods of linguistic segmentation. The Lexicon. The relationships between Phonology and Morphology and between Syntax and Morphology. The nature of clitics.

**LING 6310. Problems in Phonology**  
(LING 315) 3 credits. Seminar. Prerequisite: LING 5320.

Advanced work in phonology.

**LING 6410. Semantics Seminar**  
(LING 373) 3 credits. Seminar. Prerequisite: LING 5420.

Classical and recent literature and current research in semantics.

**LING 6420. Topics in Semantics**  
(LING 372) 3 credits. Seminar. Prerequisite: LING 5420.

Current topics in semantic research.

**LING 6510. Readings and Research in Syntax**  
(LING 324) 3 credits. Seminar. Prerequisite: LING 5320.

Examination and discussion of classic articles in syntactic theory; presentation of ongoing student research.

**LING 6520. Problems in Syntax**  
(LING 325) 3 credits. Seminar. Prerequisite: LING 5320.

Advanced work in syntax.

**LING 6530. Comparative Syntax**  
(LING 327) 3 credits. Seminar. Prerequisite: LING 5320.

Cross-linguistic study of syntactic structure; implications for linguistic theory.

**LING 6798. Special Topics in Linguistics**  
(LING 360) 3 credits. Seminar. Prerequisites: LING 5310 and LING 5510. With a change of content, this course may be repeated to a maximum of 12 credits.

Topics in general linguistics at an advanced level.

**LING 6799. Independent Study in Linguistics**  
(LING 304) 1-6 credits.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## MARINE SCIENCES

*Department Head:* Professor Ann Bucklin  
*Professors:* Bohlen, Crivello, Dam, Fitzgerald, Mason, McManus, O'Donnell, Shumway, Torgersen, Visscher, Whitlatch, and Yarish  
*Associate Professors:* Auster, Byrne, Edson, Lin, Romano, Skoog, and Ward  
*Assistant Professors:* Dupraz, Vlahos and Whitney

The Department of Marine Sciences offers study and research programs leading to the degrees of Master of Science and Doctor of Philosophy in the field of oceanography. Areas of special interest include biological, chemical, geological and physical oceanography and marine biology, geochemistry, and geophysics.

Because of the varied training of students and the interdisciplinary nature of marine sciences, plans of graduate study are flexible in focus and scope, and are designed to meet the needs of the individual student. The department offers several courses which serve as a core curriculum in the study of marine sciences, in addition to an array of other offerings in specific areas of the field.

**Master of Science.** For admission, a bachelor's degree in a related science normally is required; there are no special requirements for admission beyond those of the Graduate School. Selection of a Plan A (thesis) or Plan B (course work) degree normally is made after consultation with the student's advisory committee. Since the faculty conduct laboratory and field research programs, most students complete a research project.

**Doctor of Philosophy.** Students entering the doctoral program normally have a master's degree in a related science. Specific course requirements for the Ph.D. degree in oceanography are established by the student's advisory committee. Depending upon the student's committee, a foreign language or a related area of study (e.g., statistics, computer science) outside the student's major program emphasis is required. A written qualifying exam covering selected topics in oceanography must be passed for advancement to candidacy.

The Department also actively participates in several interdisciplinary academic programs at the M.S. and Ph.D. level:

*Biological Sciences.* Certain members of the faculty also are members of the Department of Ecology and Evolutionary Biology. Work in marine ecology, botany, and evolution is available.

*Marine Geophysics.* Appointments of several Department faculty allow work in marine geophysics, geology and sedimentology.

**Special Facilities and Educational Opportunities.** The Department maintains laboratories on the UConn-Avery Point campus in Groton, Connecticut. Research vessels, an ultra-clean analytical chemistry laboratory and seawater facilities are available through the Marine Sciences and Technology Center. Additional research and education facilities are provided by Connecticut Sea Grant, the National Undersea Research Center, the Long Island Sound Resource Center, and the Avery Point campus.

## COURSES OF STUDY

**MARN 5010. Biological Oceanography**  
(MARN 380) 3 credits. Lecture.

An advanced course in biological processes in oceanic and coastal waters. Emphasis is on empirical and theoretical concepts of marine ecosystem dynamics, primary and secondary production and detrital cycling.

**MARN 5011. Biogenic Fluxes in the Oceans**  
(MARN 336) 3 credits. Lecture. Prerequisite: MARN 5010.

Processes regulating the export of organic matter from the surface of the ocean to the sea bed. New and export production; role of the biotic and abiotic processes in downward transport of particulate and dissolved organic matter; current topics of research on the biological pump.

**MARN 5012. Ecology of Marine Invertebrates**  
(MARN 441) 3 credits. Lecture.

Functional responses of organisms to abiotic factors in the marine environment (light, temperature, salinity, oxygen tension, intertidal exposure).

**MARN 5013. Marine Systems Ecology**  
(MARN 443) 4 credits. Lecture/Laboratory.

Effects of biotic and abiotic parameters on the structure and function of marine ecosystems. Techniques for the analysis of energetics, nutrient cycles, and trophic characteristics in both theoretical and applied problems. Field trips are required.

**MARN 5014. Marine Phytoplankton Ecology and Physiology**  
(MARN 331) 3 credits. Lecture.

The physiology of marine phytoplankton, environmental factors affecting their growth and photosynthesis in the ocean, the oceanographic processes responsible for the temporal and spatial distributions of phytoplankton biomass and production, and current topics in phytoplankton research.

**MARN 5015. Molecular Approach to Biological Oceanography**  
(MARN 365) 3 credits. Lecture/Laboratory.

Principles and technology in nucleic acid purification and manipulation, DNA fingerprinting, gene cloning and sequencing, phylogenetic analysis, and detection of gene expression (mRNA and protein). Application examples in marine ecological studies.

**MARN 5016. Marine Zooplankton**  
(MARN 332) 3 credits. Lecture. Prerequisite: EEB 2244 or EEB 2245 or MARN 5010.

Bioenergetics, life history, population and community ecology of zooplankton, and role of zooplankton in aquatic biogeochemical cycles.

**MARN 5017. Plankton Ecology**  
(MARN 333) 3 credits. Lecture/Laboratory. Recommended preparation: The equivalent of one year of biology, chemistry and physics course, or consent of instructor.

Ecology of planktonic organisms (bacteria, protista and metazoa). The evolutionary ecology concept, methods of research, special features of aquatic habitats; adaptations to aquatic environments; population biology; predation, competition, life histories, community structure, and role of plankton in ecosystem metabolism.

**MARN 5020. Marine Bioorganic Chemistry**  
(MARN 386) 3 credits. Lecture/Laboratory.

Overview of the molecular basis of metabolic and bioenergetic pathways and processes with emphasis on life in the marine environment. Synthesis of marine natural products. Laboratory demonstrations of selected molecular and physiological techniques used in oceanography.

**MARN 5030. Chemical Oceanography**  
(MARN 371) 3 credits. Lecture.

The role of the oceans in the major global biogeochemical cycles of carbon, sulfur, nutrients, gases and trace elements. Studies include reaction rates, chemical speciation, equilibria, solubility, oxidation-reduction, absorption, complexation and their effects on the composition of sea water and the transfer of substances at the Earth's surface.

**MARN 5031. Aqueous Geochemistry**  
(MARN 351) 3 credits. Lecture.

Application of chemical theory (thermodynamic equilibrium approaches and kinetics) to understanding the geochemistry of the Earth's aqueous systems, with a focus on the ocean and coastal ecosystems.

**MARN 5032. Coastal Pollution and Bioremediation**  
(MARN 382) 3 credits. Lecture/Laboratory.

Overview of processes and compounds leading to pollution in the nearshore marine environment. The impact of pollution on the marine foodweb and its response is emphasized. Alleviation of pollution through metabolism of organisms, including bacteria, seagrasses and salt marshes.

**MARN 5033. Marine and Atmospheric Processes of Global Change**  
(MARN 385) 3 credits. Lecture.

Fundamentals of marine and atmospheric processes in global biogeochemistry. Evaluation of atmospheric, biological and chemical processes that contribute to global change.

**MARN 5050. Marine Geology**  
(MARN 368) 3 credits. Lecture.

Relationships between physical and chemical processes and the occurrences and distribution of rock types and compositions in the oceanic environment.

**MARN 5051. Radiotracer Applications in Natural Systems**  
(MARN 325) 3 credits. Lecture.

Applications of radiotracers in the environment for environmental engineers, environmental scientists, geologists, hydrologists and oceanographers. Use of

radionuclides in the interpretation and quantification of aqueous transport processes. The interaction of geochemistry, mass transport and flux balances in Earth, ocean and environmental systems.

**MARN 5060. Dynamic Physical Oceanography**  
(MARN 370) 3 credits. Lecture.

Global energy balance. General circulation in the oceans and atmosphere. Thermodynamics and stability. Fundamental fluid mechanics. Surface gravity waves. Geophysical fluid mechanics. Tides and other long waves. Theories of global circulation.

**MARN 5061. Advanced Dynamical Oceanography**  
(MARN 378) 3 credits. Lecture. Prerequisite: MARN 5060.

Ocean thermodynamics; dynamics of rotating; homogeneous fluids; ocean circulation; western boundary currents; the thermocline, oceanic fronts.

**MARN 5062. Sediment Transport**  
(MARN 372) 3 credits. Lecture.

The mechanics of sediment transport with particular emphasis on the processes governing transport in coastal and estuarine areas. Initiation of motion for cohesive and noncohesive materials, bed and suspended load transport, bed forms, sediment-flow interactions, modeling considerations.

**MARN 5063. Estuarine Circulation**  
(MARN 376) 3 credits. Lecture.

The physical characteristics of estuaries, river and tidal interactions, turbulence and mixing, salt balance, circulation dynamics, mass transport and flushing, modeling considerations.

**MARN 5064. Ocean Waves**  
(MARN 377) 3 credits. Lecture. Prerequisite: MARN 5060.

General methods of wave analysis; surface gravity waves; tidal wave dynamics; internal waves and tides; planetary, edge and topographic Rossby waves.

**MARN 5830. Seminar in Chemical Oceanography**  
(MARN 379) 3 credits. Lecture.

Readings and discussions of current literature in chemical oceanography. For graduate and advanced students in oceanography or related fields.

**MARN 5893. Research**  
(MARN 397) 1-3 credits. Independent Study.

Conferences and laboratory work covering selected fields of marine sciences.

**MARN 5895. Independent Study**  
(MARN 395) 1 credit. Independent Study.

A reading course for those wishing to pursue special work in marine sciences. It may also be elected by undergraduate students preparing to be candidates for degrees with distinction. Designate the field of special interest by use of the appropriate section symbol.

**MARN 5898. Special Topics in Marine Science**  
(MARN 410) 1-6 credits. Lecture.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

**MARN 6001. Mathematical Models in Marine Sciences**

(MARN 390) 2 credits. Lecture. Prerequisite: 9 graduate credits in Marine Science.

Examples of the formulation of quantitative models of marine systems with a review of some particularly useful mathematical methods (differential equations, operational methods, numerical solution techniques), emphasizing the computation of predictions.

**MARN 6002. Mathematical Models in Marine Sciences: Practicum**  
(MARN 391) 2 credits. Practicum.

Individual term projects relating to mathematical modeling in the marine sciences.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)  
(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research  
(GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research  
(GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral)  
(GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation  
(GRAD 499) Non-credit.

## MATERIALS SCIENCE

*Director:* Professor Harris L. Marcus

*Associate Director:* Professor Fotios Papadimitrakopoulos

*Distinguished Professors:* Brody, Stwalley, Suib, and Weiss

*Professors:* Aindow, Braswell, Coughlin, Cutlip, Goldberg, F. Jain, Kattamis, Kessel, Pease, L. Shaw, M. Shaw and Sung

*Associate Professors:* Adamson, Alpay, Asandei, Burkhard, Dobrynin, Parnas, Rossetti, Seery, Sotzing, Wei and Zhu

*Assistant Professors:* Gao, Hebert, Huey, M. Jain, Kasi Lin, Ramprasad, and Wang

*Research Professors:* Boggs, Gell, and Scola

*Assistant Research Professor:* Smirnova

Work leading to the degrees of Master of Science and Doctor of Philosophy is offered in the interdisciplinary field of Materials Science through the Departments of Chemical, Materials and Biomolecular Engineering, Chemistry, Electrical and Computer Engineering and Physics, as well as departments in the biological sciences.

**The M.S. Program.** There are no special requirements for admission to the master's program beyond those of the Graduate School. Selection of Plan A (thesis) or Plan B (non-thesis) is made after consultation with the advisory committee.

**The Ph.D. Program.** Admission to the doctoral program is based upon a careful assessment of the student's potential for creative research in materials science. There no special requirements for the doctoral program beyond those of the Graduate School.

**Special Facilities.** The Institute of Materials Science, organized in 1965, aids in the development and coordination of the graduate programs in materials science. In addition to the laboratories of the participating academic departments, the Institute provides special laboratories for alloy chemistry, optical studies, magnetic susceptibility, electron paramagnetic resonance, nuclear magnetic resonance, ion implantation, microprobe analyses, atomic force microscopies, electron microscopy, crystal growth, mechanical properties, optical microscopy, metallography, solidification, chromatography, low-temperature studies, X-ray diffraction, soft X-ray spectroscopy, surface studies, surface modification, ultrasonics, IR, UV, and VUV spectroscopy, nanotechnology, and polymer research. A multi-million-dollar building houses these and additional laboratories and facilities designed for graduate research in the materials sciences.

Extensive capability for computational materials science is available within the Institute of Materials Science and other University facilities.

Areas of concentration within the Materials Science field of study are offered in Alloy Science, Biomaterials, Corrosion Science, Crystal Science, Dental Materials, Metallurgy, and Polymer Science.

## COURSES OF STUDY

Course offerings are listed under the departments referred to above. The Institute of Materials Science also sponsors visiting professors and adjunct professors from industry in these departments, who usually offer graduate courses in their areas of expertise. In addition, the Institute sponsors a colloquium series of outstanding speakers representing various study areas in materials science not specifically covered by the regular faculty.

## MATERIALS SCIENCE AND ENGINEERING

*Department Head:* Professor C. Barry Carter

*Distinguished Professor:* Brody

*Professors:* Aindow, Goldberg, Jordan, Kattamis, Marcus, and Shaw

*Associate Professors:* Alpay, Rossetti, Wei, and Willis

*Assistant Professors:* Gao, Hebert, Huey, Jain, Y. Khan, Kuhn, Kumbar, Nair, Nukavarapu, and Ramprasad

*Research Professor:* Gell

*Assistant Research Professor:* Smirnova

The goal of the graduate program in Materials Science and Engineering, through its coursework and research programs, is to provide students with a comprehensive understanding of modern materials and to prepare for positions of leadership in engineering, research and development. Graduate instruction is offered which leads to the degrees of Master of Science and Doctor of Philosophy. Emphasis is placed on the relationships between the structure and properties of engineering materials, thermodynamics of materials, phase equilibria, mechanical behavior, electronic behavior and microstructural characterization. The main aspects of these subjects are covered in 3 designated core courses (see the descriptions for courses MSE 5301, 5309 and 5334 below) offered by the Department of Chemical, Materials and Biomolecular Engineering. Several other departments in the University offer courses in related disciplines, and students are encouraged to include one or more of these courses in their plans of study.

**Requirements for the M.S.** There are no special requirements for the admission to the master's program beyond those of the Graduate School. Selection of Plan A (thesis) or Plan B (course work) is made after consultation with the advisory committee. For Plan A, the student must successfully complete 5 graduate courses (15 credits), maintaining a GPA of 3.0 or above. At least 4 of these courses must be MSE courses. The student must also complete at least 9 credits of Master's Thesis Research (GRAD 5950). For Plan B, The student must successfully complete at least 8 graduate courses (24 credits), maintaining a GPA of 3.0 or above. At least 6 of these courses (18 credits) must be MSE courses.

**Requirements for the Ph.D.** Admission to the doctoral program is based upon a careful assessment of the students potential for creative research in materials science and engineering. Applicants for this program will normally have first completed an outstanding master's degree program. Students are required to complete all 3 of the graduate core courses as part of their coursework requirements, maintain a minimum GPA of 3.5 in these courses and to pass a General Examination.

**Special Facilities.** The Materials Science and Engineering Program is housed within the Institute of Materials Science. A comprehensive range of modern research equipment is available, including facilities for melting and casting of alloys, mechanical processing and heat treating, mechanical testing, electrical testing, processing and testing of ceramics and composites,

transmission electron microscopes, scanning electron microscopes, x-ray diffraction apparatus, surface analysis equipment, thermal analysis equipment, and extensive spectrometry facilities (nuclear magnetic resonance, infra-red / Raman and ultra-violet).

## COURSES OF STUDY

### MSE 5301. Thermodynamics of Materials (MMAT 301) 3 credits. Lecture.

Classical thermodynamics with emphasis on solutions and phase equilibria. Applications to unary and multicomponent, reacting and nonreacting, homogeneous and heterogeneous systems, including development of phase diagrams.

### MSE 5303. Diffusion in Solids (MMAT 303) 3 credits. Lecture. Prerequisite: MMAT 5301.

Laws of Diffusion for binary and multicomponent systems, as well as for single and multi-phase systems. Diffusivity measurements and prediction. Modeling of interdiffusion with regard to diffusion couples, high temperature coatings, and gas-solid reactions using equation-solving and finite-difference software.

### MSE 5305. Phase Transformations in Solids (MMAT 305) 3 credits. Lecture.

Thermodynamics, kinetics and crystallography of phase transformations. Nucleation and growth kinetics. Order-disorder, ferroelectric, and ferromagnetic transformations.

### MSE 5307. Solidification of Metals and Alloys (MMAT 307) 3 credits. Lecture. Prerequisite: MMAT 5301.

Thermodynamic and kinetic principles of solidification. Control of structure and properties of pure and multicomponent materials through casting and solidification processes. Application of solidification principles to shaped casting, continuous casting, crystal growth and particulate processes.

### MSE 5308. Plasticity of Solids (MMAT 308) 3 credits. Lecture.

Basic concepts of dislocations and other defects; relationship between basic deformation, thermal processes, and observable macroscopic properties. Strengthening mechanisms, e.g., solid solution hardening, dispersion hardening, and work hardening.

### MSE 5309. Transport Phenomena in Materials Science and Engineering (MMAT 309) 3 credits. Lecture.

Mechanisms and quantitative treatment of mass, energy, and momentum transfer will be discussed in the context of materials science and engineering applications. Increasingly complex and open-ended applications will be used to illustrate principles of fluid flow; heat conduction, radiation, and diffusion.

### MSE 5311. Mechanical Properties of Materials (MMAT 311) 3 credits. Lecture.

Mechanics of deformation and fracture; dislocation theory; strength of ductile and brittle materials; toughness; strengthening mechanisms; toughening mechanisms; creep mechanisms; fatigue crack initiation and propagation; reliability and lifetime prediction.

### MSE 5313. Theory of the Solid State (MMAT 313) 3 credits. Lecture.

Modern theory of metals. Review of quantum theory, elementary wave mechanics, the free electron theory of metals, and the elementary band theory of solids. Crystallography, specific heat, dielectrics, magnetism, electrical conductivity.

### MSE 5316. Fracture and Fatigue of Materials (MMAT 316) 3 credits. Lecture.

Ductile and brittle fracture, fatigue, stress corrosion, and creep rupture. Failure analysis.

### MSE 5317. Electronic and Magnetic Properties of Materials (MMAT 317) 3 credits. Lecture.

Crystal structures and interatomic forces, lattice vibrations, thermal, acoustic, and optical properties. Semiconductors, dielectric properties, magnetism, and magnetic properties, superconductivity. Device applications.

### MSE 5320. Investigation of Special Topics (MMAT 320) 3 credits. Lecture.

Special courses or individual readings.

### MSE 5322. Materials Characterization (MMAT 322) 3 credits. Lecture.

A review of the principal experimental methods used to reveal the microstructure and chemistry of materials. Diffraction techniques: x-ray, electron, neutron and proton scattering. Photon probes: photon microscopies, x-ray topography and XPS. Electron probes: SEM, TEM, EDX, EELS, AES. Atom and ion probes: RBS, SIMS, FIM, PIXE. Scanned probe microscopies.

### MSE 5323. Transmission Electron Microscopy (MMAT 323) 3 credits. Lecture. Prerequisite: MMAT 5322 or consent of instructor.

Electron beam-specimen interactions. Basics of electron microscopes. Diffraction: theory, types of patterns and interpretation. Imaging: diffraction contrast, phase contrast and other techniques. Spectrometry: x-ray microanalysis and electron energy-loss spectrometry.

### MSE 5325. Equilibrium Relationships in Multi-Phase Systems (MMAT 325) 3 credits. Lecture. Prerequisite: MMAT 301.

Thermodynamics of phase equilibria and phase diagram prediction for binary, ternary and n-component systems. Interpretation of phase diagram sections and projections. Application of multicomponent phase diagrams to alloy and process design..

### MSE 5334. Structure and Defects in Materials (MMAT 334) 3 credits. Lecture.

Structure of amorphous and vitreous materials. Crystallography: translation symmetry and lattices, point and space groups, use of the International Tables for Crystallography, examples of simple crystal structures. Defects in materials: point defects, line defects, planar defects, homophase and heterophase interfaces. Distributions of structure and defects: an introduction to microstructure.

### MSE 5335. High Temperature Materials (MMAT 335) 3 credits. Lecture.

Strength-determining factors in advanced alloys, ceramics and composites. Role of material chemistry and microstructure. High temperature creep and crack growth. Oxidation. Thermomechanical behavior.

### MSE 5337. Materials Processing (MMAT 337) 3 credits. Lecture.

Principles of powder preparation. Colloidal processing. Powder characterization. Consolidation and sintering of metals and ceramics. Microstructural evolution. Composites and coatings processing. Structure-property relations.

### MSE 5343. Corrosion (MMAT 343) 3 credits. Lecture.

Mechanisms, characteristics and types of corrosion. Test methods and evaluation of corrosion resistance. Suitability of metals, ceramics, and organic materials in corrosive environments. Oxidation and other high temperature gas-metal reactions.

### MSE 5345. Theory of Electrochemical Processes (MMAT 345) 3 credits. Lecture.

Theory and measurement of irreversible electrochemical processes at metal electrolyte interfaces. Mixed potential theory. Mass transport phenomena. Apparatus, techniques, and interpretation of experimental measurements. Applications to metallographic etching, phase extraction and electroanalytical techniques. Scientific development of corrosion-resistant alloys.

### MSE 5364. Advanced Composites (MMAT 364) 3 credits. Lecture.

Mechanical properties, analysis and modeling of composite materials. The properties treated include stiffness, strength, fracture toughness, fatigue strength and creep resistance as they relate to fiber, whisker, particulate, and laminated composites.

## MATHEMATICS

*Department Head:* Distinguished Professor Michael Neumann

*Professors:* Abe, Abikoff, R.F. Bass, Blei, Choi, DeFranco, Dey, Dunne, Gine, Glaz, Gui, Haas, Luh, Madych, McKenna, Olshevsky, Peters, Ravishanker, Sidney, Tollefson, Turchin, Vadiveloo, Valdez, Vitale, and Wang

*Associate Professors:* Bridgeman, Hernandez, Leibowitz, Roby, Russell, Teplyaev, and Wang

*Assistant Professors:* Ben Ari, Cardetti, Conrad, Gordina, Huber, Lee, Leykekhman, Lozano-robledo, Rogers, Schiffler, Sellke, Solomon, Terwilleger, and Yan

The Department of Mathematics offers work leading to the M.S. and Ph.D. degrees. The master's program permits a student to emphasize pure and applied mathematics, actuarial science, or numerical methods, with some course work taken in other departments if desired. A professional master's degree program in Applied Financial Mathematics is also offered. Advanced study at the Ph.D. level is offered in the areas of algebra and number theory, applied mathematics, classical and functional analysis, computational linear algebra, differential geometry, logic, probability, and topology. See the details below.

The Department is one of the few offering graduate study in actuarial science and financial mathematics. Admission requirements differ slightly for this option. For details, write to the Department of Mathematics.

**The M.S. Program.** A sound undergraduate major in mathematics, including courses in modern algebra and advanced calculus, normally is required for entrance to the master's program. The Department recommends that students select Plan B. Further details concerning the master's (and Ph.D.) program may be obtained by writing directly to the Department of Mathematics.

It is recommended that entering graduate students applying for financial aid take the Subject Test in Mathematics of the Graduate Record Examinations.

**The Ph.D. Program.** Students are admitted to the Ph.D. program only after demonstrating ability and evidence of special aptitude for research in mathematics in their prior work. Although no specified number of course credits is required for the Ph.D., usually at least 24 credits of course work beyond the master's level is considered necessary. Students must satisfy the doctoral foreign language requirement of the Graduate School. Doctoral students also are expected to possess computer skills necessary for mathematics research. During the first two to three years of the student's course work, comprehensive examinations covering the major areas of mathematics must be passed. The Ph.D. dissertation contains results of original research in mathematics and makes a substantial contribution to the field. A student normally writes a dissertation in an area in which the Department has faculty actively engaged in research. Such areas are: analysis on fractals, stochastic analysis, symplectic geometry, algebraic geometry, commutative rings theory, homological algebra, combinatorics, Fourier

analysis, harmonic analysis, complex analysis, Riemann surfaces, probability theory, low-dimensional topology, abelian groups, rings, group rings, discrete groups, number theory, functional analysis, representation theory, logic, computability theory, ordinary and partial differential equations, numerical analysis, approximation theory, differential geometry, numerical linear algebra, matrix theory, inverse problems, tomography, wavelet theory, mathematical physics, mathematical biology, mathematics education, and actuarial science. Further details concerning the Ph.D. (and Master's) program and faculty research interests may be obtained by writing directly to the Department of Mathematics or by visiting the website: <www.math.uconn.edu>.

**Special Facilities.** The Homer Babbidge Library has extensive holdings of mathematics books and journals. Subscriptions to numerous mathematical journals are maintained and housed in the Mathematics Department Library.

A weekly colloquium featuring visiting lecturers as well as several area-specific seminars are conducted during the academic year. Colloquia and seminars at neighboring institutions are also held on a regular basis. Because of the easy access to these institutions, there is considerable scholarly interaction.

### COURSES OF STUDY

**MATH 5000. Mathematical Pedagogy** (MATH 360) 1 credit. Seminar. Open to graduate students in Mathematics, others with consent of instructor. May not be used to satisfy degree requirements in mathematics.

The theory and practice of teaching mathematics at the college level. Basic skills, grading methods, cooperative learning, active learning, use of technology, classroom problems, history of learning theory, reflective practice.

**MATH 5010. Topics in Analysis I** (MATH 332) 3 credits. Lecture.

**MATH 5011. Topics in Analysis II** (MATH 333) 3 credits. Lecture. Prerequisite: MATH 332.

**MATH 5016. Topics in Probability** (MATH 370) 3 credits. Lecture. With a change of content, this course is repeatable to a maximum of twelve credits.

Advanced topics in probability theory, theory of random processes, mathematical statistics, and related fields.

**MATH 5020. Topics in Algebra** (MATH 321) 3 credits. Lecture. Prerequisite: MATH 5211. With a change of content, this course may be repeated to a maximum of 12 credits.

Advanced Topics chosen from group theory, ring theory, number theory, Lie theory, combinatorics, commutative algebra, algebraic geometry, homological algebra, and representation theory.

**MSE 5366. Alloy Casting Processes** (MMAT 366) 3 credits. Lecture.

Principles and practices of alloy solidification and casting processes are discussed and applied in the context of sand, investment, permanent mold and die casting; continuous and direct chill casting; electroslag and vacuum arc remelting; crystal growth; rapid solidification; and laser coating.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)** (GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research** (GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research** (GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)** (GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation** (GRAD 399) Non-credit.

†**MSE 6401. Graduate Seminars in Metallurgy and Materials Engineering** (MMAT 401) 1 credit. Seminar.

Presentations by invited guest speakers on topics of current interest in various areas of Metallurgy and Materials Engineering.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)** (GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research** (GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research** (GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)** (GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation** (GRAD 499) Non-credit.



**MATH 5026. Topics in Mathematical Logic** (MATH 336) 3 credits. Lecture. Prerequisite: Math 335. May be repeated for credit with a change in content.

Topics include, but are not restricted to, Computability Theory, Model Theory, and Set Theory.

**MATH 5030. Topics in Geometry and Topology I** (MATH 337) 3 credits. Lecture.

Advanced topics from uniform spaces, topological groups, Lie groups, fiber spaces, theory of submanifolds, PL topology, differential topology, cohomology operations, complex manifolds, Riemannian manifolds, transformation groups, fixed point theory.

**MATH 5031. Topics in Geometry and Topology II** (MATH 338) 3 credits. Lecture. Prerequisite: MATH 5030.

Advanced topics from uniform spaces, topological groups, Lie groups, fiber spaces, theory of submanifolds, PL topology, differential topology, cohomology operations, complex manifolds, Riemannian manifolds, transformation groups, fixed point theory.

**MATH 5040. Topics in Applied Analysis I** (MATH 327) 3 credits. Lecture.

Advanced topics from the theory of ordinary or partial differential equations. Other possible topics: integral equations, optimization theory, the calculus of variations, advanced approximation theory.

**MATH 5041. Topics in Applied Analysis II** (MATH 328) 3 credits. Lecture.

Advanced topics from the theory of ordinary or partial differential equations. Other possible topics: integral equations, optimization theory, the calculus of variations, advanced approximation theory.

**MATH 5046. Introduction to Complex Variables**

(MATH 352) 3 credits. Lecture. Not open to students who have passed MATH 3146. Not open for graduate credit toward degrees in Mathematics.

Functions of a complex variable, integration in the complex plane, conformal mapping.

**MATH 5050. Analysis**

(MATH 375) 3 credits. Lecture. Not open to students who have passed MATH 3150. Not open for graduate credit toward degrees in Mathematics.

Introduction to the theory of functions of a real variable.

**MATH 5070. Topics in Scientific Computation** (MATH 319) 3 credits. Lecture.

**MATH 5110. Introduction to Modern Analysis** (MATH 301) 3 credits. Lecture.

Metric spaces, sequences and series, continuity, differentiation, the Riemann-Stieltjes integral, functions of several variables.

**MATH 5111. Measure and Integration** (MATH 303) 3 credits. Lecture. Prerequisite: MATH 5110.

Lebesgue measure and integration, differentiation, Lp spaces, Banach spaces, general theory of measure and integration.

**MATH 5120. Complex Function Theory I** (MATH 340) 3 credits. Lecture. Prerequisite: MATH 5110.

An introduction to the theory of analytic functions, with emphasis on modern points of view.

**MATH 5121. Topics in Complex Function Theory**

(MATH 341) 3 credits. Lecture. Prerequisite: MATH 5120. May be repeated for credit to a maximum of 12 credits with a change in content and consent of the instructor.

Advanced topics of contemporary interest. These include Riemann surfaces, Kleinian groups, entire functions, conformal mapping, several complex variables, and automorphic functions, among others.

**MATH 5130. Functional Analysis I** (MATH 354) 3 credits. Lecture. Prerequisites: MATH 5111 and MATH 5211.

Normed linear spaces and algebras, the theory of linear operators, spectral analysis.

**MATH 5131. Functional Analysis II** (MATH 355) 3 credits. Lecture. Prerequisite: MATH 5130.

Normed linear spaces and algebras, the theory of linear operators, spectral analysis.

**MATH 5140. Fourier Analysis** (MATH 381) 3 credits. Lecture. Prerequisites: MATH 5111 and MATH 5121.

Foundations of harmonic analysis developed through the study of Fourier series and Fourier transforms.

**MATH 5141. Fourier Analysis on Groups** (MATH 382) 3 credits. Lecture. Prerequisites: MATH 5111 and MATH 5121.

**MATH 5160. Probability Theory and Stochastic Processes I** (MATH 322) 3 credits. Lecture. Prerequisite: MATH 5211.

Convergence of random variables and their probability laws, maximal inequalities, series of independent random variables and laws of large numbers, central limit theorems, martingales, Brownian motion.

**MATH 5161. Probability Theory and Stochastic Processes II** (MATH 323) 3 credits. Lecture. Prerequisite: MATH 5160.

Contemporary theory of stochastic processes, including stopping times, stochastic integration, stochastic differential equations and Markov processes, Gaussian processes, and empirical and related processes with applications in asymptotic statistics.

**MATH 5210. Abstract Algebra I** (MATH 315) 3 credits. Lecture.

Group theory, ring theory and modules, and universal mapping properties.

**MATH 5211. Abstract Algebra II** (MATH 316) 3 credits. Lecture. Prerequisite: MATH 5210.

Linear and multilinear algebra, Galois theory, category theory, and commutative algebra.

**MATH 5220. Introduction to Representation Theory** (MATH 329) 3 credits. Lecture. Prerequisite: MATH 5210.

Semi-simple rings, Jacobson radical, density theory, Wedderburn's Theorem, representations and characters of groups, orthogonality relations, Burnside's theorem.

**MATH 5230. Algebraic Number Theory** (MATH 330) 3 credits. Lecture. Prerequisite: MATH 5211.

Algebraic integers, ideal class group, ramification, Frobenius elements in Galois groups, Dirichlet's unit theorem, localization, and completion. Further topics (zeta-functions, function fields, non-maximal orders) as time permits.

**MATH 5250. Modern Matrix Theory and Linear Algebra** (MATH 318) 3 credits. Lecture.

The LU, QR, symmetric, polar, and singular value matrix decompositions. Schur and Jordan normal forms. Symmetric, positive-definite, normal and unitary matrices. Perron-Frobenius theory and graph criteria in the theory of non-negative matrices.

**MATH 5260. Mathematical Logic I** (MATH 335) 3 credits. Lecture. Prerequisite: MATH 5210.

Predicate calculus, completeness, compactness, Lowenheim-Skolem theorems, formal theories with applications to algebra, Godel's incompleteness theorem. Further topics chosen from: axiomatic set theory, model theory, recursion theory, computational complexity, automata theory and formal languages.

**MATH 5310. Introduction to Geometry and Topology I** (MATH 307) 3 credits. Lecture. Prerequisite: MATH 5110, which may be taken concurrently.

Topological spaces, connectedness, compactness, separation axioms, Tychonoff theorem, compact-open topology, fundamental group, covering spaces, simplicial complexes, differentiable manifolds, homology theory and the De Rham theory, intrinsic Riemannian geometry of surfaces.

**MATH 5311. Introduction to Geometry and Topology II** (MATH 308) 3 credits. Lecture. Prerequisite: MATH 5310.

Topological spaces, connectedness, compactness, separation axioms, Tychonoff theorem, compact-open topology, fundamental group, covering spaces,

simplicial complexes, differentiable manifolds, homology theory and the De Rham theory, intrinsic Riemannian geometry of surfaces.

**MATH 5320. Algebraic Topology I**  
(MATH 373) 3 credits. Lecture. Prerequisite: MATH 5211 and MATH 5310, which may be taken concurrently.

Complexes, homology and cohomology groups, homotopy theory.

**MATH 5321. Algebraic Topology II**  
(MATH 374) 3 credits. Lecture. Prerequisite: MATH 5320.

Complexes, homology and cohomology groups, homotopy theory.

**MATH 5360. Differential Geometry**  
(MATH 357) 3 credits. Lecture.

An introduction to the study of differentiable manifolds on which various differential and integral calculi are developed. A special emphasis is placed on the global aspects of modern differential geometry.

**MATH 5410. Introduction to Applied Mathematics I**  
(MATH 310) 3 credits. Lecture.

Banach spaces, linear operator theory and application to differential equations, nonlinear operators, compact sets on Banach spaces, the adjoint operator on Hilbert space, linear compact operators, Fredholm alternative, fixed point theorems and application to differential equations, spectral theory, distributions.

**MATH 5411. Introduction to Applied Mathematics II**  
(MATH 311) 3 credits. Lecture.

Banach spaces, linear operator theory and application to differential equations, nonlinear operators, compact sets on Banach spaces, the adjoint operator on Hilbert space, linear compact operators, Fredholm alternative, fixed point theorems and application to differential equations, spectral theory, distributions.

**MATH 5420. Ordinary Differential Equation**  
(MATH 325) 3 credits. Lecture. Prerequisite: MATH 5111.

Existence and uniqueness of solutions, stability and asymptotic behavior. If time permits: eigenvalue problems, dynamical systems, existence and stability of periodic solutions.

**MATH 5430. Applied Analysis**  
(MATH 377) 3 credits. Lecture. Not open to students who have passed MATH 3430. Not open for graduate credit toward degrees in Mathematics.

Convergence of Fourier Series, Legendre and Hermite polynomials, existence and uniqueness theorems, two point boundary value problems and Green's functions.

**MATH 5435. Introduction to Partial Differential Equations**  
(MATH 378) 3 credits. Lecture. Not open to students

who have passed MATH 3435. Not open for graduate credit toward degrees in Mathematics.

Solution of first and second order partial differential equations with applications to engineering and science.

**MATH 5440. Partial Differential Equations**  
(MATH 326) 3 credits. Lecture. Prerequisite: MATH 5120.

Cauchy Kowalewsky Theorem, classification of second order equations, systems of hyperbolic equations, the wave equation, the potential equation, the heat equation in  $R^n$ .

**MATH 5510. Numerical Analysis and Approximation Theory I**  
(MATH 313) 3 credits. Lecture. Prerequisite: MATH 5110, which may be taken concurrently.

The study of convergence, numerical stability, roundoff error, and discretization error arising from the approximation of differential and integral operators.

**MATH 5511. Numerical Analysis and Approximation Theory II**  
(MATH 314) 3 credits. Lecture. Prerequisite: MATH 5110.

The study of convergence, numerical stability, roundoff error, and discretization error arising from the approximation of differential and integral operators.

**MATH 5520. Finite Element Solution Methods I**  
(MATH 342) 3 credits. Lecture.

Numerical solution of elliptic, parabolic and hyperbolic partial differential equations by finite element solution methods. Applications.

**MATH 5521. Finite Element Solution Methods II**  
(MATH 343) 3 credits. Lecture. Prerequisite: MATH 5520.

Numerical solution of elliptic, parabolic and hyperbolic partial differential equations by finite element solution methods. Applications.

**MATH 5530. Mathematical Modeling**  
(MATH 304) 3 credits. Lecture.

Development of mathematical models emphasizing linear algebra, differential equations, graph theory and probability. In-depth study of the model to derive information about phenomena in applied work.

**MATH 5540. Computerized Modeling in Science**  
(MATH 305) 4 credits. Lecture.

Development and computer-assisted analysis of mathematical models in chemistry, physics, and engineering. Topics include chemical equilibrium, reaction rates, particle scattering, vibrating systems, least squares analysis, quantum chemistry and physics.

**MATH 5580. Optimization**  
(MATH 309) 3 credits. Lecture.

Theory of linear programming: convexity, bases, simplex method, dual and integer programming, assignment, transportation, and flow problems. Theory of nonlinear programming: unconstrained local optimization, Lagrange multipliers, Kuhn-Tucker conditions, computational algorithms. Concrete applications.

**MATH 5620. Financial Mathematics I**  
(MATH 365) 3 credits. Lecture. Not open to students who have passed MATH 2620.

The mathematics of measurement of interest, accumulation and discount, present value, annuities, loans, bonds, and other securities.

**MATH 5621. Financial Mathematics II**  
(MATH 369) 4 credits. Lecture. Not open to students who have passed MATH 3650.

The continuation of MATH 5620. Theory and practice of mathematical models applied to corporate finance. Satisfies the Society of Actuaries' learning objectives for Validation by Educational Experience for Corporate Finance.

**MATH 5630. Actuarial Mathematics I**  
(MATH 387) 4 credits. Lecture. Prerequisite: MATH 2620 or MATH 5620, which may be taken concurrently. Not open to students who have passed MATH 3630.

Survival distributions, claim frequency and severity distributions, life tables, life insurance, life annuities, net premiums, net premium reserves, multiple life functions, and multiple decrement models.

**MATH 5631. Actuarial Mathematics II**  
(MATH 388) 4 credits. Lecture. Prerequisite: MATH 5630. Not open to students who have passed MATH 3631.

Survival distributions, claim frequency and severity distributions, life tables, life insurance, life annuities, net premiums, net premium reserves, multiple life functions, and multiple decrement models.

**MATH 5633. Survival Models**  
(MATH 394) 3 credits. Lecture. Prerequisite: MATH 5630.

Analysis, estimation, and validation of lifetime tables.

**MATH 5635. Introduction to Operations Research**  
(MATH 366) 3 credits. Lecture. Not open to students who have passed MATH 4535, STAT 4535, or STAT 5535.

Introduction to the use of mathematical and statistical techniques to solve a wide variety of organizational problems. Topics include linear programming, project scheduling, queuing theory, decision analysis, dynamic and integer programming and computer simulation.

**MATH 5637. Risk Theory**  
(MATH 395) 3 credits. Lecture.

Individual risk theory, distribution theory, ruin theory, stoploss, reinsurance and Monte Carlo methods. Emphasis is on problems in insurance.

**MATH 5640. Advanced Topics in Actuarial Mathematics I**

(MATH 392) 3 credits. Lecture.

Survival models, mathematical graduation, or demography.

**MATH 5641. Advanced Topics in Actuarial Mathematics II**

(MATH 393) 3 credits. Lecture.

Credibility theory or advanced theory of interest.

**MATH 5660. Advanced Financial Mathematics**

(MATH 324) 3 credits. Lecture.

An introduction to the standard models of modern financial mathematics including martingales, the binomial asset pricing model, Brownian motion, stochastic integrals, stochastic differential equations, continuous time financial models, completeness of the financial market, the Black-Scholes formula, the fundamental theorem of finance, American options, and term structure models.

**MATH 5710. Tensor Calculus I**

(MATH 347) 3 credits. Lecture.

An introduction to tensor algebra and tensor calculus with applications chosen from the fields of the physical sciences and mathematics.

**MATH 5711. Tensor Calculus II**

(MATH 348) 3 credits. Lecture. Prerequisite: MATH 5710.

An introduction to tensor algebra and tensor calculus with applications chosen from the fields of the physical sciences and mathematics.

**MATH 5720. Vector Field Theory I**

(MATH 385) 3 credits. Lecture.

Vector algebra and vector calculus with particular emphasis on invariance. Classification of vector fields. Solution of the partial differential equations of field theory.

**MATH 5721. Vector Field Theory II**

(MATH 386) 3 credits. Lecture. Prerequisite: MATH 5720.

Vector algebra and vector calculus with particular emphasis on invariance. Classification of vector fields. Solution of the partial differential equations of field theory.

**MATH 5800. Investigation of Special Topics**

(MATH 300) 1-6 credits. Lecture.

Students who have well defined mathematical problems worthy of investigation and advanced reading should submit to the department a semester work plan.

**MATH 5850. Graduate Field Study Internship**

(MATH 390) 1-3 credits. Practicum

Participation in internship and paper describing experiences.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**MATH 6000. Seminar in Current Mathematical Literature**

(MATH 401) 1-6 credits. Seminar.

Participation and presentation of mathematical papers in joint student faculty seminars. Variable topics.

**†MATH 6010. Seminar in Analysis**

(MATH 450) 1-6 credits. Seminar.

**†MATH 6020. Seminar in Algebra**

(MATH 410) 1-6 credits. Seminar. Prerequisite: MATH 5211.

**†MATH 6026. Seminar in Mathematical Logic**

(MATH 435) 1-6 credits. Seminar. Prerequisite: MATH 5260.

**†MATH 6027. Seminar in Set Theory**

(MATH 471) 1-6 credits. Seminar. Prerequisite: MATH 5310.

**†MATH 6030. Seminar in Topology**

(MATH 470) 1-6 credits. Seminar. Prerequisite: MATH 5321.

**†MATH 6036. Seminar in Geometry**

(MATH 430) 1-6 credits. Seminar. Prerequisite: MATH 5360.

**†MATH 6040. Seminar in Applied Mathematics**

(MATH 480) 1-6 credits. Seminar.

**MATH 6060. Computers in Mathematical Research**

(MATH 460) 1 credit. Lecture.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

# MECHANICAL ENGINEERING

*Department Head:* Professor Baki Cetegen*Professors:* Accorsi, Bergman, Choi, Faghri, Gao,

Huang, Jordan, Kazerounian, Olgac, and Zhang

*Professor in Residence:* Barber*Associate Professors:* Bennett, Bzymek, Chiu, Murphy, Renfro, and Tang*Assistant Professors:* Cao, Fan, Ilies, Kim, Kotha, Lu,

Lykotrafitis, Pasaogullari, and Sun

The Department of Mechanical Engineering offers study leading to the degree of Master of Science (Plans A and B) and Doctor of Philosophy in mechanical engineering. It also cooperates with other departments to provide doctoral study in other areas (see "Applied Mechanics," "Biomedical Engineering," and "Fluid Dynamics"). Non-degree students may register for courses in the Department of Mechanical Engineering with the approval of the department head. Financial support in the form of graduate teaching or research assistantships is offered to our top full-time graduate students on a competitive basis.

**Masters and Doctoral Programs.** Students working toward the M.S. and Ph.D. degrees in mechanical engineering may choose, in consultation with their advisory committee, from a wide selection of courses in this and other departments. Doctoral students are required to take a qualifying examination early in the program. Guidelines for course selection and the department's requirements for the Masters and Ph.D. degrees are explained in the Mechanical Engineering Graduate Handbook, <<http://www.engr.uconn.edu/me/pdf/graduatehandbook.pdf>>.

The research and course offerings in the Systems and Mechanics area focus on new applications of the fundamental principles in the areas such as mechanics of materials, mechanical system dynamics and control, fuel cells, nonlinear dynamics and vibration, stability, automation, computer-aided design, kinematics, manufacturing, optimization, and nano structured materials and coatings.

The research and course offerings in the Thermofluids area include classical and statistical theories of thermodynamics, studies of conduction, convection, and radiation, compressible flow, advanced fluid dynamics, turbulence, multiphase heat transfer and fluid flow, and combustion. Engineering applications of the fundamental principles to many systems, processes, and devices, such as gas turbines, thermal manufacturing, fuel cells, micro- and nanoscale systems, and combustion, are treated.

For the latest on the faculty profiles and the research activities, visit the Department's website, <http://www.engr.uconn.edu/me>.

**Facilities.** The laboratories of the Department of Mechanical Engineering are equipped with several major facilities as well as ancillary equipment. A list of Mechanical Engineering laboratories and facilities may be found at the Department website, <<http://www.engr.uconn.edu/me>>.

## COURSES OF STUDY

### ME 5105. Basic Concepts of Continuum Mechanics

(ME 305) 3 credits. Lecture.

An introductory course in the theory of continuum mechanics. Development of physical principles using cartesian tensors. Concepts of stress, strain and motion. Basic field equation for the Newtonian fluid and the elastic solid.

### ME 5110. Advanced Thermodynamics

3 credits. Lecture.

Microscopic view of thermodynamics: probability and statistics of independent events, thermodynamic probabilities and most probable thermodynamic distributions, molecular structure and partition function, Ensemble of microstates describing macroscopic behavior, with ideal gas as an example, Macroscopic descriptions of thermodynamic equilibrium and equilibrium states, Reversible processes, Heat and Work interactions, Mixtures of pure substances and chemical equilibrium, Stability and phase transitions, Irreversible thermodynamics, Onsager reciprocity relations and thermo-electric effects, Kinetic theory of gases.

### ME 5120. Advanced Thermo-Fluids I

3 credits. Lecture.

Fluid as a continuum, Kinematics and decomposition of fluid motion, Conservation of mass and momentum, Navier-Stokes equations, Conservation of energy, Exact solutions to governing equations, Potential flows, Vorticity dynamics and low Reynolds number flows, Laminar boundary layers including heat transfer, Laminar free shear flows including heat transfer, Flow instabilities and transition.

### ME 5130. Advanced Heat and Mass Transfer

3 credits. Lecture.

Review of thermophysical properties of matter including nanoscale effects. Exact and computational solutions of heat conduction equation. Dimensionless conduction rate approach for steady-state and transient conduction. Species diffusion equations with emphasis on stationary media and partitioning effects. Navier-Stokes equations and exact solutions for special cases. Correlation approach for treatment of single phase laminar, turbulent and two-phase flow. Radiative properties and treatment of surface radiation with spectral and directional effects. Emphasis on multimode heat transfer with applications in manufacturing, nanotechnology, information technology and biotechnology.

### ME 5140. Heat and Mass Transfer in Multiphase Systems

(ME 326) 3 credits. Lecture.

Presentation of basic principles for analysis of transport phenomena in multi-phase systems and how they can be applied to a wide variety of applications. The scope is limited to thermodynamics and heat and mass transfer fundamentals in solid <-> liquid, liquid <-> vapor and solid <-> vapor with emphasis in condensation,

evaporation, sublimation, vapor deposition, boiling, two phase flow, melting and solidification.

### ME 5150. Analytical and Applied Kinematics

(ME 331) 3 credits. Lecture.

Analytical methods of coordinate transformation and two and three dimensional motion, analysis of relative motion and relative freedom through kinematics connections, study of finite and instantaneous properties of motion, study of the geometry of single and multi-parameter engineering curves, surfaces and motions. Application in the analysis and design of linkages and mechanisms.

### ME 5155. Geometric Modeling

3 credits. Lecture.

This course deals with the mathematical modeling, computer representations and algorithms for manipulating geometry on a computer. It focuses on the basic concepts of solid and geometric modeling from geometry and topology, and uses these concepts to develop computational techniques for creating, editing, rendering, analyzing and computing with models of physical objects, mechanical parts, assembly and processes.

### ME 5160. Theory and Design of Automatic Control Systems

(ME 372) 3 credits. Lecture.

Design features of a closed loop control system. Laplace domain analysis of electromechanical, pneumatic, hydraulic, thermal, and mechanical systems. Computer simulation of dynamic responses using software tools. Stability issues, Routh analysis, root locus, Bode and Nyquist analyses are addressed. An open-ended, hands-on design project from a current research topic is assigned.

### ME 5180. Dynamics

(ME 360) 3 credits. Lecture.

Three-dimensional particle and rigid-body mechanics. Particle kinematics. Newton's laws, energy and momentum principles. Systems of particles. Rigid body kinematics, coordinate transformations. Rigid body dynamics, Euler's equations. Gyroscopic motion. Lagrange's equations.

### ME 5190. Advanced Mechanics of Materials

3 credits. Lecture.

This course covers the fundamental idealizations used in linear solid mechanics and the fundamental principles of the subject. Idealizations covered include beams, circular torsion, struts and thick cylinders. Basic principles include principle of minimum potential energy, principle of minimum complementary energy, virtual work, equations of static equilibrium and direct and potential methods of solving equilibrium equations. Example applications vary but may include, bounding of elastic properties of composites, derivation of finite elements, solution of plate problems by Green's functions and others.

### ME 5210. Intelligent Material Systems and Structures

3 credits. Lecture.

Overview of piezoelectric materials and electrostrictive materials, shape memory alloys, magnetostrictive materials, and ER/MR fluids. Development of adaptive structure integrated with piezoelectric material, actuation and sensing, simultaneous optimal design/control of electromechanical integrated system, nonlinear and robust control. Design of shape memory alloy system for position control. Development of semi-active control using ER/MR fluids. Structural health monitoring and system identification research.

### ME 5220. Principles of Machining and Machine Tools

3 credits. Lecture.

Theories and applications of machining. Fundamentals of machine tools and machining automation. Physics and mechanics in machining, machining forces and stresses, shear angle theories. Basic phenomena pertinent to process characteristics, such as tribology and tool life, machinability, surface integrity, and economics. Mechanisms of machining and machine tool errors. Machining error compensation with feedback sensors. Machining chatter and vibration analyses. Case studies.

### ME 5301. Macroscopic Equilibrium Thermodynamics I

(ME 301) 3 credits. Lecture.

Review of zeroth, first and second laws of thermodynamics, development of equilibrium thermodynamics from a postulatory viewpoint, examination of thermodynamic potentials and equilibrium states, stability of thermodynamic systems including implications on phase and chemical equilibrium. Thermodynamic availability analysis.

### ME 5311. Computational Methods of Viscous Fluid Dynamics

(ME 318) 3 credits. Lecture.

An advanced course on integral and finite-difference methods of solution of the parabolic and elliptic equations of viscous fluid flow. Method of weighted residuals; Crank-Nicolson; Dufort-Frankel; Peaceman-Rachford alternating direction method; truncation error analysis; stability. Applications to boundary layer and heat transfer problems. A background of FORTRAN programming and numerical analysis is necessary.

### ME 5320. Flow of Compressible Fluids I

(ME 313) 3 credits. Lecture.

Equations of motion of a compressible fluid. Quasi-one-dimensional flow including effects of friction, heat addition, and normal shocks. Two and three dimensional flows. Velocity potential and stream function. Small perturbation theory. Subsonic pressure correction formulas. Kelvin and Crocco Theorems. Method of characteristics for steady and unsteady, rotational and irrotational flows. Curved and oblique shock waves. Shock tube theory.

### ME 5321. Flow of Compressible Fluids II

(ME 314) 3 credits. Lecture. Prerequisite: ME 5320.

Equations of motion of a compressible fluid. Quasi-one-dimensional flow including effects of friction, heat

addition, and normal shocks. Two and three dimensional flows. Velocity potential and stream function. Small perturbation theory. Subsonic pressure correction formulas. Kelvin and Crocco Theorems. Method of characteristics for steady and unsteady, rotational and irrotational flows. Curved and oblique shock waves. Shock tube theory.

**ME 5340. Conduction Heat Transfer**  
(ME 321) 3 credits. Lecture.

Mathematical development of the fundamental equations of heat conduction in the steady and unsteady state, with or without internal heat generation or absorption. Study of exact and approximate methods used in the solution of heat conduction boundary value problems. Analytical, graphical, numerical and experimental evaluation of the temperature field in conducting media.

**ME 5341. Radiation Heat Transfer**  
(ME 324) 3 credits. Lecture. Prerequisite: ME 5507.

Fundamentals of radiative emission (black body behavior and Planck's law), surface properties (emissivity, absorptivity, reflectivity, and transmissivity), electromagnetic theory for prediction of radiative properties, development of the methods of solution for radiant energy interchange between surfaces and in enclosures with and without absorbing, emitting, and scattering media present.

**ME 5410. Theory of Elasticity**  
(ME 358) 3 credits. Lecture. Prerequisite: ME 5105.

The mathematical theory of linear elasticity. The theory of torsion of prismatic members. Two-dimensional elasticity problems. Thermal stress. Variational methods.

**ME 5412. Wave Propagation in Continuous Media**  
(ME 357) 3 credits. Lecture. Prerequisite: ME 5105.

General dynamical equations for linear elastic media including both solids and fluids. Wave propagation in elastic rods, plates, cylinders, and semi-infinite and infinite solids. Rayleigh and Love waves; Layered media; reflection and refraction.

**ME 5415. Advanced Dynamics**  
(ME 361) 3 credits. Lecture. Prerequisite: ME 5180.

Variational principles of mechanics: Lagrange's equations, Hamilton's principle. Hamilton-Jacobi theory, canonical transformations, integrability. Introduction to special relativity, applications to orbital problems. Current topics in analytical dynamics.

**ME 5420. Mechanical Vibrations I**  
(ME 362) 3 credits. Lecture.

Variational principles, Lagrange's equation. Equations of motion for multi-degree of freedom systems. Free vibration eigenvalue problem: modal analysis. Forced solutions: general solutions, resonance, effect of damping, and superposition. Vibrations of continuous systems: vibration frequencies and mode shapes for strings, bars, membranes, beams, and plates. Experimental methods and techniques.

**ME 5421. Mechanical Vibrations II**  
(ME 363) 3 credits. Lecture. Prerequisite: ME 5420.

Variational mechanics, Hamilton's principle, and energy formulations for linearly inelastic bodies. Eigenvalue and boundary-value problems. Non-self adjoint systems. Approximate methods: Ritz and Galerkin. Gyroscopic systems. Nonconservative systems. Perturbation theory for the eigenvalue problem. Dynamics of constrained systems.

**ME 5425. Principles of Machine Tool Design**  
(ME 367) 3 credits. Lecture.

The basic principles and philosophies in the design of precision machine tools. Mathematical theory and precision machine tools. Mathematical theory and physics of errors. The building up of error budget and the mapping of geometric and thermal errors. Design case study of a precision machine tool. Discussion of various types of sensors and actuators, bearings, and transmissions. System design considerations.

**ME 5430. Mechanics of Composites and Laminates**

(ME 364) 3 credits. Lecture. Prerequisite: either ME 5410 or CE 5124.

Review of elasticity theory. Average theorems. Effective constitutive relations for heterogeneous media. Variational bounding. Isotropic elastic composites fiber reinforced and laminated materials.

**ME 5431. Fatigue in Mechanical Design**  
(ME 365) 3 credits. Lecture. Not open to students who have passed ME 3228.

Design calculation methods for the fatigue life of engineering components, fundamentals of fracture mechanics. Crack initiation and crack propagation fatigue lives. Neuber analysis, multiaxial stress, cyclic stress-strain behavior, mean and residual stress effects. Selected current research topics, advanced research and design projects.

**ME 5432. Tribology**  
(ME 359) 3 credits. Lecture.

The theory of fluid film lubrication, including hydrodynamic, externally pressurized and squeeze film mechanisms of load support in bearings. Fixed and pivot pad thrust bearings; air bearings; journal bearings. Elastohydrodynamic lubrication; boundary lubrication; liquid and solid lubricants. Direct solid contact and rolling element contact bearings. Theories of wear. Design considerations in lubrication and wear.

**ME 5433. Theory of Plasticity**  
(ME 369) 3 credits. Lecture.

Introduces the physical basis for inelastic behavior and various mathematical descriptions for non-linear deformation. Provides an overview of plastic deformation in metals, including the role of dislocation behavior in strain hardening and strengthening. Detailed topics include yield surfaces, flow rules, hardening rules and introduction to viscoplastic modeling; emphasis is on finite element computer-based implementation of the concepts and their use in predicting the behavior of structures.

**ME 5440. Computer Integrated Manufacturing Systems**

(ME 386) 3 credits. Lecture. Not open to students who have passed ME 3221.

Topics in Computer Integrated Manufacturing (CIM) including the fundamentals of automated manufacturing systems; production economics; Just-In-Time (JIT) and Shop Floor Control (SFC) techniques; Computer Numerical Control (CNC) and off-line programming; Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), and release and control of the engineering and manufacturing of new products. Advanced design and research projects.

**ME 5441. Design and Engineering Production Systems**

(ME 387) 3 credits. Lecture. Not open to students who have passed ME 3222

Design and engineering functions of production systems. Decision-Making Process, Economic Analysis, Demand Forecasting, Product and Process Design, Optimization and Linear Programming, Integrated Production and Inventory Control, Production Scheduling, Critical Path Methods (CPM), Program Evaluation and Review Technique (PERT), and Statistical Quality Control. Advanced design and research projects.

**ME 5507. Engineering Analysis I**  
(ME 307) 3 credits. Lecture.

Matrix algebra, indicial notation and coordinate transformations. Cartesian and general vectors and tensors, vector and tensor calculus. Partial differential equations: Fourier series, solution procedures to boundary value problems in various domains. Application to the mechanics of continuous media.

**ME 5511. Principles of Optimum Design**  
(ME 335) 3 credits. Lecture.

Engineering modeling and optimization for graduate students in all areas of engineering. Problem formulation, mathematical modeling, constrained and unconstrained optimization, interior and boundary optima constraint interaction, feasibility and boundedness, model reduction, sensitivity analysis, linear programming, geometric programming, nonlinear programming, and numerical methods in optimization.

**ME 5513. Modern Computational Mechanics**  
(ME 349) 3 credits. Lecture.

An advanced course in Computational Mechanics with emphasis on modeling problems using Finite Differences and Finite Element techniques. Projects include initial value problems, ordinary differential equations and partial differential equations. Course evaluation is made by the successful completion of several assigned projects.

**ME 5520. Finite Element Methods in Applied Mechanics I**

(ME 380) 3 credits. Lecture. Also offered as CE 5164. This course and CE 5162 may not both be taken for credit.

Formulation of finite elements methods for linear static analysis. Development of two and three dimensional continuum elements, axisymmetric elements, plate and shell elements, and heat transfer elements. Evaluation of basic modeling principles including convergence and element distortion. Applications using commercial finite element programs.

**ME 5521. Finite Element Methods in Applied Mechanics II**  
(ME 381) 3 credits. Lecture. Also offered as CE 5166.

Formulation of finite elements methods for modal and transient analysis. Development of implicit and explicit transient algorithms. Stability and accuracy analysis. Formulation of finite element methods for material and geometric nonlinearities. Development of nonlinear solution algorithms. Applications using commercial finite element code.

**ME 5895. Special Topics in Mechanical Engineering**

(ME 320) 1-3 credits. Lecture

Classroom and/or laboratory courses in special topics as announced in advance for each semester. The field of study or investigation is to be approved by the Head of the Department before announcement of the course.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**ME 6110. Statistical Thermodynamics**  
(ME 311) 3 credits. Lecture.

A microscopic development of thermodynamics including statistical ensembles, quantum statistical mechanics, and a comparison of various molecular models.

**ME 6130. Advanced Thermo-Fluids II**  
3 credits. Lecture.

Review of governing flow equations, instability and transition, Reynolds averaging and closure approximations, Algebraic turbulence models, Two-equation turbulence models, Large eddy simulations, Turbulence statistics: probability density function and power spectral densities, Energy cascade and intermittency, Turbulent boundary layers including heat transfer, Turbulent free shear flows, Turbulent internal flows (pipes and channels) including heat transfer, Natural convection.

**ME 6140. Convection Heat Transfer**  
(ME 323) 3 credits. Lecture.

A study of heat transfer to laminar and turbulent boundary layers for both compressible and incompressible fluids. Free convection heat transfer is also investigated.

**ME 6160. Turbines and Centrifugal Machinery**

(ME 338) 3 credits. Lecture. Prerequisite: ME 5320.

Theory, design and performance of centrifugal and axial flow machinery including turbines, blowers, fans, compressors, superchargers, pumps, fluid couplings and torque converters. A detailed study of the mechanics of the transfer of energy between a fluid and a rotor.

**ME 6170. Combustion and Air Pollution Engineering**

(ME 346) 3 credits. Lecture.

Review of thermodynamics and chemical equilibrium. Introduction to chemical kinetics. Studies of combustion processes, including diffusion and premixed flames. Combustion of gases, liquid, and solid phases, with emphasis on pollution minimization from stationary and mobile systems. Air pollution measurement and instrumentation.

**ME 6171. Reaction Engines**

(ME 342) 3 credits. Lecture. Prerequisite: ME 5320.

Dynamics of gas flow, including heat addition of friction. Thermodynamic analysis of ram-jets, gas turbines and rockets and their components. Principles of propulsion systems. Nuclear, thermoelectric, ionic, and high energy propulsion devices.

**ME 6172. Advanced Internal Combustion Engines**

(ME 344) 3 credits. Lecture. Prerequisite: ME 3251 or ME 5301

An analytical study of the factors influencing the operation and performance of the internal combustion engine. Spark-ignition and compression ignition engine theory. Emphasis on the latest analytical and experimental developments.

**ME 6173. Advanced Combustion**

(ME 351) 3 credits. Lecture. Prerequisite: either ME 2234 and ME 3250 or ME 6170.

Review of thermodynamic properties, transport properties, conservation equations of multicomponent reacting gas. Introduction to chemical kinetics. Classification of combustion waves. Deflagrations, detonations and diffusion flames. Ignition phenomena, droplet and spray combustion and some aspects of turbulent combustion.

**ME 6174. Seminar in Combustion Generated Pollution**

(ME 352) 3 credits. Lecture. Prerequisite: either ME 6173 or ENVE 6210.

A study of the mechanism of production of pollutants such as nitrogen oxides, carbon monoxide, sulphur dioxide, soot and unburned hydrocarbons from

power plants such as stationary gas turbines, internal combustion engines, and jet engines. Emphasis will be placed on current research problems and recent advances in combustor designs.

**ME 6175. Physical Acoustics**  
(ME 373) 3 credits. Lecture.

The basic principles of the generation and propagation of sound. Mathematical theory of vibration and sound, including single and multi-dimensional waves in stationary and moving media. Physical properties of sound waves; propagation of sound in confined and free space; refraction, reflection, and scattering from strong and weak inhomogeneities.

**ME 6176. Hypersonic Aerodynamics**

(ME 315) 3 credits. Lecture. Prerequisite: ME 5320.

Hypersonic small disturbance theory; similarity laws. Newtonian, shock-expansion and blast-wave theories of hypersonic flow. Aerodynamic shapes for minimum hypersonic drag. Physical properties of real gases; shock waves in real gas flow.

**ME 6177. Aerothermal Analysis**

(ME 317) 3 credits. Lecture. Prerequisite: ME 5320.

High-speed, viscous compressible flow. Equations of motion. Thermodynamic and transport properties of high temperature gases. Blunt body heating. Boundary layer equations and transformations. Hypersonic boundary layers with heat and mass transfer. Reference enthalpy methods.

**ME 6178. Applied Solar Energy**

(ME 327) 3 credits. Lecture. Prerequisite: ME 5340.

Study of the technology and economics of solar energy conversion to useful forms. Review of heat transfer and energy storage. Collector design and performance analysis. System design of water heaters and space heating/cooling systems. Review of wind power, wave power, ocean thermal energy conversion and satellite solar power systems.

**ME 6179. Underwater Sound**

(ME 374) 3 credits. Lecture.

The propagation of sound in sea-water, including effects of temperature and salinity gradients. Transducers. Flow noise.

**ME 6222. Non-Linear Vibrations**

(ME 377) 3 credits. Lecture.

Vibrations of non-linear single-degree-of-freedom systems. Singular points. Liapunoff function. Approximation techniques. Stability. Self-excited vibrations. Vibrations of non-linear multi-degree-of-freedom systems.

**ME 6223. Random Vibrations**

(ME 378) 3 credits. Lecture. Prerequisite: ME 5421 and MATH 3160.

Introduction to theory of sets. Statistical preliminaries. Fourier transforms. Random vibrations of single-degree-of-freedom and two-degree-of-freedom systems. Random vibrations of systems with distributed mass. Theories of failure.

**ME 6250. Advanced Analysis and Design of Mechanisms**

(ME 375) 3 credits. Lecture. Prerequisite: either ME 3224 or ME 5150.

Kinematic analysis and synthesis of planar and spatial linkages with lower pairs. Type and number synthesis. Finite position and higher order design. Unified treatment of position, path-angle and function generation problems. Approximation synthesis and optimization. Defect elimination and performance evaluation, introduction to commercial software.

**ME 6251. Robotic Manipulators**

(ME 376) 3 credits. Lecture. Prerequisite: either ME 3224 or ME5160.

Modeling of 3-D industrial robots; kinematic and dynamic analysis of manipulators. Manipulation techniques. Design workspace and performance criteria. Review of control techniques. Hardware requirements. On-line and off-line optimal trajectory planning.

**ME 6255. Computer Graphics for Design**

(ME 356) 3 credits. Lecture.

A practical study of interactive computer graphics as applied to engineering design. Graphics hardware, interactive techniques, transformations, remote graphic systems, and stand-alone minicomputer based systems are discussed emphasizing their application in engineering design. Practical experience is gained through assignments involving various graphics systems.

**ME 6260. Advances in Control Systems Design**

(ME 379) 3 credits. Lecture. Prerequisite: ME 5160 or ME 5507.

Review of the state space design concepts for control systems. Mathematical modeling of dynamic systems. Lagrange's and Newton's representations. Decentralized or linearized control. Variable structure systems. Sliding mode control of nonlinear systems and discussions of constraint control cases. Time-delayed systems. Stability-based analysis and synthesis. Engineering applications. Open-ended control system design projects.

**ME 6300. Independent Study in Mechanical Engineering**

(ME 300) 3 credits. Independent Study.

Individual exploration of special topics as arranged by student and instructor.

**ME 6301. Macroscopic Equilibrium Thermodynamics II**

(ME 302) 3 credits. Lecture. Prerequisite: ME 5301.

Review of zeroth, first and second laws of thermodynamics, development of equilibrium thermodynamics from a postulatory viewpoint, examination of thermodynamic potentials and equilibrium states, stability of thermodynamic systems including implications on phase and chemical equilibrium. Thermodynamic availability analysis.

**ME 6303. Macroscopic Non-equilibrium Thermodynamics I**

(ME 303) 3 credits. Lecture. Prerequisite: ME 5302.

A study of the laws and equations applicable to non-equilibrium processes of a very general nature; this will include the conservation laws, entropy law and entropy balance, the phenomenological equations. Onsager's relations and the fluctuation dissipation theorem. Selected application of the foundations will include heat conduction, diffusion and cross effects, viscous flow and relaxation phenomena, and discontinuous system processes.

**ME 6304. Macroscopic Non-equilibrium Thermodynamics II**

(ME 304) 3 credits. Lecture. Prerequisite: ME 6303.

A study of the laws and equations applicable to non-equilibrium processes of a very general nature; this will include the conservation laws, entropy law and entropy balance, the phenomenological equations. Onsager's relations and the fluctuation dissipation theorem. Selected application of the foundations will include heat conduction, diffusion and cross effects, viscous flow and relaxation phenomena, and discontinuous system processes.

**ME 6320. Environmental Engineering**

(ME 347) 3 credits. Lecture. Prerequisite: ME 3250 or ME 5301.

Design and arrangement of heating, air conditioning and refrigeration equipment and controls to meet comfort and industrial process requirements.

**ME 6330. Advanced Measurement Techniques**

(ME 392) 1-3 credits. Lecture.

A critical examination of measurement techniques. Principles of operation of various instruments. Estimates of accuracy, precision, and resolution of measurements. Intended primarily for students contemplating experimental theses. When possible, specific topics covered will be structured to the needs of the class.

**†ME 6340. Graduate Seminar**

(ME 401) 0 credits. Seminar.

Presentations by invited guest speakers on topics of current interest in various Mechanical Engineering and allied fields.

**ME 6508. Engineering Analysis II**

(ME 308) 3 credits. Lecture.

Calculus of variations including transversality conditions, constraints, Lagrange multipliers, Rayleigh-Ritz and Galerkin methods. Integral transform techniques including Laplace, Fourier, Hankel, and Mellin transforms, Integral equations.

**ME 6511. Advanced Optimum Design**

(ME 337) 3 credits. Lecture. Prerequisite: MATH 3410 or ME 5511.

Advanced techniques in engineering design and process modeling optimization for graduate students in all areas of engineering. Review of theories of multi-variable constrained and unconstrained optimization, and computational techniques in nonlinear programming, structured programming, including integer programming, quadratic programming, genetic algorithms, theories of multivariable optimization from calculus of variations, computational techniques in functional optimization.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## MEDIEVAL STUDIES

Interdisciplinary work leading to the degrees of Master of Arts and Doctor of Philosophy in medieval studies is offered by the Departments of Art and Art History, English, History, Modern and Classical Languages, and Philosophy. Since the program in medieval studies is intended to provide a synthesis of broad areas of medieval culture and thought as a basis for constructive research in specialized aspects of cultural and intellectual history, students normally are required to include in their programs courses offered by the supporting departments.

**Admission to Degree Programs.** The Medieval Studies Admissions Committee accepts students either to the master's or Ph.D. program. An undergraduate major in the area of study is not necessarily required, but before admission students must give evidence of adequate preparation to work in their proposed area of emphasis.

**The M.A. Program.** Work leading to the degree of Master of Arts in medieval studies may be undertaken under either Plan A (with thesis) or Plan B (without thesis). In either case, course work in medieval studies should be distributed among several departments, and the student's advisory committee is composed of representatives of three departments.

**The Ph.D. Program.** Approximately one half of the course work required for the degree of Doctor of Philosophy in medieval studies should be in the department of emphasis, the remaining half to be taken in two or more other cooperating departments. In addition to the Graduate School's requirements for the doctorate, reading examinations in three foreign languages, Latin and two languages significant to the student's program. It is expected that the student will pass these examinations immediately upon admission and in no case later than the end of the first year of study in the Ph.D. program. The student's advisory committee will consist of representatives of three different cooperating departments.

**Courses of study.** Course offerings and staff are listed under the cooperating and supporting departments referred to above. The Committee for Medieval Studies organizes a number of colloquia open to graduate students, featuring staff members or visitors.

**Support.** University Predoctoral Fellowships and graduate assistantships for teaching or research are available through cooperating departments for qualified students in the medieval studies program. Other support available for graduate students is described under "University Fellowships and Other Aid."

**Major Advisors:** J. Givens, art history; D. Caner, S. Johnson, and R. Travis, Classics and Ancient Mediterranean Studies; C. D. Benson, F. Biggs, R. Hasenfratz, T. J. Jambeck, and K. A. Tonry, English; S. Olson, history; A. Berthelot, French; M. Masciandaro, Italian; E. Rice, Music; D. Baxter, Philosophy, and B. Liu, Spanish.

## MODERN AND CLASSICAL LANGUAGES

**Department Head:** Associate Professor Norma Bouchard

**Professors:** Berthelot, Celestin, DalMolin, Gomes, Gordon, Guénoun, Masciandaro, Miller, and von Hammerstein

**Associate Professors:** Caner, Chinchilla, Finger, Johnson, Irizarry, Loss, McNeece, Pardo, Seda, Travis, and Weidauer

**Assistant Professors:** Balma, Casamayor-Cisneros, Diaz-Marcos, Nanclares, Urios-Aparisi, Van Alst, Wagner, and Wogenstein

The Department offers courses in literature and philology leading to the degrees of Master of Arts and Doctor of Philosophy in French, German, Italian, and Spanish. Programs are available in Comparative Literary and Cultural Studies in cooperation with the Department of English and in Medieval Studies in cooperation with the Departments of Art, English, History, and Philosophy (see *Comparative Literary and Cultural Studies* and *Medieval Studies*). There also is supporting work in Greek and Latin. Seminars numbered in the 6000's are designed chiefly for doctoral students, but master's students occasionally are admitted.

**Admission.** All applicants are urged, and some may be required, to submit results of the Graduate Record Examinations for both the General Test and the Subject Test in their field. In the modern languages, applicants are expected to be able to participate in seminars at the graduate level conducted in the foreign languages.

**The M.A. Program.** Applicants normally are expected to have a bachelor's degree or its equivalent in the language. Students with insufficient undergraduate preparation may be accepted provisionally, but they are required to make up deficiencies before being admitted to regular graduate status. A research methodology course and a minimum of one semester of teaching experience are required of all M.A. candidates in German. M.A. students in German who emphasize philology are required to take at least two literature courses; students emphasizing literature or German studies are required to take at least one philology course. Candidates in Spanish are required to take the course in concepts of literary criticism. All master's candidates must pass a written and/or oral final examination.

**Special Requirements for the Ph.D.** Doctoral candidates are expected to demonstrate competence in reading scholarly material in two additional languages other than English, as designated by their advisory committees. For candidates in French, these normally are Latin and German.

Students in Spanish are required to present or to take a course in concepts of literary criticism.

In German, a research methodology course and a minimum of one semester of teaching experience at the college level are required of all doctoral candidates.

**Library Facilities.** The Homer Babbidge Library contains outstanding collections of texts and commentaries in the literature of the French Renaissance and a fine collection of texts in the

literature of the Spanish Golden Age. The Latin American Collection is particularly strong in the Mexican, Chilean, and Argentine areas. There is a fine collection of German literature of the eighteenth, nineteenth, and twentieth centuries, and the collection of modern drama is outstanding. In addition, the Library houses an extensive collection of videotapes of German literary and cultural materials, and facilities for viewing them. Holdings in Italian literature and in intellectual history are extensive, especially in the modern period. The Risorgimento pamphlet collection stands out as one of the best available outside of Italy. Other holdings in modern and classical languages are sufficient for the pursuit of scholarly research in all languages and literatures offered.

### COURSES OF STUDY

#### Classics: Latin

**CAMS 5301. Special Topics in Latin Literature** (CAMS 301) 1-6 credits. Lecture

**CAMS 5307. Ovid and Elegiac Poets** (CAMS 307) 3 credits. Lecture.

**CAMS 5328. Advanced Latin Composition** (CAMS 328) 3 credits. Lecture.

#### French

**FREN 5302. The Seventeenth-Century Theatre** (FREN 302) 3 credits. Seminar.

**FREN 5304. Seventeenth-Century French Thought** (FREN 304) 3 credits. Lecture.

Religious and Libertin thinkers: Gassendi, Descartes; the Moralistes: Pascal, La Rochefoucauld, La Bruyère.

**FREN 5306. The Later French Enlightenment** (FREN 306) 3 credits. Lecture.

**FREN 5307. Problems in French Literature or Philology** (FREN 307) 1-3 credits. Lecture.

**FREN 5309. Provençal Language and Literature** (FREN 309) 3 credits. Lecture.

**FREN 5310. Introduction to French Philology** (FREN 310) 3 credits. Lecture.

**FREN 5311. Aesthetic Trends in Twentieth-Century French Literature** (FREN 311) 3 credits. Seminar.

**FREN 5352. Old French Language** (FREN 352) 3 credits. Lecture.

**FREN 5353. Old French Literature** (FREN 353) 3 credits. Lecture.



**FREN 5357. The French Novel in the Eighteenth Century**

(FREN 357) 3 credits. Lecture.

**FREN 5359. Romantic Poetry and Drama**

(FREN 359) 3 credits. Lecture.

**FREN 5361. French Poetry in the Second Half of the Nineteenth Century**

(FREN 361) 3 credits. Seminar.

**FREN 5362. French Contemporary Poetry**

(FREN 362) 3 credits. Seminar.

**FREN 5369. The French Novel in the First Half of the Nineteenth Century**

(FREN 369) 3 credits. Seminar.

Stendhal, Balzac, and the romantic novelists.

**FREN 5370. The French Novel in the Second Half of the Nineteenth Century**

(FREN 370) 3 credits. Lecture.

Flaubert, Zola, and their contemporaries.

**FREN 5373. The French Contemporary Novel**

(FREN 373) 3 credits. Seminar.

**FREN 5376. The Prose of the French Renaissance**

(FREN 376) 3 credits. Seminar.

**FREN 5377. The Poetry of the French Renaissance**

3 credits. Lecture.

**FREN 5380. Seminar in Francophone Literature**

(FREN 380) 3 credits. Seminar.

The study of the literature from the French-speaking world outside of France (Quebec, the Antilles, West Africa, the Maghreb) against the background of colonial and post-colonial history. May be repeated for credit with change of topic.

**FREN 5381. Study of French Style**

(FREN 381) 3 credits. Lecture.

Problems of French style and writing of critical papers.

**FREN 5401. Seminar on Villon**

(FREN 401) 3 credits. Lecture. Prerequisite: FREN 5353.

**German****GERM 5305. Studies in Germanic Philology and Linguistics**

(GERM 305) 3 credits. Seminar.

Study of a coherent body of material related to older Germanic languages; to diachronic or synchronic phonology, morphology, syntax, and lexicology of Germanic languages; or to other areas of theoretical or applied linguistics.

**GERM 5306. Topics in Germanic Philology and Linguistics**

(GERM 306) 1 credit. Seminar.

Focus on a specific topic, problem, controversy, research methodology, etc. in Germanic philology and linguistics.

**GERM 5314. German Studies**

(GERM 314) 3 credits. Seminar.

Exploration of the field of German Studies as an "interdiscipline"; analysis of a coherent body of material drawn from the social sciences, humanities, natural sciences, or other fields that helps to illuminate the German-speaking world.

**GERM 5315. Topics in German Studies**

(GERM 315) 1 credit. Seminar.

Focus on a particular theme (e.g. "revolution," or "family and society"), approach (e.g. critical theory, or feminist interpretations), genre (e.g. lyric, or autobiographical essay), skill (e.g. research methodology) or other aspect of German studies.

**GERM 5322. Studies in German Literature I**

(GERM 322) 3 credits. Seminar.

Study of a coherent body of texts drawn from the period from the beginnings of German literature to approximately 1700.

**GERM 5332. Studies in German Literature II**

(GERM 332) 3 credits. Seminar.

Study of a coherent body of texts drawn from the period from approximately 1700 to 1890.

**GERM 5345. Studies in German Literature III**

(GERM 345) 3 credits. Seminar.

Study of a coherent body of texts drawn from the period from approximately 1890 to the present.

**GERM 5360. Research Methodology**

(GERM 360) 3 credits. Seminar.

Introduction to the methods of literary research and bibliography.

**GERM 5365. German Film Studies**

(GERM 365) 3 credits. Seminar.

Study of a coherent body of films and related materials (e.g. fiction, theory, reviews) organized to illuminate particular themes (e.g. representations of postwar Germany), relationships (e.g. between films and literature or film and social context), cinematic styles (e.g. Expressionism), etc.

**GERM 5368. The German-Speaking World**

(GERM 368) 3 credits. Lecture.

Landeskunde of the German-speaking world. The physical geography as well as cultural heritage, traditions, and contemporary customs of Austria, Germany, Switzerland, and other German-speaking regions of the world.

**GERM 5369. Topics in *Landeskunde* of the German-Speaking World**

(GERM 369) 1 credit. Seminar.

Focus on a specific topic or problem related to diachronic or contemporary Landeskunde of Austria,

Germany, Switzerland, or another German-speaking region of the world.

**GERM 5375. Advanced Conversation and Composition**

(GERM 375) 3 credits. Lecture.

Practice in oral and written expression, with an emphasis on current idiomatic usage, grammatical structure, and stylistics

**GERM 5376. Rhetoric and Writing**

(GERM 376) 3 credits. Seminar.

In-depth introduction to the rhetorical resources of the German language; extensive analysis of spoken and written language; application of knowledge in students' own writing and speaking.

**GERM 5377. Topics in Rhetoric and Writing**

(GERM 377) 1 credit. Seminar.

**GERM 5378. Preparation for Certification of Proficiency in German**

(GERM 378) 0 credits. Lecture.

Development of students' proficiency in speaking, listening, reading and writing German in preparation for either the Mittelstufenprüfung or Oberstufenprüfung.

**GERM 5380. German Language Methodology**

(GERM 380) 3 credits. Lecture.

Exploration and analysis of a range of theories, issues, and problems in German instruction. Focus on the nature of language acquisition, methods, and implications for practice.

**GERM 5381. Topics in German Language Methodology**

(GERM 381) 1 credits. Seminar.

Focus on such special areas as content-based instruction, language for specific purposes (LSP), instructional technologies, development of teaching materials, proficiency, testing techniques, etc.

**GERM 5385. German Literary Criticism and Theory**

(GERM 385) 3 credits. Seminar.

Systematic study of literary criticism, including such topics as the contributions of particular critical approaches to the understanding of significant German-language literary works; the philosophies, implicit or explicit, underlying various critical approaches; and the German contribution to international critical discourse.

**GERM 5388. Topics in German Literature**

(GERM 388) 1 credit. Seminar.

Focus on a specific topic, problem, controversy, methodology, etc. in German literature studies or criticism.

**GERM 5390. Independent Study**

(GERM 390) 1-6 credits. Independent Study.

**GERM 6410. Seminar in Germanic Philology and Linguistics**

(GERM 410) 3 credits. Lecture.

**GERM 6420. Seminar in Medieval Literature**  
(GERM 420) 3 credits. Seminar.

**GERM 6430. Seminar in Sixteenth- and Seventeenth-Century Literature**  
(GERM 430) 3 credits. Seminar.

**GERM 6450. Seminar in Nineteenth-Century Literature**  
(GERM 450) 3 credits. Seminar.

**GERM 6460. Seminar in Twentieth-Century Literature**  
(GERM 460) 3 credits. Seminar.

**GERM 6480. Investigation of Special Topics**  
(GERM 480) 1-6 credits. Lecture.

### Hebrew

**HEB 5303. Religion of Ancient Israel**  
(HEB 303) 3 credits. Lecture.

Significant aspects of the religion of ancient Israel: The God-human relationship, the origins of good and evil, law and covenant, kingship, prophecy, ritual and morality, repentance and redemption. Taught in English.

**HEB 5311. History and Literature of Talmudic Palestine**  
(HEB 311) 3 credits. Seminar.

A discussion of select topics and texts pertaining to religious, social, and political currents in Talmudic Palestine. Taught in English.

**HEB 5390. Independent Study**  
(HEB 390) 3 credits. Independent Study.

**HEB 5397. Special Topics**  
(HEB 397) 3 credits. Seminar.

Investigation of special topics in Hebrew literature and civilization.

### Italian

**ILCS 5315. Introduction to Contemporary Literary Studies**  
(ILCS 315) 3 credits. Lecture.

Contemporary methods and fields of literary analysis. Paradigms of literary studies and overview of Marxist, Freudian, Feminist, Historicist, and Culturalist criticism.

**ILCS 5330. The Literature of the Origins**  
(ILCS 330) 3 credits. Lecture.

Poets and poetical schools of the Duecento from the Franciscans to the Sicilians and the "Dolce stil nuovo."

**ILCS 5332. Seminar on Petrarch**  
(ILCS 332) 3 credits. Seminar.

The works of Francesco Petrarca; their relevance to humanism and to subsequent European lyrical poetry.

**ILCS 5333. Seminar on Boccaccio**  
(ILCS 333) 3 credits. Seminar.

The Italian lyrics and narrative poems, the Decameron and its seminal importance for prose fiction, the scholarly Italian and Latin works.

**ILCS 5334. Seminar on Machiavelli**  
(ILCS 334) 3 credits. Seminar.

The principal objective of this course is twofold: 1) to analyze and assess the political thought and the theater of Machiavelli as represented, respectively, in the Prince and the Discourses, and in the comedies Mandragola and Clizia and in the Favola (Belfagor arcidiavolo); and 2) to discuss Machiavelli's influence beyond Italy (e.g., on authors such as Christopher Marlowe, Shakespeare, Ben Jonson, and Francis Bacon). Special attention will be given to Machiavelli's unique relation to Renaissance Humanism, to his unconventional concept of virtue and his redefinition of the ethics of politics, and to his view of the statesman as artist.

**ILCS 5335. Baroque Literature**  
(ILCS 335) 3 credits. Lecture.

The beginnings of baroque literary style and its ramifications in the seventeenth century.

**ILCS 5337. Theories and Methods of Modern Criticism I**  
(ILCS 337) 3 credits. Lecture.

Aesthetic problems from Vico to the present day.

**ILCS 5339. Seminar on Modern Literature**  
(ILCS 339) 3 credits. Seminar.

One leading writer from the last two centuries.

**ILCS 5340. Divina Commedia**  
(ILCS 340) 3 credits. Seminar.

**ILCS 5342. Seminar on Italian Theatre from Renaissance to Romanticism**  
(ILCS 342) 3 credits. Lecture.

Major figures and developments from Poliziano and Machiavelli to Goldoni, Alfieri and Manzoni.

**ILCS 5345. Studies in Italian Literature or Philology**  
(ILCS 345) 1-6 credits. Lecture.

**ILCS 5347. Italian Chivalric Poetry**  
(ILCS 347) 3 credits. Lecture.

**ILCS 5350. Literature of the Settecento**  
(ILCS 350) 3 credits. Lecture.

Major figures of the eighteenth century enlightenment. Vico, Alfieri, Goldoni, Parini.

**ILCS 5351. Literature of Romanticism**  
(ILCS 351) 3 credits. Lecture.

Neoclassicists versus innovators: Monti, Foscolo, Leopardi, Berchet, Manzoni, De Sanctis.

**ILCS 5352. Modern Italian Poetry I**  
(ILCS 352) 3 credits. Lecture.

Post-romantic masters through the twentieth

century experiments: e.g., the Crepuscolari, Futurists, Hermeticists.

**ILCS 5354. Masters of Twentieth-Century Fiction**  
(ILCS 354) 3 credits. Lecture.

Pirandello, Svevo, Moravia, Pavese, Vittorini.

### Portuguese

**PORT 5301. Studies in Portuguese and Brazilian Literature**  
(PORT 301) 3 credits. Seminar.

The major poets, novelists, dramatists, and essayists from Portugal and Brazil.

### Romance Languages

**ROML 5395. Applied Linguistics for Teachers of Romance Languages**  
(ROML 395) 3 credits. Seminar.

### Spanish

**SPAN 5320. Independent Study**  
(SPAN 320) 1-6 credits. Independent Study.

**SPAN 5321. Theatre of the Golden Age**  
(SPAN 321) 3 credits. Lecture.

A study of the origin, formation and development of the Spanish comedia. Representative works of Lope de Vega, Calderón, Tirso de Molina, and Alarcón will be analyzed with special emphasis on individual characteristics.

**SPAN 5322. History of the Spanish Language**  
(SPAN 322) 3 credits. Seminar.

The development of Castilian and its relation to its congeners in the Iberian Peninsula and Hispanic America.

**SPAN 5323. Concepts of Literary Criticism**  
(SPAN 323) 3 credits. Seminar.

A practical approach to the theories and methods of literary criticism with particular reference to Hispanic literature.

**SPAN 5325. Cervantes**  
(SPAN 325) 3 credits. Lecture.

A study of the life and works of Cervantes with special emphasis on Don Quixote.

**SPAN 5328. Medieval Spanish Literature (1100-1350)**  
(SPAN 328) 3 credits. Lecture.

Major works in prose and poetry from 1100-1350 in medieval Iberia.

**SPAN 5329. Medieval Spanish Literature (1350-1500)**  
(SPAN 329) 3 credits. Lecture.

Major works in prose and poetry written in Spain from 1350-1500.

**SPAN 5332. Spanish Poetry of the Renaissance**

(SPAN 332) 3 credits. Seminar.

Analysis of the currents of Spanish poetry from Bosc n to Fray Luis de León.

**SPAN 5333. Spanish Poetry of the Golden Age**

(SPAN 333) 3 credits. Lecture.

Analysis of the currents of Spanish poetry from Cervantes to Calderón.

**SPAN 5334. Modern Spanish-American Poetry**

(SPAN 334) 3 credits. Seminar.

Selected poets and movements in Spanish America from the late nineteenth century to the present.

**SPAN 5335. The Theatre in Spanish America**

(SPAN 335) 3 credits. Lecture.

The works of selected dramatists, with emphasis on the modern period.

**SPAN 5336. Colonial Latin American Literature**

(SPAN 336) 3 credits. Lecture.

Study of particular aspects of colonial literary production: religious and secular historiography; humanist thought in the colonies, poetry, and society; literature and the Baroque city; political and scientific thought.

**SPAN 5350. The Essay in Spanish America**

(SPAN 350) 3 credits. Seminar.

The Spanish-American essay as a literary genre and a vehicle of ideas. Reading in the works of the chief essayists of the Spanish-American nations.

**SPAN 5351. The Novel in Spanish America**

(SPAN 351) 3 credits. Seminar.

The development of the genre in Spanish America and selected readings in the works of its chief exponents.

**SPAN 5355. The Nineteenth-Century Spanish Novel and Essay**

(SPAN 355) 3 credits. Seminar.

A study of the essays of Larra and Ganivet, as well as the nineteenth-century novel. Special emphasis will be placed on the post-romantic novel.

**SPAN 5356. Twentieth-Century Novel and Essay**

(SPAN 356) 3 credits. Seminar.

Selected works either of authors from 1895 to 1936, or of authors from 1936 to the present.

**SPAN 5357. Twentieth-Century Drama and Poetry**

(SPAN 357) 3 credits. Seminar.

Selected works and authors from 1900 to the present.

**SPAN 5359. Prose of the Golden Age**

(SPAN 359) 3 credits. Lecture.

The picaresque novel and the chief works of Quevedo, Graci n and Saavedra Fajardo.

**SPAN 6400. Seminar on Lope de Vega**

(SPAN 400) 3 credits. Seminar.

A study of the life and works of Lope de Vega with special emphasis on his comedia.

**SPAN 6402. Studies in Spanish-American Literature**

(SPAN 402) 3 credits. Lecture.

**SPAN 6403. Studies in Spanish Literature**

(SPAN 403) 3 credits. Lecture. May be repeated for up to nine credits with a change of topic.

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**All Master's and Doctoral Fields**

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## MOLECULAR AND CELL BIOLOGY

*Department Head:* Professor David R. Benson

*Associate Department Head for Research and*

*Graduate Education:* Professor Michael A. Lynes

*Associate Department Head for Undergraduate*

*Education and Research:* Professor Kenneth M. Noll

*Professors:* Albert, Birge, Chen, Frank, Freake, Geary, Gogarten, Kendall, King, Knecht, Lalande, LoTurco, Lynes, Marcus, Noll, Reiter, Rosenberg, Sekellick, Setlow, Silbart, Strausbaugh, Teschke, Visscher, Weller, Yang, and Zinn

*Associate Professors:* Aggison, Alexandrescu, A.

Anderson, Beck von Bodman, Ben Mamoun,

Brewer, Burkhard, Cole, Fenteany, Gage, Giardina,

Goldhamer, Graf, Hoch, Lee, McGrane, M. O'Neill,

R. O'Neill, Pask, Rasmussen, Schiller, Tian,

Washington, Zhang, and Zweifach

*Assistant Professors:* Abbott, Adler, Bruno, Fridell,

Gascon, Gryk, Hao, Nelson, Nyholm, Papke,

Pavlopoulos, Robinson, Vinogradova, and Yao

*Adjunct Professors:* Bush, Craig, Denoya, Laue, and Oates

*Adjunct Associate Professor:* Perdrizet

*Adjunct Assistant Professors:* Arnold and Ladd

Molecular and Cell Biology offers graduate programs in the following fields of study: (1) *Biochemistry* – protein transport through membranes, receptor/ligand interactions, biochemical signalling, transcriptional and translational regulation, protein folding, molecular chaperones and response to stress, plant cell molecular biology; (2) *Structural Biology and Biophysics* – enzyme mechanisms, x-ray structural and kinetic analyses of enzymes, structure of membrane interactive peptides and proteins, macromolecular interactions, mechanisms of virus assembly; (3) *Cell Biology* – signal transduction, cytoskeleton and cell motility, developmental and stem cell biology, molecular endocrinology, hormones and morphogenesis, mechanisms of immune function, stress responses, molecular virology and interferons; (4) *Genetics and Genomics* – organization and regulation of genes and gene families in microbial, plant, virus and animal model systems; genome analysis; molecular evolution; chromosome structure and function; developmental genetics; transposable genetic elements and gene transfer; genetic responses to stress; applied genetics; (5) *Microbiology* – microbial diversity and ecology, evolution, genetics and physiology, microbial biotransformations, symbiosis.

### Interdisciplinary Study

**Applied Genomics.** The professional M.S. degree program in Applied Genomics trains scientists with interdisciplinary competency in genetics, molecular biology, and computational analysis. The program

provides substantial cross-training elements for successful performance in a business or corporate environment. The program has its foundations in the existing strengths of more than 20 faculty members, campus-wide, who conduct genomics-related research and training. Additional information is available at the Professional Science Master's website: <<http://www.smasters.uconn.edu>>.

**Applied Microbial Systems Analysis.** A professional M.S. degree program in Applied Microbial Systems Analysis is offered.

**Materials Science.** The Department of Molecular and Cell Biology also cooperates with other departments in offering masters' degree programs in materials science. Members of this department serve as advisors for the Ph.D. program in polymer science. For information, write to Dr. Peter Burkhard, Unit 3136, Storrs, Connecticut 06269-3136; [peter.burkhard@uconn.edu](mailto:peter.burkhard@uconn.edu).

## COURSES OF STUDY

### MCB 5001. Biochemistry

(MCB 301) 5 credits. Lecture/Laboratory.

Metabolism of carbohydrates, lipids, amino acids, proteins, and nucleic acids, including regulation, and to the structure and function of biological macromolecules. Provides suitable preparation for advanced course work in biochemistry, biophysics, and other areas of molecular biology. Graduate students with considerable laboratory experience may arrange to take only the lecture portion of this course as Biology: MCB 5896 with consent of instructor.

### MCB 5002. Biochemistry Laboratory

(MCB 302) 3 credits. Lecture/Laboratory.

Theory and application of modern techniques for the separation and characterization of biological macromolecules, including several types of liquid chromatography, liquid scintillation spectrophotometry and SDS polyacrylamide gel electrophoresis. Each student will carry out individual projects using selected techniques.

### MCB 5003. Biophysical Chemistry I

(MCB 303) 3 credits. Lecture.

Thermodynamics, electrostatics of polar molecules and ionic solutions, dielectric constants, conductance, acid-base equilibria, molecular interactions.

### MCB 5004. Biophysical Chemistry II

(MCB 304) 3 credits. Lecture.

The physico-chemical behavior of biological macromolecules, their interactions, the forces involved, and the physical methods for studying such systems.

### MCB 5007. Biophysical Techniques

(MCB 307) 3 credits. Laboratory.

Laboratory experience in the characterization of macromolecules in solution. Methods such as velocity- and equilibrium-sedimentation, density determination, refractometry and light scattering are covered.

### MCB 5008. Techniques of Biophysical Chemistry

(MCB 308) 3 credits. Lecture.

Theory and applications of biophysical methods for the analysis of the size, shape and interactions of proteins and nucleic acids. Topics include analytical ultracentrifugation, light scattering, X-ray scattering, calorimetry, surface plasmon resonance and single molecule approaches.

### MCB 5011. Enzyme Structure and Function

(MCB 311) 3 credits. Lecture.

Information at the molecular level derived from protein chemistry, equilibria, kinetics and X-ray diffraction.

### MCB 5012. Foundations of Structural Biochemistry

(MCB 312) 3 credits. Lecture.

Comprehensive introduction to the molecular aspects and dynamics of structural biochemistry. Examination of nucleic acid, protein, and lipid structures including current topics in conformation and folding, enzyme kinetics, nucleic acid stability, ligand/receptor binding, and bioenergetics. Overviews of experimental strategies used to study macromolecular structure and interactions.

### MCB 5013. Structure and Function of Biological Macromolecules

(MCB 313) 3 credits. Lecture.

Fundamentals of protein structure, and the forces that stabilize structure. Recurrent structural motifs, molecular ancestry/homology, and insights into proteins structure evolution. Protein folding and dynamics. Structure-function correlations, and structural basis of regulation. Techniques used to investigate structure: X-ray diffraction, NMR, TEM, AFM, structure prediction, computational simulations. Advanced topics: chaperones; structural genomics; role of misfolded proteins in disease.

### MCB 5015. X-ray Structure Analysis

(MCB 315) 3 credits. Lecture.

The determination of three-dimensional atomic-level structure by diffraction methods. Small-angle solution scattering. Protein crystallography.

### MCB 5019. X-ray Diffraction Laboratory

(MCB 319) 3 credits. Laboratory.

Analysis of low- and high-angle X-ray data from both synthetic and biological macromolecules in amorphous and crystalline states.

### MCB 5022. Human Disease and Development of Therapeutic Agents

(MCB 322) 3 credits. Lecture.

Molecular basis of human disease and strategies for developing therapeutic treatments. Applications of genetic, cellular, and biochemical information in treating different disease states. Especially appropriate for students interested in biomedical research and the health professions.

### MCB 5025. Structure and Function of Biological Membranes

(MCB 325) 3 credits. Lecture.

Overview of cell membrane structure and function based on a foundation of physical and biochemistry principles. Topics include lipid bilayers, vesicles and liposomes, cholesterol, membrane protein structure and function, transport, membrane fusion, receptors, drug/membrane interactions and membranes in cell regulation.

### MCB 5034. Human Metabolism and Disease

(MCB 334) 2 credits. Lecture

A thorough analysis of the inter-relationships of metabolic pathways in connection with human health and disease, including inherited metabolic diseases and the role of hormones in metabolic pathways.

### MCB 5035. Protein Folding

(MCB 335) 3 credits. Lecture.

In-depth examination of protein folding in vitro and in vivo. Kinetics and thermodynamics of protein folding and assembly; chaperones in folding and misfolding; misfolding in human disease and biotechnology. Experimental methods used to study protein folding, including NMR, mutagenic and spectroscopic techniques.

### MCB 5038. Techniques in Structural Biology

(MCB 338) 2 credits. Lecture. Also offered as MEDS 5338.

A short course to introduce graduate students and selected undergraduates to modern techniques in structural biology. Each course offering covers a specific technique: NMR, computational and graphical analysis of biomolecules, X-ray crystallography, analytical ultracentrifugation, spectroscopy, calorimetry, and others.

### MCB 5076. Biomolecular Nuclear Magnetic Resonance Spectroscopy

(MCB 376) 2 credits. Lecture. Open to undergraduate students with consent of instructor.

Advanced treatment of NMR spectroscopy as applied to problems in structural biology, particularly protein structure and dynamics. Recommended preparation: courses in biochemistry, organic chemistry, and physical chemistry.

### †MCB 5099. Graduate Seminar in Biochemistry

(MCB 339) 1 credit. Seminar.

### MCB 5210. Molecular Endocrinology

3 credits. Lecture.

This course will be devoted to discussing the molecular mechanism(s) of hormone action in vertebrates and invertebrates. The course will cover molecular cloning and characterization of peptide hormone genes, purification and molecular characterization of receptors, hormone actions at the molecular levels and signal transduction. In addition to regular lectures, part of the lecture time slots will be devoted to student presentation on selective papers taken from relevant literature.

**MCB 5217. Biosynthesis of Nucleic Acids and Proteins**

(MCB 317) 3 credits. Lecture.

Mechanisms of protein and RNA synthesis in prokaryotes and eukaryotes. Topics such as RNA processing, gene splicing, and control of protein and RNA synthesis are discussed.

**MCB 5233. Plant Metabolism**

(MCB 333) 3 credits. Lecture

Biochemistry and physiology of the principal metabolic systems of plants.

**MCB 5240. Virology**

(MCB 340) 3 credits. Lecture.

Biological, biochemical, genetic, and physical characteristics of viruses, with an emphasis on molecular and quantitative aspects of virus-cell interactions.

**MCB 5243. Molecular Analysis of Development**

(MCB 343) 3 credits. Lecture.

An analysis of the mechanisms of morphogenesis and differentiation with special emphasis on molecular aspects.

**MCB 5253. Eukaryotic Molecular Biology**

(MCB 353) 2 credits. Seminar.

Considerations of the molecular and cellular biology of eukaryotes with emphasis on current literature. Presentations by faculty and students.

**MCB 5255. Cellular and Molecular Immunology**

(MCB 355) 2 credits. Lecture.

Genetic, biochemical, and cellular control of the immune system, addressing such topics as antigen recognition, immune regulation, stress and immunity, apoptosis, and signal transduction.

**MCB 5256. Animal Cell Culture Laboratory**

(MCB 356) 5 credits. Laboratory

Lecture and laboratory covering basic aspects of cell culture *in vitro*, including mammalian, avian, fish and insect cells. Laboratory procedures include: preparation of complex and synthetic media; mass and single cell culture; primary and established cell cultures; large scale growth of cells; culture contaminants; cell preservation; growth factors; measurement of cell growth and viability; cell cloning; cell synchrony; cell cycle analysis; karyotyping; mutant isolation; cell fusion/hybridomas; culture of specialized cells; virus propagation; production of specialized cell products; toxicity testing; cell transformation/immortalization; DNA transfection.

**MCB 5280. Advanced Cell Biology**

(MCB 380) 3 credits. Lecture.

Integrative approach to the study of eukaryotic cell biology emphasizing structure, function, and dynamics of the cytoskeleton, membrane, and extracellular matrix.

**MCB 5299. Current Topics in Cell Biology**

(MCB 314) 1-2 credits. Seminar.

Discussion of papers from recent literature. Topics include cytoskeletal function, cell motility, gene

expression, and signal transduction, with special focus on their relationship to development, the immune system, and cancer.

**MCB 5426. Genetic Engineering and Functional Genomics**

(MCB 326) 3 credits. Lecture.

Methods and applications of genetic engineering, including gene manipulation and transfer techniques in prokaryotes and eukaryotes. Emphasis on the application of recombinant DNA technology in the elucidation of gene function. Recent technological developments in molecular genetics and the societal issues related to these developments will also be addressed. Students will prepare a grant application or other written assignment.

**MCB 5427. Laboratory Techniques in Functional Genomics**

(MCB 327) 1 credit. Laboratory.

Molecular biological techniques utilized in gene discovery and in the functional characterization of genes in animal development. Taught as a series of short modules, each focusing on a different set of techniques. With a change of content, this course may be repeated for credit.

**MCB 5428. Theory and Practice of Forensic Identification Methods**

(MCB 328) 1 credit. Laboratory. With change of content, may be repeated for credit.

Advanced consideration of the theory, practice, and analysis of various techniques used in forensic identification strategies. Taught as a series of stand-alone, "executive format" modules with each focused on a different methodology and consisting of hands-on laboratory combined with lectures and data analysis, problem solving, and/or case studies.

**MCB 5429. Theory and Practice of High Throughput Sequence Analysis**

2 credits. Lecture/Laboratory. This course may be repeated for credit.

Advanced training in experimental design, sample preparation, quality control, high throughput sequence acquisition and analysis of data sets for a variety of genomics applications. Taught as a series of modules with each focused on a different aspect of the practice of next-generation genome analysis.

**MCB 5432. Molecular and Genetic Approaches to Developing Systems**

(MCB 332) 2 credits. Lecture.

Topics of current interest in developmental biology are presented with related developmental and genetic background information.

**†MCB 5449. Molecular Genetics**

(MCB 349) 3 credits. Lecture.

A course of lectures on the molecular basis of heredity. The nature and properties of hereditary materials, including replication, mutation, recombination, and repair.

**MCB 5452. Problems in Genetics of Eukaryotes**

(MCB 352) 3 credits. Lecture.

Consideration of such problems as chromosomal organization, mechanisms of meiotic drive, epigenetic inheritance, chromosome distribution, and transposable elements in model genetic organisms.

**MCB 5454. Molecular Aspects of Genetics**

(MCB 354) 2 credits. Lecture.

Integration of the biological effects, molecular structure, expression, and evolution of genes and genomes.

**MCB 5459. Genetics of Higher Plants**

(MCB 359) 2 credits. Lecture.

Use of tools of molecular genetics to address problems in the biochemistry, cell biology, and physiology of higher plants. Topics covered include organ development, signal transduction, carbon partitioning, plant-microbe interactions, and plant genome projects.

**MCB 5470. Current Advances in Epigenetics**

(MCB 370) 1 credit. Seminar. This course can be repeated to a maximum of three credits. Also offered as ANSC 5623.

Epigenetics is a field of modern biological research that is concerned with influences on gene expression, developmental biology, and disease that are mediated by mechanisms independent of DNA sequence. This course is a literature review course in which each student will present and critically analyze primary literature in epigenetics. All students will present and participate in detailed technical evaluations of selected papers, and develop a written proposal for future research based on the paper(s) that they present individually. Topics will include imprinting, X chromosome inactivation, chromatin dynamics, and cloning (nuclear transfer).

**MCB 5471. Current Topics in Molecular Evolution and Systematics**

(MCB 371) 1 credit. Lecture.

Current concepts, ideas and techniques in the field of molecular evolution, and theoretical problems peculiar to the phylogenetic analysis of molecular data.

**MCB 5472. Computer Methods in Molecular Evolution**

(MCB 372) 3 credits. Lecture.

Practical aspects of molecular data analyses. Databank searches, sequence alignments, statistical analyses of sequence data. Parsimony, distance matrix, and spectral analysis methods. Students compile and analyze a data set of their choice.

**MCB 5490. Industrial Insights**

2 credits. Lecture. This course may be repeated for credit.

Instruction in the research and development, regulation, intellectual property protection, and production of commercial services and products from the vantage point of genomics-related industries. Taught as a series of specialized courses with each focused on a different topic related to the genomics, biotechnology, and pharmaceutical industries.

†**MCB 5499. Special Topics in Genetics**  
(MCB 404) 2 credits  
Intensive reading and discussion in current topics in genetics.

**MCB 5616. Experiments in Bacterial Genetics**  
(MCB 316) 3 credits. Laboratory.  
Experiments in bacterial genetics emphasizing genetic manipulations using modern techniques for mutant isolation, DNA characterization and cloning. These include the use of transposons, DNA isolation, restriction analysis, gel electrophoresis, PCR and DNA sequencing. Each student conducts an independent project.

**MCB 5621. Molecular Biology and Genetics of Prokaryotes**  
(MCB 321) 3 credits. Lecture.  
Molecular genetics of bacteria, archaeobacteria, and their viruses. Transcription and replication of DNA, transformation, transduction, conjugation, genetic mapping, mutagenesis, regulation of gene expression, genome organization. Recommended preparation: a course in general microbiology.

**MCB 5636. Industrial Microbiology**  
(MCB 336) 3 credits. Lecture/Laboratory.  
Biology of industrial microorganisms, including their physiology, selection, and biochemical and genetic manipulation. Primary and secondary metabolite biosynthesis and production. Pollution microbiology and biodegradation.

**MCB 5650. Genetics of Microorganisms**  
(MCB 350) 3 credits. Lecture.  
Basic genetic processes in microorganisms including homologous and nonhomologous recombination, chromosome mechanics, and mutation; genome organization; transposable elements, their uses in genetic analyses and their role in microbial evolution.

**MCB 5679. Microbial Physiology**  
(MCB 379) 3 credits. Lecture.  
Topics in microbial cell organization, growth, and intermediary metabolism with emphasis on specialized physiological adaptations.

**MCB 5681. Mechanisms of Bacterial Pathogenicity**  
(MCB 381) 3 credits. Lecture.  
An in-depth examination of several host-parasite relationships as models of disease states.

**MCB 5682. Physiological Genetics of Bacteria**  
(MCB 382) 3 credits, Lecture.  
The use of mutants in investigating metabolic pathways and homeostic mechanisms in bacteria, with extensive reference to *Escherichia coli* and its genetic map.

**MCB 5683. Biotechnology Seminar**  
(MCB 383) 1 credit. Seminar.  
Current topics in biotechnology.

**MCB 5684. Fermentation and Separation Technology Laboratory**  
(MCB 384) 3 credits. Lecture/Laboratory.  
Introduction to techniques used for industrial mass culture of prokaryotic and eukaryotic cells and methods used to extract useful products from these cultures.

†**MCB 5699. Seminar in Microbiology**  
(MCB 394) 1 credit. Seminar  
Discussion of current topics in microbiology.

**MCB 5893. Special Topics in Cellular and Molecular Biology**  
(MCB 393) 2 credits. Seminar.  
Consideration of selected topics in cellular and molecular biology. Presentations are made by invited speakers. Each session is preceded by a discussion of readings related to the subject matter of the presentation.

**MCB 5895. Independent Study**  
(MCB 395) 1 credit. Independent study.  
A reading course for those wishing to pursue special work in biology. It may also be elected by undergraduate students preparing to be candidates for degrees with distinction.

**MCB 5896. Investigation of Special Topics**  
(MCB 396) 1-6 credits. Seminar.  
Advanced study in a field within Molecular and Cell Biology.

†**MCB 5899. Graduate Seminar**  
(MCB 374) 1 credit. Seminar.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1 - 9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**MCB 6897. Research**  
(MCB 397) 1-6 credits. Independent study.  
Conferences and laboratory work covering selected fields of Molecular and Cell Biology.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1 - 9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## MUSIC

*Interim Department Head:* Professor Karla Fox  
*Professors:* Arm, Bass, Frogley, Fuchs, Junda, Miller, Mills, Renshaw, Stanley, and Stephens  
*Associate Professors:* Kaminsky, Larrabee, Lee, McClain, Neelly, Rock, and Squibbs  
*Assistant Professors:* Hanzlik and Rice

**The Master's Program.** The Master of Music degree is offered with a concentration in performance (including an area of emphasis in conducting). Areas of concentration leading to the Master of Arts degree are historical musicology and theory.

Admission requirements in addition to those of the Graduate School are as follows: Applicants in historical musicology and theory are required to submit a writing sample, and Graduate Record Examination scores (General Test). All applicants must submit the University of Connecticut Graduate Theory Placement Exam. Applicants in performance, conducting, and music education are required to audition for admission. While a personal audition is preferred, a recorded audition may be submitted by applicants who find it prohibitive to travel to Storrs. In lieu of an audition, music education applicants may substitute a video recording of their recent teaching that demonstrates the applicant's personal musicianship.

The M.A. degree programs require a minimum of 24 credits plus nine credits of GRAD 5950-*Thesis Research* and a master's thesis. M.Mus. programs require a minimum of 30 credits.

**The D.M.A. Program.** Areas of Concentration in conducting (instrumental, choral) and performance are offered. The program includes applied study, a minor field in theory or history, and electives suited to the student's objectives and needs. For specific information with regard to admission to the D.M.A. program, students should write to the Director of Graduate Studies in Music, Department of Music, Unit 1012, Storrs, Connecticut 06269-1012.

**The Ph.D. Program.** Areas of concentration are music theory and history, and music education. Plans of study are constructed through consultation between the student and advisory committee, so that the program is uniquely suited to the student's objectives and needs. For specific information with regard to admission to the Ph.D. program, students should write to the Director of Graduate Studies in Music, Department of Music, Unit 1012, Storrs, Connecticut 06269-1012.

**Graduate Performer's Certificate.** For information concerning the Graduate Performer's Certificate, write to the Department of Music, Unit 1012, Storrs, Connecticut 06269-1012.

**Special Facilities.** The Music and Dramatic Arts Library maintains an extensive collection of books, scores, periodicals, audio and video recordings, and electronic resources. Listening facilities are available to students in the library. Unique research facilities include the department computer laboratory, the music recording studio, and the Professor Bruce Bellingham Collection of Period Instruments. The von der Mehden Recital Hall, seating 500, is used for student and faculty performances and houses digital recording facilities. A concert hall seating 3,000 provides a full season of concerts, including

performances by major symphony orchestras, chamber musicians and internationally known solo artists.

### COURSES OF STUDY

#### MUSI 5300. Investigation of Special Topics

(MUSI 300) 1-3 credits. Independent Study. Open to graduate students in Music, others with permission.

#### MUSI 5301. Research Procedures in Music Education

(MUSI 301) 3 credits. Lecture.  
 Research methods and sources.

#### MUSI 5302. Analytic Techniques

(MUSI 302) 3 credits. Lecture.  
 Structure and style in works from the 18th through the 20th Centuries.

#### MUSI 5305. Graduate Performing Ensemble

(MUSI 305) 1 credit. Laboratory. Open to graduate students in Music, others with permission.  
 Symphony Orchestra, Symphonic Wind Ensemble, Concert Band, Concert Choir, Chamber Singers, University Chorale, Voices of Freedom Gospel Choir, Jazz Ensemble, Jazz Lab Band.

#### MUSI 5306. Seminar in Opera Literature

(MUSI 306) 3 credits. Seminar. Open to graduate students in Music, others with permission.  
 Literature of the opera from the Early Baroque to the present. Course content can change from a general survey to a study of selected works by a composer, or works in a specific country or style period.

#### MUSI 5309. Seminar in Woodwind Literature

(MUSI 309) 3 credits. Seminar. Open to graduate students in Music, others with permission.  
 Historical development of the woodwind instruments; of representative solo and ensemble literature.

#### MUSI 5315. Seminar in Suzuki String Pedagogy

(MUSI 315) 2 credits. Seminar. Open to graduate students in Music, others with permission  
 Philosophy, repertoire and pedagogy of the Suzuki Method, including guided observation and supervised teaching.

#### MUSI 5319. Notation and Performance Practice

(MUSI 319) 3 credits. Lecture. Open to graduate students in Music, others with permission.  
 Notation, ornamentation, and instrumentation from the middle ages through the classic period.

#### MUSI 5322. Experimental Research in Music

(MUSI 322) 3 credits. Lecture. Open to graduate students in Music, others with permission.  
 Investigation of the problems and techniques employed in experimental studies of music.

#### MUSI 5323. Applied Music

(MUSI 323) 1-6 credits. Practicum. Participation in an appropriate major ensemble, advanced standing in performance, recommendation by an instructor in this department, and consent of the department head are required.

The Applied Music Fee fee is charged all students receiving private instrumental, vocal, or conducting instruction.

#### MUSI 5324. Graduate Chamber Ensemble

(MUSI 324) 1 credit. Laboratory. Open to graduate students in Music, others with permission.  
 Study and performance of chamber music for various ensembles.

#### MUSI 5325. Opera Theater

(MUSI 325) 1 credit. Lecture. Open to graduate students in Music, others with permission.  
 Study and performance of roles in major opera productions and/or work in production technique. May be repeated for credit.

#### MUSI 5330. Advanced Instrumental Conducting

(MUSI 330) 2 credits. Laboratory. Open to graduate students in Music, others with permission.  
 Score study, conducting, and rehearsal techniques of selected instrumental literature.

#### MUSI 5331. Conducting Seminar

(MUSI 331) 1 credit. Seminar.  
 Special topics in instrumental and choral conducting.

#### MUSI 5333. Foundations and Principles of Music Education

(MUSI 333) 3 credits. Lecture.  
 Historical, sociological and philosophical foundations of music education in American elementary and secondary schools.

#### MUSI 5340. Musical Skills for Teachers

(MUSI 340) 2 credits. Lecture. Open to graduate students in Music, others with permission.  
 Aural, sight-singing and keyboard skills for public school music teachers.

#### MUSI 5348. Schenkerian Theory and Analysis

(MUSI 348) 3 credits. Lecture. Open to graduate students in Music, others with permission.  
 Prerequisite: MUSI 5302.  
 Readings and analytical projects based on the theories of Heinrich Schenker and his followers.

#### MUSI 5353. Theory Seminar

(MUSI 353) 3 credits. Seminar. Open to graduate students in Music, others with permission.  
 Prerequisite: MUSI 302.  
 Analysis of specific styles and the work of particular theorists: variable topics.

#### MUSI 5354. Advanced Analysis

(MUSI 354) 3 credits. Lecture. Open to graduate students in Music, others with permission.  
 Prerequisite: MUSI 302.

Methods and models of music analysis applied to selected works from the Middle Ages to the 20th Century.

**MUSI 5359. History of Music Theory** (MUSI 359) 3 credits. Lecture. Prerequisite: MUSI 5302.

Speculative pedagogical and analytical thought on the music in theoretical treatises from antiquity to the twentieth century.

**MUSI 5364. Advanced Choral Techniques** (MUSI 364) 2 credit. Seminar. Open to graduate students in Music, others with permission.

Score study, conducting, and rehearsal techniques of selected choral literature.

**MUSI 5365. Choral Literature to 1600** (MUSI 365) 2 credits. Lecture. Open to graduate students in Music, others with permission.

Historical-analytical study of choral compositions: c. 1000 A.D. to 1600.

**MUSI 5366. Choral Literature from 1600 to 1800**

(MUSI 366) 2 credits. Lecture. Open to graduate students in Music, others with permission.

Historical-analytical study of choral compositions: 1600 to 1800.

**MUSI 5367. Choral Literature from 1800 to Present**

(MUSI 367) 2 credits. Lecture. Open to graduate students in Music, others with permission.

Historical-analytical study of 1800 to the present.

**MUSI 5372. Wind Band Literature**

(MUSI 372) 3 credits. Lecture. Open to graduate students in Music, others with permission.

Historical-analytical study of music for wind ensemble and symphony band.

**MUSI 5373. Orchestra Literature**

(MUSI 373) 3 credits. Lecture. Open to graduate students in Music, others with permission.

Historical-analytical study of orchestral literature.

**MUSI 5379. Atonal Theory and Analysis** (MUSI 379) 3 credits. Lecture.

Set theoretic concepts and operations in applied twentieth-century music.

**MUSI 5391. Procedures in Historical Research**

(MUSI 391) 3 credits. Lecture.

A project-oriented approach to bibliographic tools and research methods applicable to the historical study of music.

**MUSI 5397. Recital**

(MUSI 397) 1 credit. Laboratory.

†GRAD 5930. Full-Time Directed Studies (Master's Level) (GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research (GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research (GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's) (GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation (GRAD 399) Non-credit.

MUSI 6400. Tutorial in Music (MUSI 400) 1-3 credits. Independent Study.

Concentrated individualized study and research.

MUSI 6411. Seminar: The Life and Works of Individual Composers

(MUSI 411) 3 credits. Seminar. Open to graduate students in Music, others with permission.

MUSI 6412. Seminar: Style Periods in Music History

(MUSI 412) 3 credits. Seminar. Open to graduate students in Music, others with permission

MUSI 6413. Seminar: History of Musical Forms

(MUSI 413) 3 credits. Seminar. Open to graduate students in Music, others with permission.

Sonata, concerto, madrigal, motet or other musical forms.

MUSI 6491. Seminar: Advanced Research Procedures in Musicology

(MUSI 491) 3 credits. Seminar. Open to graduate students in Music, others with permission.

Critical reading and original research in recent historical musicology.

MUSI 6497. Topics in Music Education

(MUSI 497) 1-3 credits. Lecture. Open to graduate students in Music, others with permission. May be repeated for credit with a change of content.

Principles and advanced methods in the teaching of music.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level) (GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research (GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research (GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral) (GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation (GRAD 499) Non-credit.

## NATURAL RESOURCES

*Department Head:* Professor John C. Volin  
*Professors:* Civco, Clausen, Miller, Robbins, Warner, and Yang

*Associate Professors:* Barclay, Meyer, and Ortega  
*Assistant Professors:* Anyah, Rudnicki, and Vokoun

The Department of Natural Resources and the Environment offers study leading to the Master of Science and Doctor of Philosophy degrees in Natural Resources: Land, Water, and Air.

**The M.S. Program.** The purpose of the program is to provide advanced study in one of the following specialty areas: atmospheric resources, earth resource information systems, fisheries management, water resources, and wildlife management. Both thesis (Plan A) and non-thesis (Plan B) options are available.

**The Ph.D. Program.** The purpose of the Ph.D. program is to educate scientists with a broad experience in natural resources and to prepare them to do independent research in one of the following specialties: air resources, earth resources, fisheries resources, water resources, and wildlife resources. The program requires at least 20 credits beyond the master's degree, exclusive of the related or supporting area. All Ph. D. candidates are required to take NRME 397 and NRME 401. Ordinarily, students enrolled in this program will have completed the master's degree. Students are required to have at least six credits of advanced work in a related or supporting area or have a competent reading knowledge of at least one foreign language appropriate to the general area of study. Candidates should be versed in natural resources management, science and technology, and analytical methods.

**Special Facilities.** The Department has state-of-the-art laboratories for atmospheric resources, aquatic resources, fisheries resources, terrestrial resources and the Laboratory for Earth Resources Information (LERIS). The Department also houses the Wildlife Conservation Research Center and the Connecticut Water Resources Institute. The Department manages the 1,500 Acre UConn Forest for teaching, research, and demonstration.

### COURSES OF STUDY

NRE 5105. Micrometeorology I (NRME 420) 3 credits. Lecture.

Study of basic processes of the atmospheric boundary layer including turbulent flow and the exchanges of heat, water vapor, and pollutants.

NRE 5110. Micrometeorology II (NRME 421) 3 credits. Lecture.

Study of current literature on processes in the atmospheric boundary layer

NRE 5115. Field Methods in Hydrogeology (NRME 357) 3 credits. Lecture. Not open to students who have passed GEOL 5790.

Field methods associated with ground water and contamination assessments.



**NRE 5125. Environmental Measurements and Instrumentation**

(NRME 325) 3 credits. Lecture.

Principles that govern the selection and use of both field sensors and recording data systems for field research and environmental monitoring.

**NRE 5135. Water Transport in Soils**

(NRME 326) 3 credits. Lecture.

Application of the principles of transport of water in soil for various physical properties of soils and fluids, initial conditions and boundary conditions. The differential equations describing the movement of energy and mass for both saturated and unsaturated flow conditions will be applied to soil evaporation and plant transpiration, infiltration and percolation of wetting fronts, and movement of tracers and chemical constituents of water. Both uniform flow and preferential flow will be examined.

**NRE 5145. Environmental Biophysics**

(NRME 328) 3 credits. Lecture.

Gas laws and transport processes. Radiation environment. Momentum, heat, and mass transfer. Steady-state and transient energy balance. Microclimate of plants and animals. Physical and physiological interactions between plants/animals and their environment.

**NRE 5155. Principles of Nonpoint Source Pollution**

(NRME 350) 3 credits. Lecture.

An advanced investigation of sources, impacts, modeling and management of nonpoint sources of water pollution.

**NRE 5165. Advanced Ground Water Hydrology**

(NRME 355) 3 credits. Lecture. Not open to students who have passed GEOL 5710.

Covers ground water resource assessment, management and protection, understanding the flow of ground water in fractured rock, application of tracer studies in evaluating flow conditions.

**NRE 5252. Physiology and Ecology of Trees**

3 credits. Lecture. Instructor consent required. Also offered as PLSC 5252.

An examination of the interactions between trees and their environment at the molecular, individual and forest stand scales. Lectures and reviews of current research span at least two spatial scales of organization for each course topic. Course topics include tree carbon balance, water relations, mineral nutrition, morphology, genomics, phenology, climate change and modeling.

**NRE 5325. Wildlife Management**

(NRME 381) 1-6 credits. Lecture/Laboratory

The application of ecological principles as practiced by natural resource agencies throughout North America.

**NRE 5335. Advanced Stream Ecology**

(NRME 305) 2-3 credits. Lecture.

Advanced Stream Ecology is intended to introduce graduate students to the current state of knowledge and research in rivers and streams. Topics will include both basic structure and function of stream habitats and biotic assemblages as well as branch into the management and conservation applications of ecological information. Term project and paper is required. Instructor consent required - students with previous stream ecology coursework (such as NRME 205) may take the course for 2 credits and attend the single weekly meeting. Students lacking a basic introduction to stream ecology may take the course for 3 credits and will attend NRME 205 lectures in addition to the weekly meeting.

**NRE 5345. Advanced Fisheries Management**

(NRME 360) 3 credits. Lecture.

Principles, practices, and current trends in fisheries science and management.

**NRE 5461. Landscape Ecology**

3 credits. Lecture.

Interdisciplinary focus on the effect of landscape pattern on environmental processes and conditions and the influence of disturbance and underlying geomorphology on landscape pattern. Consideration of landscape ecology principles in planning and management of pattern and processes in which conservation and production land uses are intermingled.

**NRE 5555. GPS Surveying**

(NRME 352) 3 credits. Lecture.

Theory and practice of global positioning system (GPS) surveying. Includes network design, control, geodetic coordinate systems, field collection of measurements, data processing, and interpretation of results.

**NRE 5565. Digital Terrain Modeling**

(NRME 353) 3 credits. Lecture. Suggested preparation: NRME 3252 (GIS), NRME 4545 (Introduction to Geodesy) or equivalent.

Theory and practice of digital terrain modeling. Topics include topographic surveying, topographic surface modeling, derivative estimation, and selected applications of digital terrain models.

**NRE 5575. Natural Resource Applications of Geographic Information Systems**

(NRME 377) 3 credits. Lecture.

The principles and applications of computer-assisted spatial data analysis in natural resources management will be covered. Both hypothetical and actual case studies of the use of geographic information systems (GIS) to solve natural resource problems will be discussed. Raster- and vector-oriented, microcomputer-based GIS software will serve as the hands-on tools for students.

**NRE 5585. Geospatial Data Processing Techniques**

(NRME 387) 3 credits. Lecture.

Research approaches and techniques in geospatial analysis, enabling students to pursue integrated research in earth resources data geoprocessing

applications. A variety of computer-based tools, including remote sensing, geographic information systems (GIS), and global positioning satellite (GPS), will be utilized in the acquisition, analysis, and presentation of digital earth resource data and information.

**NRE 5605. Environmental Data Analysis**

(NRME 432) 3 credits. Lecture.

Topics on natural resources and environmental data analysis, including: random variables and probability distributions, parameter estimation and Monte Carlo simulation, hypothesis testing, simple regression and curve fitting, wavelet analysis, factor analysis; formulation and classification of optimization problems with and without constraints, linear programming; models for stationary and non-stationary time series; solution of ordinary differential equations with Laplace transforms and Euler integration; solution of partial differential equations with finite differences; basics of modeling.

**NRE 5694. Natural Resources Seminar**

(NRME 491) 1 credit. Seminar.

Active participation in weekly natural resources seminars given by invited speakers.

**NRE 5695. Special Topics in Natural Resources**

(NRME 492) 1-3 credits. Lecture.

Advanced topics in the field of natural resources. Topics and credits to be published prior to the registration period preceding the semester offerings.

**NRE 5698. Natural Resources Colloquium**

(NRME 490) 1-6 credits. Seminar.

Study and discussion of readings (journal articles, books, current research) on a selected topic in natural resources.

**NRE 5699. Independent Study**

(NRME 402) 1-3 credits. Independent Study

**†NRE 5800. Graduate Seminar**

(NRME 397) 1 credit. Seminar.

The mechanism of presenting and moderating a professional presentation. Topics include: presentation, organization, speaking skills, use of media technology, formulation of questions, and moderator activities.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

## NURSING

### NRE 6000. Research Methods in Natural Resources

(NRME 401) 3 credits. Lecture.

General research techniques, writing scientific articles and grant proposals, problem solving approaches, experimental design and modeling concepts, and research ethics.

### NRE 6135. Small Watershed Modeling

(NRME 431) 3 credits. Lecture.

Mathematical modeling of hydrologic processes in small watersheds and aquatic systems. Solutions of mass balance and flow relationships. Investigation of dynamic relationships among variables. Examples include: infiltration, overland flow, channel routing, chemical transport and transformations, surface-subsurface interactions and biotic growth and degradation.

### NRE 6175. Ground Water Modeling Applications

(NRME 356) 3 credits. Lecture. Not open to students who have passed GEOL 5720.

Application of Modflow to ground water flow and contaminant problems. Well head protection modeling.

### NRE 6325. Wildlife Ecology

(NRME 378) 1-6 credits. Lecture.

A discussion of the principles upon which wildlife conservation is based.

### NRE 6450. Teaching Practicum

3 credits. Practicum. May be repeated once for a total of 6 credits.

Doctoral students in the Natural Resources: Land, Water, and Air program take primary teaching responsibility for a course under the supervision of a faculty liaison.

### NRE 6695. Special Topics in Natural Resources

(NRME 498) 1-3 credits. Lecture.

Advanced topics in the field of natural resources.

### †GRAD 6930. Full-Time Directed Studies (Doctoral Level)

(GRAD 497) 3 credits.

### †GRAD 6950. Doctoral Dissertation Research

(GRAD 495) 1-9 credits.

### †GRAD 6960. Full-Time Doctoral Research

(GRAD 496) 3 credits.

### GRAD 6998. Special Readings (Doctoral)

(GRAD 498) Non-credit.

### GRAD 6999. Dissertation Preparation

(GRAD 499) Non-credit.

*Dean:* Professor Anne R. Bavier

*Associate Dean for Academic Affairs and Advanced*

*Practice:* Professor Regina Cusson

*Associate Dean for Academic Affairs and Special*

*Initiatives:* Associate Professor E. Carol Polifroni

*Professors:* Bavier, Beck, Cusson, and Neafsey

*Associate Professors:* Anderson, Collins, Crogan,

Delaney, Engler, Hegedus, Kenefick, Long,

McDonald, Polifroni, Sanford, Shelton, Van Hoof, and Walsh

*Assistant Professors:* Allchin, Bassi, Bellini, Cong, Daisy,

Gacad, Judge, Ohalate, Pearson, and Telford

The School of Nursing offers study leading to the Master of Science, Doctor of Nursing Practice, and Doctor of Philosophy degrees in nursing.

**The M.S. Program.** The plan of study includes nursing and supportive courses according to the plan of study for each specialty. The program is accredited by Commission on Collegiate Nursing Education.

The purpose of the master's program is to prepare advanced practice nurses with specialized knowledge, skills, and values. Graduates assume leadership roles in the health care system and advance practice and the discipline of nursing by applying existing knowledge and using a spirit of inquiry to examine and test knowledge. Areas of study include the following: clinical nurse leader, community health, acute care, neonatal, patient care services and systems administration, and primary care. Opportunity exists for dual degrees resulting in an M.P.H. and M.S. in Nursing for those students in the community health track. A dual degree option is also available for students resulting in an M.B.A. and M.S. in Nursing.

Each student completes a 15-credit core curriculum in theory, research, statistics, needs assessment and legal, regulatory and policy aspects of advanced nursing practice. All students are required to enroll in NURS 5010 and EPSY 5605 or NURS 5020 as their first two courses. Additional courses supportive to the core or selected area of emphasis are mutually agreed upon by the student and their faculty advisor. Students need 2,080 hours of clinical experience as an RN in direct patient care prior to beginning their first practicum course. Neonatal students need 4,160 hours in a neonatal ICU.

An accelerated master's program is available for nurses with diplomas or associate degrees or baccalaureate degrees in another field.

No student may take more than six (6) credits as a non-degree student.

**Admission Requirements for the M.S.**

**Program.** In addition to those of the Graduate School, requirements for admission are: a baccalaureate in nursing or its equivalent and current nurse licensure in Connecticut, a three-credit undergraduate course in both statistics and research completed with a grade of C or better, and comprehensive health assessment knowledge for professional nursing PRAXIS including a three-credit course or its equivalent for students enrolling in individual specialty tracks. Two or more years of experience as a professional nurse are

recommended preparation for specialized graduate study. Contemporary nursing and related science knowledge is expected in order to be successful in the advanced courses within the graduate program. Evidence of tetanus immunization within the past ten years, one poliomyelitis booster following initial immunization, PPD test (chest x-ray required biennially for positive reactors), rubella, rubeola, varicella, hepatitis B titers (with vaccine if titer is negative) are required for clinical practicum coursework. CPR certification must remain current as well. A criminal background check may be required prior to placement in a clinical assignment. In certain circumstances evidence of a criminal record may prevent a student from fulfilling clinical requirements and/or requirements for professional licensure.

**The D.N.P. Program.** The Doctor of Nursing Practice program is a post-master's program. The D.N.P. program provides a terminal degree in nursing practice for those currently engaged in advanced practice, offering an alternative to doctoral programs focused on the science of research. D.N.P.-prepared advanced practice nurses focus on the science of clinical scholarship. D.N.P.-prepared advanced practice nurses will be well-equipped to fully implement the science developed by nurse researchers prepared in Ph.D., D.N.Sc. and other research-focused nursing doctorates. The D.N.P. program consists of a total of 36 credits including: 15 credits of required core course work related to the science of nursing, evidenced-based practice, health care policy, information systems, and inter-professional collaboration; 12 credits of specialty coursework including 6 credits of clinical practica coursework and 6 credits of related specialization coursework; and 9 credits of end of program project coursework. The end of program project will involve an implementation of a change in practice initiative which will result in a manuscript and a final oral examination.

**Admission Requirements for the D.N.P.**

**Program.** In addition to those of the Graduate School, requirements for admission are: An earned masters degree in nursing from an accredited college or university, national advanced practice certification in the applicant's area of specialty, submission of graduate record examination scores (GRE's), a personal statement from the applicant addressing his or her reasons for applying and his or her plans for the future, three letters of reference from faculty or others who can address the candidate's potential for success in the graduate program.

**Additional D.N.P. Requirements.** Evidence of tetanus immunization within the past ten years, one poliomyelitis booster following initial immunization, PPD test (chest x-ray required biennially for positive reactors), rubella, rubeola, varicella, hepatitis B titers (with vaccine if titer is negative) are required for clinical practicum coursework. CPR certification must remain current as well. A criminal background check may be required prior to placement in a clinical assignment.

**The Ph.D. Program.** The purpose of the Ph.D. Program is to prepare nurse leaders who will advance the scientific body of knowledge that is unique to professional nursing practice. Educational experiences are offered in nursing theory development, philosophy of nursing science, qualitative and quantitative research methods, and in advanced statistics. Study in

specialty areas further supports the individual's area of clinical interest.

**Admission Requirements for the Ph.D. Program.** In addition to those of the Graduate School, requirements for admission are: graduation from an accredited master's program; eligibility for licensure as a registered nurse in Connecticut; a cumulative master's grade point average of 3.25 or higher; submission of Graduate Record Examination scores; completion of a graduate level inferential statistics course; three reference letters; a personal statement; a personal interview; and submission of published works or scholarly papers. Additional information may be obtained by contacting the School of Nursing Office of Admissions and Enrollment Services, 231 Glenbrook Road, Unit 2026, Storrs, Connecticut 06269-2026.

Program information and information concerning the application process is located on the web at <[www.nursing.uconn.edu](http://www.nursing.uconn.edu)>.

## COURSES OF STUDY

### **NURS 5000. Investigation of Special Topics**

(NURS 300) 1-6 credits. Lecture.

### **NURS 5010. Nursing Science**

(NURS 350) 3 credits. Lecture. Open to non-degree students.

Analysis of the current state of nursing science and the application of knowledge from this science and other disciplines to advanced nursing practice from historical, contemporary and futuristic perspectives.

### **NURS 5011. Nursing Theories and Patterns of Knowing**

(NURS 356) 3 credits. Lecture. MBEIN students only. Instructor consent required. Offered in the spring semester.

This survey course introduces the student to the art and science of nursing practice. It explores the historical, empirical, ethical, esthetical, and personal knowing aspects of nursing praxis. The legal, educational, regulatory, and financial world of nursing is examined. The major theorists influencing the development and advancement of the profession are explored.

### **NURS 5020. Statistical Methods in Nursing**

(NURS 358) 3 credits. Lecture. Open to MBEIN students only.

Quantitative procedures including descriptive and inferential statistics, nonparametric approaches to data, and parametric analyses through factorial analysis of variance.

### **NURS 5030. Nursing Research in Advanced Practice**

(NURS 351) 3 credits. Lecture. Prerequisite: NURS 5020 or EPSY 5605 and NURS 5010 or NURS 5011.

Analysis of qualitative and quantitative methods employed to answer questions in nursing practice. Emphasis on problem identification; design principles;

and accessing, analyzing, disseminating and utilizing research.

### **NURS 5040. Needs Assessment and Planning**

(NURS 354) 3 credits. Lecture. Prerequisite: NURS 5020 or EPSY 5605 and NURS 5030.

An interdisciplinary survey course that prepares students to conduct a needs assessment on a selected population. Includes elements of epidemiology, identification of populations at risk and the development of plans to market, implement and evaluate programs to enhance the health and well-being of selected populations.

### **NURS 5050. Policy Aspects of Advanced Nursing Practice**

(NURS 352) 3 credits. Lecture.

Analysis and evaluation of legal, regulatory, policy and economic aspects of advanced nursing practice from historical, contemporary and futuristic perspective. Understand the interrelationships among change, power and politics.

### **NURS 5060. Advanced Pathophysiology**

(NURS 329) 4 credits. Lecture. Open to non-degree students with consent of instructor.

Advanced level analysis of the etiology and pathogenesis of diseases that alter the health status of adults. This analysis will be related to adults' clinical and pathophysiologic manifestations of diseases. The course is designed for nurses studying for advanced nursing practice to care for adults with chronic, acute, and life-threatening diseases.

### **NURS 5062. Advanced Health Assessment**

(NURS 384) 3 credits. Lecture/Laboratory/Practicum. Prerequisite: Either NURS 5350 or NURS 5060, which may be taken concurrently.

The clinical management of individuals experiencing common acute and chronic health problems, focusing on the cardiovascular and respiratory systems and mental health. Principles and techniques of advanced physical assessment are emphasized.

### **NURS 5070. Pharmacotherapeutics and Implications for Nursing Action.**

(NURS 311) 3 credits. Lecture. Prerequisite: Either NURS 5060 or NURS 5350. Open to non-degree students.

Emphasis is placed on pharmacodynamics, on nursing measures that support desired drug responses or reduce side effects which must be tolerated, and on client teaching indicated by pharmacotherapy.

### **NURS 5080. Health Care Financing**

(NURS 370) 1-3 credits. Lecture.

An analysis of economic theory as it relates to health care. Incorporation of expert support systems in the design of nursing department and unit financial plans. Compare and contrast various budgeting systems. Open to non-degree students.

### **NURS 5090. Intellectual Leadership in Nursing Education and Practice**

(NURS 327) 3 Credits. Lecture.

Study of the history, philosophy, and theory of nursing education from the Nightingale Training School to the initiation of the associate and baccalaureate degree nursing programs. Analysis of curriculum development with emphasis on professional practice. Consideration of the articulation of associate and baccalaureate education. Non-traditional, futuristic curricular models are examined. Evaluation of professional ethics, intellectual leadership behaviors and clinical practice skills.

### **NURS 5098. Independent Study**

(NURS 397) 1-6 credits. Independent Study.

### **NURS 5099. Teaching, Learning, and Evaluation in Baccalaureate Nursing Programs**

(NURS 328) 4-7 credits. Lecture/Laboratory. Prerequisite: NURS 5090.

Study of advanced methods of curricular design and testing related to classroom, simulation lab, and clinical learning. Emphasis on selection and organization of content, teaching methodologies, learning activities, the practice environment, simulation laboratory and computer generated learning. Development of instruments and tests to measure learning outcomes and evidence-based practice outcomes. Guided practice teaching.

### **NURS 5150. Advanced Physical Diagnosis**

(NURS 323) 3 credits. Lecture/Laboratory. Prerequisite: NURS 5062.

The diagnosis of patients with acute health problems with a focus on data collection through history, physical examination, laboratory, radiology, and electronic and hemodynamic monitoring.

### **NURS 5160. Advanced Practice: Acute Care Nursing I**

(NURS 360) 2 credits. Lecture. Prerequisites: NURS 5060, NURS 5062, NURS 5070, and NURS 5150.

The focus of this course will be the introduction of critical thinking, analysis and application of theories and concepts to care for acutely ill clients. A strong emphasis will be placed on pathophysiology and assessment. Interpretation and management of treatment plans will be explored.

### **NURS 5169. Acute Care Nurse Practitioner Practicum I**

(NURS 365) 4 credits. Lecture/Practicum. Prerequisite: NURS 5010 and NURS 5160; NURS 5010 may be taken concurrently.

The focus of this practicum will be critical thinking, assessment and diagnosis of acutely/critically ill patients. Database creation, formulating a plan of care, and evaluation of outcomes will be explored. Diagnostics and therapeutics will be emphasized.

### **NURS 5170. Advanced Practice: Acute Care Nursing II**

(NURS 361) 2 credits. Lecture. Prerequisite: NURS 5160.

This course continues to refine the analysis and application of theories for the nurse practitioner and

clinical nurse specialist in acute care. The focus is on role development, trends, issues and research into common problems of the acutely ill client.

**NURS 5179. Acute Care Nurse Practitioner Practicum II**

(NURS 366) 4 credits. Practicum. Prerequisite: NURS 5010 and NURS 5160; NURS 5010 may be taken concurrently.

The focus of this practicum will be the refinement of pertinent management abilities and skill for the nurse practitioner student. The student will expand their management to multiple patients. Collaboration within a multidisciplinary team, providing holistic care and evaluation of current research will be explored.

**NURS 5200. Nursing Administration I**

(NURS 371) 1-3 credits. Lecture. Offered in odd-numbered fall semesters.

Introduction to the process of nursing administration. Emphasis is placed on theories of leadership, motivation, evaluation, organizational design and problem solving.

**NURS 5215. Nursing Administration II**

(NURS 372) 1-4 credits. Lecture/Practicum. Prerequisite: NURS 5200. Co-requisite: NURS 5030. Offered in even-numbered spring semesters. Practicum applications are due October 1st for spring enrollment.

Application of management theories to nursing administration focusing on staff development, labor relations, staffing and scheduling, patient classification systems, quality management, performance and program evaluation, and human resource management.

**NURS 5220. Health Care Outcome Management**

(NURS 340) 2 credits. Lecture. Open to non-degree students. Offered in even-numbered fall semesters.

An examination and utilization of variance analysis and outcome measurement skills to achieve cost effective quality health care delivery through outcome management.

**NURS 5225. Nursing Administration III**

(NURS 379) 1-5 credits. Lecture. Prerequisites: NURS 5010, NURS 5030, and NURS 5215. Offered in even-numbered fall semesters. Practicum applications are due March 1st for fall enrollment.

Synthesis of nursing and multidisciplinary theories in the system of nursing administration. Strategic planning, ethics, marketing, entre/intrapreneurship, and multisystem corporations are analyzed and the role of the administrator examined.

**NURS 5250. Community Health Nursing Theory: Enhancing Wellness**

(NURS 334) 3 credits. Lecture/Practicum. Prerequisites or Co-requisites: NURS 5010 and PUBH 5401, both may be taken concurrently. Offered in odd-numbered fall semesters.

Theoretical formulations from nursing, public health, and related sciences are used to enhance the levels of wellness of selected population groups in the

community. A needs assessment is conducted to develop a community diagnosis as the basis for developing a plan for health promotion.

**NURS 5259. Community Health Nursing Practicum I: Enhancing Wellness**

4 credits. Practicum. Prerequisites or Corequisites: NURS 334, NURS 350, and PUBH 401.

Practicum experience in community care and consultation focusing on health promotion and disease prevention under the supervision of an advanced practice nurse. A weekly seminar addressing the teaching, coaching, and interdisciplinary collaboration elements of role development is incorporated.

**NURS 5265. Community Health Nursing Theory and Practice: Risk Reduction**

(NURS 335) 4 credits. Lecture/Practicum. Prerequisite: NURS 5250. Prerequisite or co-requisite: NURS 5080.

Analysis of risk factors for selected populations/communities through an integration of nursing and public health theories. Opportunity for development, implementation, and evaluation of risk reduction interventions is provided.

**NURS 5269. Community Health Nursing Practicum II: Risk Reduction**

4 credits. Practicum. Prerequisites: NURS 5250 and NURS 5259. Co-requisite: NURS 5265.

Apply integrated knowledge of nursing and public health principles in the appraisal of health risks; development and implementation of risk reduction strategies; and evaluation of plans to promote self-care activities for a selected population.

**NURS 5275. Community Health Nursing Theory and Practice: Health Maintenance**

(NURS 336) 4 credits. Lecture/Practicum. Prerequisite: NURS 5265.

Analysis of health maintenance issues and interventions for groups sharing a common health problem. Opportunity to apply integrated knowledge of nursing and public health principles in the development and evaluation of plans to maintain optimum levels of health is provided.

**NURS 5279. Community Health Nursing Practicum III: Health Maintenance**

4 credits. Practicum. Prerequisites: NURS 5265 and NURS 5269. Co-requisite: NURS 5275.

Provide interventions for groups sharing a common health problem. Identify, discuss, and apply various theories and methodologies related to the processes of behavior change.

**NURS 5350. Advanced Neonatal Embryology/Physiology**

(NURS 322) 3 credits. Lecture.

This course examines fetal, transitional, and neonatal physiology. Embryology is also discussed, as the basis for neonatal development.

**NURS 5362. Neonatal Advanced Health Assessment**

(NURS 310) 3 credits. Lecture.

This course is designed to enable students to put into practice the principles and skills needed for advanced health assessment of the neonate.

**NURS 5365. Advanced Neonatal Nursing Theory I**

(NURS 313) 3 units. Lecture. Prerequisites or co-requisites: NURS 5010 and NURS 5350, both may be taken concurrently.

The purpose of this first clinical course is to introduce the role of the neonatal nurse practitioner clinician in the management of normal and high-risk families and infants. The focus of the course is to develop skills in the physical and psychosocial assessment of high-risk childbearing families during all phases of the childbearing process: antenatal, intrapartum, postpartum, and the neonatal period. Special emphasis will be placed on events during the antenatal, intrapartum, and postpartum periods that impact the neonate.

**NURS 5369. Advanced Neonatal Practicum I**

(NURS 324) 2 credits. Practicum.

The focus of this practicum is the assessment and management of moderately ill infants and their families.

**NURS 5370. Neonatal Pharmacotherapeutics and Implications for Nursing Action**

(NURS 312) 3 credits. Lecture. Prerequisite: NURS 5060 or NURS 5350.

Emphasis is placed on neonatal pharmacodynamics, on nursing measures that support desired drug responses or reduce side effects which must be tolerated.

**NURS 5375. Advanced Neonatal Nursing Theory II**

(NURS 314) 4 credits. Lecture. Prerequisite: NURS 5365.

Focuses on the acquisition and application of in-depth physiological and psychological knowledge to the nursing care of high-risk neonates and their families. Emphasis is placed on the role of the advanced practice nursing management of high-risk neonatal populations.

**NURS 5379. Advanced Neonatal Practicum II**

(NURS 325) 1-3 credits. Practicum. Prerequisite: NURS 5369.

The focus of this practicum is the assessment and management of high-risk neonates and families.

**NURS 5385. Advanced Neonatal Nursing III**

(NURS 315) 2 credits. Lecture. Prerequisite: NURS 5375.

This course focuses on the components essential for preparation of students for advanced practice in neonatal nursing.

**NURS 5389. Advanced Neonatal Practicum III**

(NURS 326) 2 credits. Practicum. Prerequisite: NURS 5379.

The focus of this course is the assessment and management of critically ill high-risk neonates and their families.

**NURS 5400. Primary Care I**

(NURS 383) 3 credits. Lecture. Prerequisite: NURS 5062.

Focus is on the health promotion/disease prevention and the assessment and management of selected acute and chronic health problems, including respiratory, cardiovascular, and endocrine systems. Assessment skills applied to diagnosis and treatment of human responses to acute and chronic health problems are emphasized.

**NURS 5409. Primary Care Practicum I**

(NURS 389) 4 credits. Lecture/Practicum. Prerequisites: NURS 5010, NURS 5060, and NURS 5062. Co-requisite: NURS 5400.

Focus is health promotion/disease prevention and the clinical diagnosis and management of individuals experiencing common acute and chronic health problems of respiratory, cardiovascular, and endocrine systems. The role of the nurse in primary care is examined. Includes a seminar and 12 clinical hours per week.

**NURS 5410. Primary Care II**

(NURS 385) 3 credits. Lecture. Prerequisite: Grades of B or higher in NURS 5400, NURS 5062 and NURS 5409.

Assessment and management of selected acute and chronic health problems, focusing on endocrine, gastrointestinal, integumentary and genitourinary systems, women's health and behavioral health.

**NURS 5419. Primary Care Practicum II**

(NURS 386) 4 credits. Lecture/Practicum. Prerequisites: NURS 5410, which may be taken concurrently.

Assessment and management of selected acute and chronic health problems, focusing on gastrointestinal, integumentary, genitourinary systems, women's health, and behavioral health. Includes a seminar and 12 clinical hours per week.

**NURS 5420. Primary Care III**

(NURS 387) 3 credits. Lecture. Prerequisite: Grades of B or higher in NURS 5410 and NURS 5419.

Special focus will be on assessment and management of adolescents and adults with acute and chronic health problems, including musculoskeletal, neurological, immunological, sensory, and oncological problems. Violence, ethics, and genetic counseling will be addressed. A grade of B or higher is required to receive endorsement for certification examination.

**NURS 5429. Primary Care Practicum III**

(NURS 388) 5 credits. Lecture/Practicum. Prerequisite: NURS 5420, which may be taken concurrently.

Builds on all previous primary care didactic and practicum courses, focusing on clinical management of individuals experiencing acute and chronic health problems with special emphasis on musculoskeletal, neurological, immunological and sensory systems, oncology, violence, and ethics. Additional practice in an area of special interest is encouraged. Includes a seminar and 15 clinical hours per week. A grade of B or higher is required to receive endorsement for certification examination.

**NURS 5450. Psychopharmacology**

(NURS 341) 3 credits. Lecture. Prerequisite: NURS 5060, NURS 5062, and NURS 5070 or equivalent courses. Required preparation includes an M.S. degree in nursing including research, population assessment, policy, and science/theory courses.

The neurobiology of psychiatric disorders and the complex biochemical interactions of treatment with psychotropic medication are addressed. Specific medications, side effects, polypharmacy, and nursing management of prescriptive practices are explored.

**NURS 5460. Advanced Psychiatric Nursing I**

(NURS 342) 3 credits. Lecture. Prerequisite: NURS 5450.

The advanced practice psychiatric nurse practitioner role in multiple settings and specific psychiatric disorders from a historical and contemporary perspective will be addressed, while detailing treatment models. The required course paper will focus on a developmental stage and the associated psychiatric issues that can effect that population.

**NURS 5469. Advanced Psychiatric Practicum I**

(NURS 345) 5 credits. Practicum.

The provision of psychiatric mental health care and consultation under the supervision of an APRN. A weekly seminar addressing the teaching and coaching and interdisciplinary collaboration elements of role development is incorporated. Enrollees select a modality of care and the experience is arranged to maximize learning and implementing this modality.

**NURS 5470. Psychiatric Treatment Modalities**

(NURS 344) 4 credits. Lecture.

This course addresses the treatment modalities available to advanced practice psychiatric nurses—individual, family, and group treatment. Case management is addressed. Students would focus the course paper on one treatment modality and do an in-depth analysis of the principles and practice associated with modality.

**NURS 5480. Advanced Psychiatric Nursing II**

(NURS 343) 3 credits. Lecture. Prerequisite: NURS 5460.

Specific advanced psychiatric disorders, etiology and treatment will be explored. The course project involves planning and implementing a primary mental health prevention project with a defined population.

**NURS 5489. Advanced Psychiatric Practicum II**

(NURS 346) 5 credits. Practicum.

The provision of advanced psychiatric mental health nursing care and consultation under the supervision of an APRN utilizing a new modality of care and enhancing the application of a previous modality of care. A weekly seminar addressing the case management and leadership elements of role development is incorporated.

**NURS 5850. Scientific Underpinnings for Nursing Practice**

3 credits. Lecture.

This course focuses on the historical development, current utilization, future development and evaluation of middle range theories and other relevant theories to guide nursing practice.

**NURS 5855. Evidenced-Based Practice in Nursing and Health Care**

3 credits. Lecture.

This course focuses on the development of skills in the translation, application, and evaluation of research, with an emphasis on evidenced-based practice. Skills in the integration of knowledge from diverse sources and disciplines and its application to solve clinical problems and improve health outcomes will be emphasized.

**NURS 5860. Organizational, Systems, and Health Care Policy Leadership**

3 credits. Lecture.

This course addresses assessment and diagnosis of organizations, facilitation of system wide change, development of political skill for change, engagement in the process of health care policy development, financial and business acumen for outcome analysis, and application of leadership theory within organizations.

**NURS 5865. Impacting Health Care through Information Systems and Patient Care Technology**

3 credits. Lecture.

This course focuses on the evaluation and use of information systems/technology and patient care technology supportive of clinical and administrative decision-making relevant to patient care, care systems, and quality improvement.

**NURS 5870. Interprofessional Collaboration for Clinical Prevention and Population Health**

3 credits. Lecture.

This course focuses on the role of collaborative health care teams in health promotion and risk reduction/illness prevention for population health. Educational strategies necessary for transformation of clinical education to decrease preventable deaths will be incorporated.

**NURS 5875. Advanced Pathophysiology and Diagnosis**

3 credits. Lecture.

This course provides an advanced level synthesis of the pathophysiology of diseases, the predicted trajectory of illnesses, and the therapeutic options for cure of diseases and control of illness. It is designed for nurses studying for advanced nursing practice to care for adults with chronic, acute, and life-threatening diseases.

**NURS 5879. Doctor of Nursing Practice Practicum I**

3 credits. Practicum.

This course requires the student to complete a nursing practicum in the speciality area of their choice. Students will select an area of specialization, develop goals, and implement a practicum

**NURS 5880. Advanced Pharmacodynamics**  
3 credits. Lecture.

This course provides an advanced level synthesis of the pharmacotherapy of diseases and control of illnesses. It is designed for nurses studying for advanced nursing practice to care for adults with chronic, acute, and life-threatening disease.

**NURS 5889. Doctor of Nursing Practice Practicum II**

3 credits. Practicum. Prerequisite: NURS 5879.

This course requires the student to complete a nursing practicum in the speciality area of their choice, as an extension of the Doctor of Nursing Practice Practicum I. Students will continue implementation of advanced practice in their selected area of specialization, develop goals, and implement a competency-based practicum.

**†NURS 5895. Doctor of Nursing Practice End of Program Project**

1-9 credits. Practicum.

Students engage in a project that involves the implementation of a change in practice initiative. The student will use evidence-based practice principles to develop and implement the change in practice with the goal of improving either patient care or practice outcomes.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.**†GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.**NURS 6000. Special Topics in Doctoral Methods**

1-3 credits. Seminar. Open only to D.N.P. and Ph.D. students in Nursing.

Variable credit course in doctoral research methods.

**NURS 6100. Philosophy of Science in Nursing**

(NURS 410) 3 credits. Lecture.

A critical examination of the meanings, methods, and logical structure of science. Contemporary and historical views pertaining to the nature of truth, explanation, law, theory and methodology will be analyzed and compared. Examples drawn from nursing epistemology as well as that of other disciplines will be utilized to depict the presuppositions of modern science.

**NURS 6101. Introduction to Grantsmanship**  
1 credit. Lecture.

This course presents an introduction to the process of securing grants. Practical application is stressed to enhance the development of skills needed to secure funding for scholarly research endeavors.

**NURS 6110. Analysis of Contemporary Nursing Knowledge**

(NURS 414) 3 credits. Lecture. Prerequisite: NURS 6100.

Methods of analysis and evaluation of the concepts and theories in nursing both grand and mid range.

**NURS 6115. Experimental Design and Analysis in Nursing Research**

3 credits. Lecture. Prerequisite or Co-requisite: NURS 6100.

This course will focus on the study and application of quantitative research methods from design through statistical analysis for experimental designs in nursing and healthcare. Options for the structures of experimental designs and techniques of data analysis appropriate to experimental studies of varying complexity, including emerging research methodologies, will be addressed. Students will conduct a pilot study using the most appropriate experimental design.

**NURS 6120. Constructing Nursing Theory**  
(NURS 413) 3 credits. Lecture. Prerequisite: NURS 6110.

Integrates the student's experiential worldview into the construction of knowledge relevant to the evolving epistemology in nursing. Provides a forum for dialogue focused on the process of caring in the human health experience as informed by research and theoretical developments.

**NURS 6130. Qualitative Methodology in Nursing Inquiry**

(NURS 430) 3 credits. Lecture.

The study of the relationship among philosophy, theory, and qualitative methodology within the human science of nursing. Techniques related to sampling, research design, data collection, and data analysis will be explored through a combination of lecture, class discussion and course assignments.

**NURS 6135. Exploring the Nature of Nursing Knowledge**

3 credits. Lecture. Prerequisite: NURS 6100.

The course is a critical examination of the development of nursing's disciplinary knowledge as it relates to the nature of nursing and its epistemic, ontologic, and ethical claims. This examination will include historical analysis and evaluation of nursing's meta-paradigm (meta language), conceptual models, and theories both grand and middle range.

**NURS 6140. Quantitative Methodology Applied to Nursing**

(NURS 431) 3 credits. Lecture. Prerequisite EPSY 5613.

Study and application of theories of sampling and probability testing to nursing research. Different approaches to research design, variable specification, data collection and analysis are explored within quantitative methods of scientific inquiry.

**NURS 6145. Quasi and Non Experimental Design and Analysis in Nursing Research**  
3 credits. Lecture. Prerequisite: NURS 6115.

This course focuses on application of quantitative research methods from design through statistical analysis for quasi and non experimental designs in nursing and healthcare. Options for the structures of quasi and non experimental designs and techniques of data analysis appropriate to studies of varying complexity, including emerging research method innovations, will be addressed. Limitations to the justification/feasibility of applying an experimental approach to human subjects will be included. Students will conduct a pilot study utilizing the most appropriate research design.

**NURS 6150. Instrument Development in Nursing**

(NURS 432) 3 credits. Lecture. Prerequisite: EPSY 5613.

A study of the theories and methods of instrument development as applied to nursing. The basic psychometric properties to be assessed and built into a useful measure for clinical or research applications are explored.

**NURS 6160. Advanced Qualitative Methods**

(NURS 434) 3 credits. Lecture. Prerequisite: NURS 6130.

This seminar is designed for students in nursing and other disciplines to achieve an advanced level of expertise in selected qualitative approaches. Expected course outcome is a completed qualitative project.

**NURS 6165. Mixed Methods in Nursing Research**

3 credits. Lecture. Prerequisites: NURS 6145 and NURS 6160.

This course presents mixed methods as a third paradigm that combines and complements the qualitative and quantitative approaches traditionally used in nursing research. Theoretical, paradigmatic, and programmatic issues, as well as practical application will be discussed.

**NURS 6170. Grantsmanship: The Pursuit of Scholarly Support**

(NURS 435) 3 credits. Lecture. Prerequisites: NURS 6130 and NURS 6140.

A pragmatic exploration of the societal and professional realities of grantsmanship. Experiences are practical so as to enhance the development of skills needed to secure funding for scholarly research endeavors.

**NURS 6175. Advancing Nursing Knowledge Development**

3 credits. Lecture. Prerequisite: NURS 6135.

The course is a critical application of nursing knowledge to nursing research. Each student will identify and justify the epistemology, theoretical perspective, methodology, and methods that will provide a scaffold for his/her dissertation topic.

**†NURS 6180. Research Internship in Nursing**

(NURS 396) 1-3 credits. Seminar.

The research internship will be completed under the mentorship of an experienced researcher. The course will meet in seminar format to provide direction and support during the internship.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## NUTRITIONAL SCIENCES

*Department Head:* Professor Sung I. Koo*Professors:* Clark, Duffy, Fernandez, Ferris, Freaque, Perez-Escamilla, and Rodriguez*Associate Professors:* Kerstetter, McGrane, and Volek*Assistant Professors:* Bruno and Chun

The degrees of Master of Science (Plan A thesis and Plan B non-thesis options) and Doctor of Philosophy in the field of Nutritional Science are offered.

**Admission to Degree Programs.** In addition to the standard requirements of the Graduate School, applicants also should submit scores from the Graduate Records Examinations (GRE). Prior study in the biological sciences and nutrition is required, however, some prerequisites may be taken after matriculation in the program. More detailed information can be obtained from the department.

**Program of Study.** There are three major areas of expertise within the Department: molecular nutrition, nutritional biochemistry and metabolism, and community nutrition and health. Molecular nutrition is based on laboratory studies utilizing molecular biological techniques to examine mechanisms of nutrient action and metabolism in the cell, tissue, and whole animal. Nutritional biochemistry and metabolism involves human and animal studies to examine nutrient metabolism in health and disease. Community nutrition and health focuses on public health areas of nutrition including community-level nutrition assessment, education and intervention programs. These areas are interdisciplinary in approach and are supported by other departments as well as by collaborative arrangements with other institutions. Opportunities for interdisciplinary research and study exist. All programs require a thesis, dissertation, or expanded paper, in addition to the successful completion of the appropriate graduate courses and examinations.

### COURSES OF STUDY

**†NUSC 5100. Concepts of Nutrition**

(NUSC 301) 2 credits. Lecture.

An introduction to the broad field of nutrition. Intended for entering graduate students, the course provides a conceptual framework for research and study in the nutritional sciences.

**NUSC 5200. Macronutrient Metabolism**

(NUSC 300) 3 credits. Lecture. Prerequisite: MCB 5001.

The function and metabolic pathways of energy, carbohydrates, protein and lipids; their interrelationships and factors controlling their metabolism. Methodologies for studying metabolism and assessing nutrient requirements in man and animals.

**NUSC 5300. Vitamins and Minerals**

(NUSC 332) 3 credits. Lecture. Prerequisite: MCB 5001.

Comprehensive study of vitamins, trace elements, and selected macrominerals, including biochemical function(s), metabolic pathways, interactions, and toxicities.

**NUSC 5312. Assessment of Nutritional Status**

(NUSC 312) 3 credits. Lecture/Laboratory.

Prerequisite: NUSC 5200.

This course is designed to discuss and critique the methodologies of nutritional status assessment, namely dietary, anthropometric and biochemical. Analysis of human blood and urine samples provides exposure to laboratory techniques and equipment used in nutritional assessment.

**NUSC 5314. Nutrition for Healthy Communities**

(NUSC 314) 3 credits. Lecture.

Development of knowledge and skill in public nutrition, including community assessment, development of program policies, and program planning, implementation, and evaluation.

**NUSC 5390. Field Work on Community Nutrition**

(NUSC 370) 1-6 credits. Practicum.

Supervised field studies of community nutrition problems and visits with community agencies and families. Readings, conferences and reports required.

**NUSC 5394. Seminar**

(NUSC 390) 1 credit. Seminar. Prerequisite: NUSC 5200.

Students develop the skills required for the analysis and presentation of current literature and research problems.

**NUSC 5398. Special Topics in Nutrition**

(NUSC 342) 1-6 credits. Lecture.

Advanced study in a given area of nutritional science.

**NUSC 5399. Independent Study in Nutritional Science**

(NUSC 380) 1-6 credits. Independent Study.

Research problems or critical review of literature in any area of nutrition.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**NUSC 6313. Nutrition and Gene Expression**

(NUSC 313) 3 credits. Lecture. Prerequisite: MCB 5001.

Regulation of eukaryotic gene expression by specific nutrients, hormones, and metabolites. Transcriptional, post-transcriptional, and translational mechanisms.

## PATHOBIOLOGY

*Department Head:* Professor Herbert J. Van Kruiningen

*Professors:* Bushmich, Garmendia, Geary, and Khan

*Associate Professors:* De Guise, Frasca, French, and Smyth

*Assistant Professors:* Risatti and Tufts

*Adjunct Assistant Professors:* Borca and Smolowitz

Graduate instruction leading to the M.S. and Ph.D. degrees is offered by the Department of Pathobiology and Veterinary Science. All M.S. degrees are granted in Pathobiology. Ph.D. degrees are granted in Pathobiology with areas of concentration in bacteriology, pathology, and virology. Standard admission requirements are maintained for these programs. There also is a study area offered in veterinary pathology, which is open only to Ph.D. students with the D.V.M. degree. In all of these areas, the accent is on basic sciences as related to diseases of animals.

**Requirements.** For the M.S. degree, generally 15 credits of course work and a thesis are required. No established sequence of courses is required for the Ph.D. degree. Since students possessing the D.V.M. degree usually have four more years of advanced education than the typical Ph.D. applicant, fewer courses may be required. In addition to graduate courses offered within the Department, the candidate is expected to take graduate courses in biochemistry, nutrition, toxicology, immunology, pharmacology, cell biology, genetics, statistics, and molecular biology in appropriate departments.

**Special Facilities.** The Department houses the Connecticut Veterinary Medical Diagnostic Laboratory which is equipped with a fully functioning mammalian and avian necropsy laboratory, histology laboratory and diagnostic microbiology, virology and serology laboratories. State of the art molecular biology facilities are present in the Department for research on infectious, immunologic, toxic and metabolic diseases. The Department also houses the Northeastern Research Center for Wildlife Diseases. Collaborative opportunities exist with the USDA Plum Island Animal Disease Center and the School of Pharmacy.

### COURSES OF STUDY

**PVS 5094. Pathobiology Seminar**  
(PVS 370) 1 credit. Seminar.

**PVS 5099. Research and Independent Study in Animal Diseases**  
(PVS 300) 1-6 credits. Independent Study.

**PVS 5201. Microbiology of Atypical Bacteria**  
(PVS 379) 2 credits. Lecture.

An in-depth presentation of current information on medically significant atypical bacteria, with emphasis on molecular aspects of pathogenesis.

**PVS 5202. Viral Pathogenesis**  
(PVS 384) 2 credits. Lecture.

Disease processes of the virus and host at the organic and molecular levels. Various aspects of selected viral infections will be covered, including contemporary topics of interest. Active student participation through presentations and discussion of literature.

**PVS 5331. Toxicological Pathology**  
(PVS 354) 2 credits. Lecture.

Principles of toxicological pathology are covered, with special attention to chemical carcinogenesis and systemic toxicological pathology. For the different systems, the particularities of structure and function of the system are reviewed, along with the particular mechanisms of toxicity to that system, the specific responses of that system to injury, and the methods to test for toxicity. The discussion of related scientific journal articles supplement the textbook information reviewed in lectures.

**PVS 5394. Veterinary Pathology Seminar**  
(PVS 312) 1 credit. Seminar.

A discussion of current problems in veterinary pathology with emphasis on histopathology and the related disciplines.

**PVS 5401. Immunobiology**  
(PVS 349) 3 credits. Lecture.

Principles of basic and clinical immunobiology; phylogeny and ontogeny of the immune response, characteristics of the immune response, cellular and humoral immunity; central and peripheral lymphoid tissues; mechanisms of immunologic injury and immunologic diseases; comparative and veterinary immunology; transplantation and tumor immunology.

**PVS 5431. Avian Pathology**  
(PVS 339) 2 credits. Lecture.

A comprehensive study of systemic avian pathology, stressing the correlation of pathological changes with clinical and microbiological findings.

**PVS 5502. Evaluation of Diagnostic Test**  
(PVS 357) 2 credits. Lecture.

Sampling criteria and size determination, diagnostic test selection, diagnostic strategies, test result evaluation and interpretation.

**PVS 5503. Molecular Approaches to Disease Diagnosis and Prevention**  
(PVS 378) 2 credits. Lecture.

Molecular aspects of disease, with emphasis on methodologies and strategies for diagnosis, analysis and prophylaxis.

**PVS 5632. Vaccines: Mechanisms of Immune Protection**  
(PVS 306) 3 credits. Lecture. Also offered as ANSC 5632.

The focus is on several different approaches to inducing prophylactic immunity in the host. Both traditional and modern molecular approaches to

**NUSC 6315. Lipid Metabolism in Health and Disease**

(NUSC 315) 3 credits. Lecture.

Comprehensive study of lipid and lipoprotein metabolism. Influence of diet, drugs, exercise and obesity. Overview of relationship between genetics, lifestyle factors and chronic disease.

**NUSC 6317. Nutritional Epidemiology**  
(NUSC 317) 3 credits. Lecture.

Principles and applications of nutritional epidemiology with emphasis on research design.

**NUSC 6365. Advanced Clinical Nutrition**  
(NUSC 365) 3 credits. Lecture. Prerequisite: NUSC 5200.

A study of topics of current clinical interest. Lectures, readings, reports and discussion.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1 - 9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.



vaccine design will be discussed. In addition, the mechanisms employed by pathogenic microbes to avoid hosts' immune responses will be examined in the context of vaccine design. The students will gain an appreciation for the transition from basic research to practical applications.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1-9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)  
(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research  
(GRAD 495) 1-9 credits.

†GRAD 6960. Full-Time Doctoral Research  
(GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral)  
(GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation  
(GRAD 499) Non-credit.

## PHARMACEUTICAL SCIENCE

*Dean:* Professor Robert L. McCarthy  
*Associate Dean:* Professor Andrea Hubbard

Course work and research programs leading to the M.S. and Ph.D. degree are offered through the Department of Pharmaceutical Sciences.

Descriptions of the major research programs available in this department as well as interdisciplinary areas and a list of faculty are shown below.

### PHARMACEUTICAL SCIENCE

*Department Head:* Professor John B. Morris  
*Professors:* Boelsterli, Burgess, Langner, and Pikal  
*Associate Professors:* Anderson, Aneskievich, Bahr, Bogner, Gianutsos, Grant, Henkel, Hubbard, Kalonia, Manautou, and Wright  
*Assistant Professors:* Chaudhuri, Pavlopoulos, and Vinogradova

*Adjunct Professors:* Amacher, Cohen, Makriyannis, Shalaev, Shire, Spratto, and Stoll

*Adjunct Associate Professors:* Blanchard, Bogdanffy, Krill, Lawton, McNamara, Patapoff, Sutton, Updyke, and Yang

*Adjunct Assistant Professors:* Jayadev, Jiao, Masino, Slitt, and Xu

Programs leading to the M.S. and Ph.D. degrees in Pharmaceutical Science are offered in these areas: (1) Medicinal Chemistry, (2) Neurosciences, (3) Pharmaceutics, and (4) Pharmacology and Toxicology. These programs make full use of courses offered by departments in such areas as organic, analytical, and physical chemistry; biochemistry; molecular and cell biology; neurobiology; biophysics; physiology; statistics; mathematics; microbiology; pathology; and materials science. A brief description and a statement of objectives for each program area are offered below.

**Medicinal Chemistry.** Medicinal chemists investigate the structural features responsible for the biological activity of drug molecules. To this end they design and synthesize new potentially active drugs. They also study the molecular mechanisms of drug action using biophysical methods and focusing on the stereoelectronic features of the drug and its interactions with its site of action. As a means of exploring the mechanism of drug action, they also study the target biopolymers through which drug activity is induced. Furthermore, they are interested in modifying drug structures to assist in targeting and to facilitate transport. Although their major concern is with chemistry, medicinal chemists must be also familiar with the pharmacological and biochemical systems on which the drug molecules act.

The M.S. (Plan A) and the Ph.D. are offered in the area of medicinal chemistry. A strong background in chemistry is essential for admission. Required course work varies with the background and interests of the student. This includes advanced courses in medicinal chemistry as well as courses from the following disciplines: organic, physical, and biophysical

chemistry; spectroscopy; biophysics; biochemistry; molecular biology; pharmacology; microbiology.

**Neurosciences.** This is an interdisciplinary area of concentration that comprises the Neurosciences Program at Storrs. Neuroscience is concerned with the molecular, cellular, and behavioral characteristics of the nervous system and their relation to the adaptive physiology of the organism. Students in this program may approach the full range of neuroscience studies through courses and research using a variety of model systems. Particular strengths include analysis of neural development, memory encoding, neurodegenerative processes, and repair mechanisms. This area of concentration is offered in the fields of study of pharmaceutical science, physiology and neurobiology, and psychology. Application is made to the preferred field of study, but the applicant must be acceptable to the Neurosciences Committee.

**Pharmaceutics.** Pharmaceutics deals with those factors bearing on the design of drug delivery systems that are safe and efficacious. The necessary concern with such factors as the stability of the drug molecule in a multitude of environments, the release of the drug from various dosage forms, surface and colloid chemistry, and the subsequent absorption, metabolism, and excretion of the drug requires a diversified educational and research experience. Faculty interests and graduate plans of study may emphasize kinetics, thermodynamics, transport phenomena, biopharmaceutics, pharmacokinetics, biopharmaceutics of proteins, and biotechnology. Moreover, each of these exposures entails an emphasis on quantitative appraisals which demand grounding in advanced mathematics. While individual dissertation problems usually are sharply focused, the overall thrust of the graduate program in pharmaceutics is the education of a generalist in drug delivery systems.

The M.S. (Plan A) and the Ph.D. are offered in the concentration of pharmaceutics. In particular, course work in advanced pharmaceutics, physical chemistry, and mathematics is required.

**Pharmacology and Toxicology.** Scholarly laboratory research and the education of graduate students in all aspects of drug and chemical action are paramount activities of the pharmacology and toxicology faculty. Therapeutic and toxic reactions to drugs and chemicals and their physiological and biochemical mechanisms of action are emphasized in this program. Emphasis is also placed in the areas of biochemical toxicology, inhalation toxicology, neuropharmacology, molecular toxicology, molecular pharmacology of nuclear receptors, hepatotoxicology, and immunology. The Ph.D. is offered in the concentration of pharmacology and toxicology. For admission to the graduate program, a strong background in biology as well as proficiency in chemistry, mathematics, and physics are essential. Course requirements for the Ph.D. degree are individualized, although advanced courses in pharmacology, physiology, and biochemistry are uniformly required.

**Special Facilities.** The Department has well-equipped laboratories in diverse research areas. Equipment available includes ultra-violet, F.T. infrared, dual wavelength, and fluorescence spectrophotometers, liquid scintillation spectrometers, analytical and preparative gas-

liquid chromatographs, high-pressure liquid chromatographs, preparative and ultra centrifuges, low and high voltage electrophoresis apparatus, differential thermal analytical and scanning calorimeter, thermal gravimetric and analytical equipment. Langmuir film balance, atomic absorptometer, gas chromatography-mass spectrometry unit, mass spectrometers and electron microscopes are available on campus. Animal quarters and cold rooms are located in or adjacent to the School of Pharmacy. The Department has a nuclear Magnetic Resonance Facility with Bruker Avance 300, 400, and 500 MHz spectrometers and a Varian Inova 600 MHz spectrometer equipped with a cryoprobe.

## COURSES OF STUDY

### PHAR 5215. Pharmaceutical Biotechnology (PHAR 325) 3 credits. Lecture.

A survey of medicinal chemistry and pharmaceuticals of pharmaceutical products derived from modern methods of molecular biology. This course will consider products in use or in clinical trials to emphasize the conceptual basis, design, and synthesis of biotech products in the context of current practical applications.

### PHAR 5216. Dosage Forms I (PHAR 316) 3 credits. Lecture.

Introduces the student to the principles of thermodynamics, ionic equilibrium, chemical kinetics and diffusion. Application of these principles to formulation, stability and dissolution of a drug product, and release from the dosage form for optimum therapeutic outcome. Required of entering graduate students in Pharmaceutics who do not have a Pharmacy background as well as those who do not pass the qualifying examination within the first year of the program.

### PHAR 5217. Dosage Forms II (PHAR 317) 3 credits. Lecture.

Covers the basic principles of the surface and colloid chemistry and rheology, as these relate to the performance of dispersed system dosage forms including colloids, suspensions, emulsions, suppositories, aerosols, ointments, and transdermals. Required of entering graduate students in Pharmaceutics who do not have a Pharmacy background, and those who do not pass the qualifying examination within the first year of the program.

### PHAR 5219. Biopharmaceutics and Pharmacokinetics (PHAR 319) 3 credits. Lecture.

Basic principles of biopharmaceutics, bioavailability, and pharmacokinetics, including their application to the rational design of both dosage forms and maximally effective dosing regimens. Intended for graduate students who may not have sufficient previous exposure to biopharmaceutics and pharmacokinetics.

### †PHAR 5239. Current Literature in Pharmaceutics (PHAR 339) 1 credit. Discussion.

Designed to familiarize students with current pharmaceuticals literature and to educate students in critical peer review in the pharmaceuticals literature.

### †PHAR 5293. Seminar in Pharmaceutics (PHAR 380) 1 credit. Seminar.

Reports and discussions.

### PHAR 5295. Special Problems in Pharmaceutics (PHAR 338) 1-4 credits. Independent Study.

Individualized course for students desiring research experience in any of the areas of pharmacy other than the area chosen by the student for thesis research.

### PHAR 5297. Special Topics in Pharmaceutics (PHAR 335) 1-6 credits. Lecture.

Includes topics not presently covered in courses which are pertinent to current departmental research and areas of recent development in the literature.

### PHAR 5301. Drug Design (PHAR 301) 3 credits. Lecture.

A cooperative presentation of the fundamentals of medicinal chemistry.

### PHAR 5308. Structure and Function of Biological Membranes (PHAR 308) 3 credits. Lecture.

Overview of cell membrane structure and function based on a foundation of physical and biochemistry principles. Topics include lipid bilayers, vesicles and liposomes, cholesterol, membrane protein structure and function, transport, membrane fusion, receptors, drug/membrane interactions and membranes in cell regulation.

### †PHAR 5393. Seminar in Medicinal Chemistry (PHAR 377) 1 credit. Seminar.

Reports and discussions.

### PHAR 5395. Special Problems in Medicinal Chemistry (PHAR 315) 1-4 credits. Lecture.

Individualized course for students desiring research experience in any of the areas of medicinal chemistry other than the area chosen by the student for thesis research.

### PHAR 5397. Special Topics in Medicinal Chemistry (PHAR 318) 1-6 credits. Lecture.

Current developments in Medicinal Chemistry. A course for students needing exposure to topics not covered in other department offerings.

### †PHAR 5403. Current Toxicology Literature (PHAR 303) 1 credit. Lecture.

Designed to familiarize students with current toxicology literature and to educate students in critical peer review of this toxicology literature.

### PHAR 5454. Principles of Safety Evaluation (PHAR 354) 1 credit. Lecture.

Introduction to toxicologic risk assessment. Fundamentals of dose-response relationships and risk characterization, and their application in the establishment of permissible exposure limits for drugs and other chemicals in the environment or workplace.

### PHAR 5458. Analytical Toxicology (PHAR 358) 2 credits. Lecture.

Qualitative and quantitative determination of xenobiotics. Isolation techniques; principles of chromatography and spectrometry; theory, instrumentation and analysis of data.

### PHAR 5471. Advanced Pharmacology I: Basic Principles (PHAR 371) 3 credits. Lecture.

Molecular mechanisms of drug action including occupation and rate theories. Characterization of receptors in-situ and in-vitro.

### PHAR 5472. Advanced Pharmacology II: Drug Disposition (PHAR 372) 2 credits. Lecture.

Drug absorption, distribution, excretion, metabolism, interaction, allergy, resistance, tolerance, idiosyncrasy and toxicity.

### PHAR 5475. Toxicology Scholars Colloquium (PHAR 375) 1 credit. Lecture.

Reviews, discussions and seminars focused on the research of scientists who have made significant contributions to the science of toxicology.

### †PHAR 5493. Seminar in Pharmacology and Toxicology (PHAR 379) 1 credit. Seminar.

Reports and discussions on journal and review articles and presentation of personal research results.

### †PHAR 5494. Seminar in Immunology (PHAR 378) 1 credit. Seminar.

Reports and discussions.

### PHAR 5495. Special Problems in Pharmacology I (PHAR 356) 1-4 credits. Independent Study.

The course is individualized for students desiring research experience in any of the areas of pharmacology.

### PHAR 5496. Special Problems in Toxicology (PHAR 384) 1-4 credits. Independent Study

Individualized course for students desiring research experience in any of the areas of toxicology.

### PHAR 5497. Special Topics in Pharmacology (PHAR 382) 1-6 credits. Lecture.

Includes topics not presently covered in courses, which are pertinent to current departmental research and areas of recent development in the literature.

### PHAR 5498. Special Topics in Toxicology (PHAR 383) 1-6 credits. Lecture.

Basic principles of toxicology as emphasized by recent developments in the biochemical toxicology literature.

†GRAD 5930. **Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†GRAD 5950. **Master's Thesis Research**  
(GRAD 395) 1 - 9 credits.

†GRAD 5960. **Full-Time Master's Research**  
(GRAD 396) 3 credits.

GRAD 5998. **Special Readings (Master's)**  
(GRAD 398) Non-credit.

GRAD 5999. **Thesis Preparation**  
(GRAD 399) Non-credit.

PHAR 6234. **Advanced Biopharmaceutics**  
(PHAR 334) 3 credits. Lecture.

Overview of physico-chemical, biopharmaceutic, and physiologic factors controlling the delivery of drug and their sites of action.

PHAR 6241. **Advanced Kinetics and Mechanisms of Drug Degradation**  
(PHAR 341) 2 credits. Lecture. Prerequisite: PHARM 388.

An advanced treatment of the physical organic chemistry critical to the characterization and understanding of stability in pharmaceutical products.

PHAR 6242. **Freeze Drying of Pharmaceuticals**  
(PHAR 342) 2 credits. Lecture.

The science and technology of freeze drying, including fundamentals of heat and mass transfer gas systems, process design considerations, and formulation strategies with emphasis on stabilization of therapeutic proteins.

PHAR 6285. **Complex Equilibria**  
(PHAR 385) 3 credits. Lecture.

A study of the physico-chemical and mathematical treatment in pharmaceutical systems. Topics center on thermodynamics, activity coefficients, acids and bases, solubility, complexation solubilization and protein binding.

PHAR 6286. **Transport Processes**  
(PHAR 386) 3 credits. Lecture.

Emphasis is on the application of the laws of diffusion to dissolution, membrane transport and release of drugs from dosage forms.

PHAR 6288. **Kinetics and Mechanisms of Drug Degradation and Stability**  
(PHAR 388) 3 credits. Lecture.

A study of the kinetics and mechanisms of drug degradation in the solid and liquid states and drug stabilization.

PHAR 6289. **Pharmacokinetics**  
(PHAR 389) 3 credits. Lecture.

A discussion of absorption, distribution, and clearance mechanisms, and their impact on concentration-time profiles and drug response.

PHAR 6290. **Colloid Chemistry and Interfacial Phenomena**  
(PHAR 390) 3 credits. Lecture.

Interfacial phenomena, colloid chemistry.

PHAR 6452. **Toxicology of the Respiratory System**  
(PHAR 352) 2 credits. Lecture. Prerequisite: PHAR 355.

Anatomic and functional aspects of toxic injury to the respiratory tract with an emphasis on biochemical and physiologic mechanisms of toxic pulmonary injury. Lectures and student presentations.

PHAR 6455. **Advanced Toxicology**  
(PHAR 355) 4 credits. Lecture.

A study of the harmful effects of toxic chemicals on biological systems. Emphasis is on mechanisms of toxicant action and on practical applications of modern techniques to assess toxicity and hazard.

PHAR 6459. **Immunotoxicology**  
(PHAR 359) 2 credits. Lecture.

Demonstrates the detrimental effects on the immune system and/or inflammatory response, by a variety of physical and chemical xenobiotics. Emphasis is placed on the mechanisms of chemical and drug-induced immunosuppression, autoimmune response, and allergic response.

PHAR 6465. **Pharmacology of the Circulatory System**  
(PHAR 365) 2 credits. Lecture.

A study of the cardiovascular system. Both physiological and pharmacological responses of the cardiovascular system are reviewed. Emphasis is placed upon the biochemical and physiological changes associated with atherosclerosis.

PHAR 6473. **Function and Dysfunction of Brain Synapses**  
(PHAR 373) 2 credits. Lecture.

This course covers the functional and structural regulation events that influence synaptic activity, as well as corresponding ideas related to memory encoding. In addition, pathogenic processes are addressed which have a negative influence on brain circuits. These include age-related changes, stroke, and Alzheimer-type pathogenesis. Lastly, new and future therapeutic strategies are discussed in regard to the enhancement of memory mechanisms and repair systems. The format of the course is formal lectures and journal article discussions by students.

PHAR 6484. **Cutaneous Differentiation: Molecular Mechanisms and Cellular Processes**

2 credits. Lecture. Instructor consent required.

This course examines mammalian skin structure, keratinocyte, immune and pigment cells, mechanisms of mesenchymal-epithelial induction, replication- and cytoskeletal-based diseases, stem cell identification and plasticity, and transcriptional regulation of differentiation-dependent gene expression.

†GRAD 6930. **Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†GRAD 6950. **Doctoral Dissertation Research**  
(GRAD 495) 1 - 9 credits.

†GRAD 6960. **Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

GRAD 6998. **Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

GRAD 6999. **Dissertation Preparation**  
(GRAD 499) Non-credit.

## PHILOSOPHY

*Department Head:* Professor Crawford L. Elder  
*Professors:* Anderson, Beall, Baxter, Clark, Kupperman, Lynch, Meyers, and Wheeler  
*Associate Professors:* Bloomfield, Bontly, Hiskes, and Troyer  
*Assistant Professors:* Parekh and Shapiro

The Department of Philosophy offers study leading to the degree of Master of Arts and Doctor of Philosophy. The department is primarily an Analytic Philosophy department. Courses of study typically focus on philosophy of psychology and mind, philosophy of language and formal semantics, or on ethics. However, students can plan a dissertation on metaphysics, history of philosophy, Asian philosophy, or other areas. The instruction is broad enough to make students versatile undergraduate instructors, and concentrated enough to enable students to do significant research.

Students are able to work closely with the faculty at every stage of progress from the initial construction of a plan of study to the completion of a dissertation.

**Admission.** After reviewing the basic requirements for admission to the Graduate School, applicants should present to the Philosophy Department their scores for the General Test of the Graduate Record Examinations, three letters of recommendation from individuals (preferably philosophy professors) familiar with their academic work, and a philosophical writing sample. Students admitted to the program normally are awarded full graduate assistantships.

**The M.A. Program.** The Department generally offers only Plan B (non-thesis) for the M.A. Thus a student must have 24 credits in Philosophy in order to take the MA examination. First year students must satisfy a formal logic requirement, normally by taking Philosophy 5307. First year students also should take Philosophy 5301 unless they have a strong background in contemporary analytic philosophy.

The M.A. examination consists of turning in two papers written for seminars in philosophy at UConn. On the basis of these papers, the students record, and recommendations from professors under whom the student has worked, the student is either passed with a promise of funding (given satisfactory progress) for three years in the PhD program, passed without such funding, or failed.

**The Ph.D. Program.** The Ph.D. degree requires eight graduate seminars beyond the M.A. level. Students who enroll in the Ph.D. program with an M.A. from another institution are reviewed after one year, at which time funding for another two years is either awarded or not.

The General Examination consists of three papers, normally seminar papers, in the three areas of philosophy we have defined, namely (1) Metaphysics and Epistemology, (2) Social and Political Philosophy and Ethics, and (3) History of Philosophy. The papers are read by the examining committee and the student is either passed or failed. General examination papers may be turned in to the Director of Graduate Studies at any time. See the Guide to Graduate Students on the Philosophy

Department website <[www.philosophy.uconn.edu/grad](http://www.philosophy.uconn.edu/grad)> for further details and a definition of *satisfactory progress*.

**Special Facilities.** The holdings of the Homer Babbidge Library are adequate for the pursuit of scholarly research in most fields of philosophy. The Library subscribes to all major philosophical journals and has a complete collection of past issues of most journals. The Department conducts informal weekly seminars at which graduate students and faculty discuss current research with their colleagues. It runs a program of colloquia featuring distinguished philosophers from around the country, and presents the yearly Ruth Evelyn Parcells Lecture in ethics.

### COURSES OF STUDY

#### PHIL 5300. Independent Study for Graduate Students

(PHIL 300) 1-6 credits. Independent Study. Open to graduate students in Philosophy, others with permission.

#### PHIL 5301. Seminar in Contemporary Philosophy

(PHIL 301) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

An introduction to contemporary philosophers such as Russell, Carnap, Ayer, Quine, Putnam, and Kripke.

#### PHIL 5305. Seminar in Aesthetics

(PHIL 305) 3 credits. Lecture. Open to graduate students in Philosophy, others with permission.

A consideration of some of the basic problems in aesthetics.

#### PHIL 5307. Logic

(PHIL 307) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 311. Properties of Formal Systems

(PHIL 311) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

The development of formal deductive systems. The completeness and consistency of logical systems adequate for the expression of parts of mathematics. A consideration of aspects of the foundations of logic and mathematics.

#### PHIL 5312. Seminar in the Philosophy of Science

(PHIL 312) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

A discussion of selected current, methodological issues in the philosophy of science. Topics may include scientific realism versus nonrealism; theories of scientific explanation; the nature of scientific revolutions; theories of the lawfulness of nature; and feminist theories of science.

#### PHIL 5313. Seminar in the Philosophy of Physics

(PHIL 313) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

Examination of philosophical issues associated with physical concepts of space, time, and matter. Topics may include relational versus absolute theories of space and time, and philosophical implications of quantum mechanics.

#### PHIL 5314. Action Theory

(PHIL 314) 3 credits. Seminar. Open to graduate students in Philosophy and to others with instructor consent.

Examination and analysis of the concept of "action" and related concepts such as "agent" and "intention".

#### PHIL 5315. Seminar in Moral Philosophy

(PHIL 315) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

A discussion and analysis of significant problems in ethical theory.

#### PHIL 5316. Seminar in the Philosophy of Social Science

(PHIL 316) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5317. Seminar in the Philosophy of Psychology

(PHIL 317) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

Philosophical examination of contemporary issues in the philosophy of psychology. Topics may include a philosophical analysis of the nature of behavior, consciousness, perception, cognition, and emotion; the nature of psychological explanation; comparison of the science of human psychology with ethology and other biological sciences, the physical sciences, and computer science.

#### PHIL 5318. Seminar on Plato

(PHIL 318) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5319. Seminar on Aristotle

(PHIL 319) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5320. Seminar in the History of Philosophy

(PHIL 320) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5321. Seminar on the British Empiricists

(PHIL 321) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5327. Seminar on Kant

(PHIL 327) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

#### PHIL 5330. Seminar on Theory of Knowledge

(PHIL 330) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

Problems in the foundations and nature of knowledge. A critical study of recent treatments of the problem of mind. Issues such as the mind-body

problem, our knowledge of the existence of other minds, the existence of private languages, will be dealt with in detail.

**PHIL 5331. Seminar in Philosophy of Mind**

(PHIL 331) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

A critical study of recent treatments of the problem of mind. Issues such as the mind-body problem, our knowledge of the existence of other minds, the existence of private languages, will be dealt with in detail.

**PHIL 5333. Seminar on Nietzsche**

(PHIL 333) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

**PHIL 5340. Seminar on Metaphysics**

(PHIL 340) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

**PHIL 5342. Seminar in Philosophy of Language**

(PHIL 342) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

**PHIL 5344. Seminar in Philosophical Logic**

(PHIL 344) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission. This course may be repeated to a maximum of nine credits.

Topics in the philosophies of logic and mathematics. May include completeness results for non-classical logics, higher-order languages and logics, diagonalization, limitative theorems (Tarski, Godel), paradoxes, and formal theories of truth.

**PHIL 5350. Seminar in Recent Social and Political Philosophy**

(PHIL 350) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

**PHIL 5352. Seminar in Feminist Theory**

(PHIL 352) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

The focus of inquiry might be the history of feminist theory, a school of contemporary feminist theory, an issue or a selection of issues in feminist theory, or feminist approaches to major texts or themes in the history of philosophy.

**PHIL 5360. Seminar in Recent Continental Analytic Philosophy**

(PHIL 360) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

Critical reading of selected texts of recent European philosophers such as Derrida, Irigaray, Kristeva, Heidegger, and Foucault; along with related work of analytic philosophers such as Davidson, Quine, Rorty, and Kripke.

**PHIL 5397. Seminar**

(PHIL 397) 3 credits. Seminar. Open to graduate students in Philosophy, others with permission.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1 - 9 credits.

†GRAD 5960. Full-Time Master's Research  
(GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's)  
(GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation  
(GRAD 399) Non-credit.

†GRAD 6930. Full-Time Directed Studies (Doctoral Level)  
(GRAD 497) 3 credits.

†GRAD 6950. Doctoral Dissertation Research  
(GRAD 495) 1 - 9 credits.

†GRAD 6960. Full-Time Doctoral Research  
(GRAD 496) 3 credits.

GRAD 6998. Special Readings (Doctoral)  
(GRAD 498) Non-credit.

GRAD 6999. Dissertation Preparation  
(GRAD 499) Non-credit.

## PHYSICAL THERAPY

*Dean:* Professor Thomas C. DeFranco

*Department Head:* Professor Carl M. Maresh

*Program Head:* Professor Craig R. Denegar

*Professors:* Bohannon and Smey

*Associate Professors:* Zito and Kinsella-Shaw

*Assistant Professors:* Bhat and Bubela

*Clinical Associate Professor:* Leavitt

*Director of Clinical Education:* Ward

The Physical Therapy Program in the Department of Kinesiology at the Neag School of Education offers a post-baccalaureate Doctor of Physical Therapy (D.P.T.) degree program. A description of all other graduate programs in the Department of Kinesiology is found in this *Catalog* under the heading *Kinesiology*. The program in Physical Therapy is accredited by the Commission on Accreditation of Physical Therapy Education (CAPTE). The three-year program integrates didactic preparation in clinical sciences and clinical practice with 32 weeks of full-time clinical practicum. The Physical Therapy program is committed to the advancement of evidence-based clinical practice and developed around practice in acute care, musculoskeletal care and neurological rehabilitation. Through the development of the skills and abilities needed for excellence in clinical practice including interpersonal communication, time and resource management, and problem solving skills students are prepared to practice across the spectrum of physical therapy in an ever-changing health care environment. A commitment to professionalism and life-long learning is valued by the faculty and expected of the students and graduates.

**Academic Plan.** The D.P.T. program begins in late May each year and requires nine semesters (summer, fall, spring for three years) to complete. The academic plan is found at <[www.pt.uconn.edu](http://www.pt.uconn.edu)>.

**Admission.** In addition to the standard requirements of the Graduate School (found in this *Catalog* under the heading *Admission*), applicants must (1) have completed the following prerequisite courses prior to matriculation: biology, anatomy, and physiology (8 credits), general chemistry (8 credits), general physics (8 credits), psychology (2 courses), pre-calculus or calculus, and statistics; (2) meet the Technical Standards established for the program which can be found at <[www.pt.uconn.edu](http://www.pt.uconn.edu)>; and (3) completion of the supplemental admissions requirements found at <[www.education.uconn.edu/howtoapply/dpt.cfm](http://www.education.uconn.edu/howtoapply/dpt.cfm)>. Applicants to the D.P.T. program are expected to demonstrate outstanding ability and to show on the record of previous scholarship and experience that they are likely to do superior work in their professional preparation. Meeting minimum requirements does not assure acceptance into the program.

**Transfer Credit.** Transfer of credit for coursework completed at other institutions is approved only if (1) the course(s) were completed in a CAPTE accredited Physical Therapy Education program, (2) a grade of B (not B-) was earned in each course being considered for transfer, and (3) the coursework being

considered for transfer is substantially similar to coursework offered in the D.P.T. program at the University of Connecticut.

**Tuition and Fees.** In addition to the standard graduate tuition and fees, a tuition differential of \$1,750 is required for physical therapy students for the fall and spring semesters of each year of enrollment in the program.

**Scholarships.** Scholarship assistance is available to students in the D.P.T. program. A listing is available at <[http://www.education.uconn.edu/students/scholarships/pt%20scholarships/scholarships\\_pt.cfm](http://www.education.uconn.edu/students/scholarships/pt%20scholarships/scholarships_pt.cfm)>. The amount of scholarship awards varies and is dependent on available funds.

**Clinical Education.** The role of clinical education in the preparation of Physical Therapy professionals cannot be overstated. The Physical Therapy Program is committed to excellence in this most important area. Clinical sites are selected based on a known history of superior patient care and a clear statement of dedication to the learning process. The costs of travel, housing and other expenses related to clinical education are the responsibility of the student.

**Health Policies and Insurance.** Physical Therapy students must be free of communicable disease and in good health in order to be admitted to clinical experiences and complete the PT program. Health services are provided through Student Health Services. All students are required to carry personal health insurance throughout the program. All students are required to provide the University with documentation of well being and good health prior to any course work that may require direct, or indirect, patient contact. Information regarding Student Health Services is found at <<http://www.shs.uconn.edu/>>.

**Physical Therapist Licensure.** Under the provisions of N 19a-14(a) of the Connecticut General Statutes, as amended by Public Act 86-365, <<http://www.cga.ct.gov/2007/pub/Chap368a.htm#Sec19a-14.htm>>, the Department of Public Health of the State of Connecticut may deny licensure to applicants who have been convicted of a felony or are addicted to drugs or alcohol. Students are responsible for being aware of what the licensure requirements are in the State in which they intend to apply for a license.

**Performance Evaluation.** The members of the Physical Therapy faculty regularly monitor the performance of each student in all facets of the program (classroom, laboratory and clinic) at the close of each semester of their graduate education to determine their readiness to progress in the program. Performance evaluations are conducted by the Physical Therapy faculty in advance of each clinical practicum experience specifically to determine the adequacy of each student's knowledge, proficiency level and their preparedness to interact safely with patients and clients during the clinical education experience. If at any time, a student's level of performance, progress in completing the academic requirements for the degree, or professional development/or suitability is considered to be unsatisfactory, the faculty and the program/student advisory committee may require remedial action on the part of the student or recommend dismissal to the Dean of the Graduate School.

## COURSES OF STUDY

**PT 5307. Integrative Seminar I**  
(PT 307) 3 credits. Seminar. Open only to students in the program in Physical Therapy.

One of a series of seminars which integrate application, assessment and intervention knowledge and experience across multiple courses. Focus is on the acute, sub-acute and long-term nursing home patient population. Students develop competency in critical thinking, problem-solving, clinical decision making and best practice recommendations for the acute, sub-acute and long-term nursing home patient population groups. Students demonstrate critical reading skills of the professional literature that reflects an understanding of the problems and functional limitations of the acute, sub-acute and long-term nursing home.

**PT 5308. Integrative Seminar II**  
(PT 308) 3 credits. Seminar. Prerequisite: PT 5307. Physical Therapy majors only.

One of a series of seminars which integrate application, assessment and intervention knowledge and experience across multiple courses; and develops the research project—professional paper. Focus is on the acute, sub-acute and long-term nursing home and musculoskeletal patient population. Students identify and discuss professional issues generated by observations made in the acute, sub-acute and long-term nursing home practicum setting. Students develop competency in critical thinking, problem solving, clinical decision making and best practice recommendations for the musculoskeletal patient. Students demonstrate critical reading skills of the professional literature that reflects an understanding of the problems and functional limitations of the musculoskeletal patient population. Students submit a research project proposal that includes a comprehensive literature review, research hypotheses and methods.

**PT 5308W. Integrative Seminar II**  
(PT 308W) 3 credits. Seminar. Prerequisite: PT 3507. Pre-Physical Therapy majors only.

One of a series of seminars which integrate application, assessment and intervention knowledge and experience across multiple courses; and develops the research project—professional paper. Focus is on the acute, sub-acute and long-term nursing home and musculoskeletal patient population. Students identify and discuss professional issues generated by observations made in the acute, sub-acute and long-term nursing home practicum setting. Students develop competency in critical thinking, problem solving, clinical decision making and best practice recommendations for the musculoskeletal patient. Students demonstrate critical reading skills of the professional literature that reflects an understanding of the problems and functional limitations of the musculoskeletal patient population. Students submit a research project proposal that includes a comprehensive literature review, research hypotheses and methods. Includes a writing component.

**PT 5309. Integrative Seminar III**

(PT 309) 3 credits. Seminar. Prerequisites: PT 5308 and PT 5318.

One a series of seminars which integrate application, assessment and intervention knowledge and experience across multiple courses; and develops the research project—professional paper. Focus is on the musculoskeletal and neuromuscular patient population. Students identify and discuss professional issues generated by observations made in the musculoskeletal practicum setting. Students develop competency in critical thinking, problem solving, clinical decision making and best practice recommendations for the neuromuscular patient. Students demonstrate critical skills of the professional literature that reflects an understanding of the problems and functional limitations of the neuromuscular patient population. Students collect data and prepare preliminary results of their findings.

**PT 5310. Integrative Seminar IV**  
(PT 310) 3 credits. Seminar. Prerequisites: PT 5309 and PT 5320.

One of a series of seminars which integrate application, assessment and intervention knowledge and experience across multiple courses. Focus is on the neuromuscular patient population. Students identify and discuss professional issues generated by observations made in the neuromuscular practicum setting. Students meet identified standards on competency in critical thinking, problem solving, clinical decision making and best practice recommendations for all patient populations in this culminating course.

**PT 5311. Integrative Seminar V**  
(PT 311) 3 credits. Seminar. Prerequisite: PT 5309.

One of a series of seminars which develops the research project—professional paper. Focus is to complete and present the research project—professional paper in this culminating course.

**PT 5314. Principles of Rehabilitation**  
(PT 314) 3 credits. Lecture/Laboratory/Practicum.

Explores the role of physical therapists in the rehabilitation of patients with complex problems and multi-system dysfunction. Students develop competency in assessment, treatment planning and implementation, and evaluation of treatment outcomes in the areas of functional mobility and accessibility, patient education and prevention of complications.

**†PT 5316. Acute Care Practicum**  
(PT 316) 7 credits. Practicum.

In a supervised acute care setting, sub-acute care setting or long-term nursing home, students apply a variety of patient care procedures and techniques leading to the development of entry level competency. Clinical teaching facilities are located throughout the United States.

**PT 5318. Principles of Musculoskeletal Rehabilitation**  
(PT 318) 6 credits. Lecture/Laboratory/Practicum. Prerequisite: PT 5308.

Focus is on the physical therapy care of patients with existing or potential musculoskeletal dysfunction.

The student learns to establish physical therapy diagnoses, identify realistic goals, plan and implement programs for patients with musculoskeletal problems, giving full consideration to their physical, social and psychological well being.

**PT 5320. Principles of Neuromuscular Rehabilitation**

(PT 320) 6 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5308 and PT 5318.

Through comprehensive problem solving, students analyze patient situations where neuromotor dysfunction is a complicating factor. Students develop neurophysiological sound evaluation and treatment skills integrating physical and psychological patient considerations.

†**PT 5322. Musculoskeletal Practicum**

(PT 322) 7 credits. Practicum. Prerequisites: PT 5318.

In an outpatient orthopedic setting, students apply a variety of patient care activities leading to the development of entry level competency. Clinical teaching facilities are located throughout the United States.

†**PT 5324. Neuromuscular Practicum**

(PT 324) 10-11 credits. Practicum. Prerequisite: PT 5320.

In a neuromuscular rehabilitation setting, students apply a variety of patient care procedures and techniques leading to the development of entry level competency. Clinical teaching facilities are located throughout the United States.

**PT 5330. Lifespan Growth and Development**

(PT 330) 3 credits. Lecture. Prerequisite: PT 5308  
Provides an overview of motor development, individual development and family development from a lifespan perspective as they relate to the practice of physical therapy. The impact of disease and disability on the individual and the family is explored with a focus on recognizing dysfunction and facilitating effective coping and adaptation.

**PT 5343. Physical Therapy Issues Seminar**

(PT 343) 3 credits. Lecture. Prerequisite: PT 5308.

Through discussion of current issues and problems in the professional field of physical therapy, students explore the possible solutions to those problems from their own perspective as aspiring professionals, the professional organization's perspective and from the perspective of the consumer of their services.

**PT 5384. Balance and Postural Control**

(PT 384) 3 credits. Lecture.  
This course will explore historical and contemporary perspectives on human balance and sway while standing. The interplay between Center of Mass and Center of Pressure will be examined. Conceptual models of balance strategies and the theoretical basis for different "approaches" to balance will be discussed. Different strategies for analyzing data will

be discussed with regard to normal and physically challenged individuals.

**PT 5410. Human Anatomy: Trunk and Upper Extremity**

(PT 410) 4 credits. Lecture/Laboratory. Department consent required.

Discussion of the conceptual and structural basis of osteology, myology, neurology, human development, and basic kinesiology and biomechanics. Selected anatomical and physiological dysfunctions of the trunk and upper extremity will also be discussed.

**PT 5412. Human Anatomy: Pelvis and Lower Extremity**

(PT 412) 4 credits. Lecture/Laboratory. Department consent required.

Discussion of the conceptual and structural bases of osteology, myology, neurology, human development, and basic kinesiology and biomechanics. Selected anatomical and physiological dysfunctions of the pelvis and lower extremity will also be discussed.

**PT 5414. Clinical Human Physiology**

(PT 414) 3 credits. Lecture/Laboratory. Department consent required.

Discussion of the biochemical, nutritional, cellular and physiological principles necessary for the analysis of the normal and abnormal function and for the rehabilitation of the human musculoskeletal, cardiovascular and respiratory systems using patient cases.

**PT 5416. Neuroanatomy and Clinical Neurology**

(PT 416) 4 credits. Lecture/Laboratory. Department consent required.

This course is designed to provide healthscience professionals an up-to-date comprehensive investigation into the human nervous system. Complex interrelationships between structure and function of the nervous system are being clarified. This course will relate these facts into information of clinical significance. Clinical examples in each area will offer opportunities for practice in neurophysiological analysis that health professionals use daily.

**PT 5418. Clinical Pharmacology**

(PT 418) 3 credits. Lecture. Department consent required.

This course is designed to integrate and summarize the essentials of medical pharmacology. The main molecular and cellular actions of drugs will be emphasized as well as the principles governing the use and actions of drugs in the treatment of disease.

**PT 5420. Foundation in Clinical Pathology**

(PT 420) 3 credits. Lecture. Prerequisites: PT 5414 and PT 5416. Department consent required.  
A comprehensive presentation of the general principles of disease with an emphasis on general pathology. Focus is on the mechanisms underlying disease and their management as a basis for therapeutic program planning in physical therapy.

**PT 5422. Cardiopulmonary Pathology**

(PT 422) 2 credits. Lecture. Prerequisite: PT 5420. Department consent required.  
A comprehensive presentation of cardiopulmonary diseases. Focus is on the mechanisms underlying disease and their management as a basis for therapeutic program planning in physical therapy.

**PT 5424. Musculoskeletal Pathology**

(PT 424) 4 credits. Lecture/Discussion. Prerequisite: PT 5420. Department consent required.  
Mechanical properties of musculoskeletal tissues will be described. Growth and maintenance mechanisms of the different tissues will be detailed. Diseases and disorders of the musculoskeletal system will be covered. The underlying tissue pathology and clinical symptoms will be addressed from the orthopedic and physical therapy perspective. Therapeutic interventions will be presented.

**PT 5426. Neuromuscular Pathology**

(PT 426) 3 credits. Lecture. Prerequisites: PT 5416 and PT 420. Department consent required.  
This course introduces students to basic mechanisms of neuropathology, the neurological examination and tests, and specific pathologies they are likely to encounter in physical therapist practice. The course will emphasize the medical and surgical diagnosis and management of patients with neurologic pathology.

**PT 5430. Functional Neuro-Biomechanical Relationships**

(PT 430) 3 credits. Lecture. Department consent required.  
Students will analyze the impact of force systems on the human body, thus preparing the student to apply knowledge of normal anatomical structure and function to therapeutic intervention. Interactions between contiguous and non-contiguous bone segments will be emphasized in order to understand functional movement. Neural control and activation principles will be discussed.

**PT 5432. Motor Control and Clinical Applications**

(PT 432) 4 credits. Lecture. Department consent required.  
Introduction to theories of motor control and motor learning, current methods in human movement science, and their implications for evidence-based practice.

**PT 5433 Management for the Physical Therapist**

(PT 433) 3 credits. Lecture. Program consent required.  
The goal of this course is to provide comprehensive exposure to management principles and concepts with a focus on their applications and impact in physical therapy practice. Students will be provided the opportunity to gain cognition and skills in physical therapy practice management which prepares them as practitioners and future administrators.

**PT 5434. Foundations for Systems Review** (PT 434) 2 credits. Lecture. Prerequisite: PT 5420. Department consent required.

A foundations course for Physical Therapy Majors in Differential Diagnosis. The course scope covers a broad spectrum of clinical sciences and provides training in screening (i.e. history taking) of a culturally diverse patient/client population across the lifespan for appropriate healthcare management.

**PT 5435. Health Care Issues for Physical Therapists**

(PT 435) 3 credits. Lecture. Open to students enrolled in the D.P.T. program and to others with departmental consent.

The goal of this course is to promote awareness of health care issues as they relate to an individual, community or health care institutions.

**PT 5436. Disability Studies**

(PT 436) 3 credits. Lecture. Department consent required.

This course will introduce the student to the field of disability studies. Disability and chronic illness (CI) are often a major factor influencing an individual and/or family during one's lifetime. People with a disability (PWD) or CI may be considered a sub-culture of our society. Physical, cognitive, emotional, social, and cultural factors related to the presence of disability and CI throughout the life span will be explored. Emphasis is placed on those aspects of disability that affect the practice of physical therapy assessment and treatment.

**PT 5437. Education and Communication for Physical Therapists**

2 credits. Lecture/Laboratory.

This course covers fundamental aspects of education and communication as they relate to physical therapy as described in the Guide to Physical Therapy Practice. Students are introduced to learning theories and theories of change. Learner assessment and strategies for communication and instruction will be covered. Students generate written and oral communications.

**PT 5438. Professionalism for the Physical Therapist**

2 credits. Lecture.

Through readings, lecture, personal investigation, and discussion of current issues, "hot topics" and problems in the profession of physical therapy, students will demonstrate an understanding of their environment of practice. Students learn selected laws, rules, regulations, guidelines and ethical codes governing the practice of physical therapy and will explore possible solutions to common professional problems. Emphasis is placed on the importance of ethical and legal practice.

**PT 5439. Operational Management for Physical Therapists**

(PT 439) 3 credits. Lecture. Program consent required.

The goal of this course is designed to build upon

concepts introduced in PT 433. An integrated approach will be utilized to focus on skills that impact the management of physical therapists. Students will be provided the opportunity to utilize skills in a simulation practice setting which will prepare them for private practice and/or as future administrators.

**PT 5440. Evidence-Based Practice in Physical Therapy**

(PT 440) 2 credits. Lecture. Department consent required.

A foundations course in evidence-based clinical decision making designed to provide Physical Therapy students with content areas in forming clinical questions, literature search, and critical appraisal of selected literature. Applications will fall within the Physical Therapy Profession Patient/Client Management Model and consider culturally diverse patient/client populations across the life span.

**PT 5441. Clinical Research for Physical Therapists**

(PT 441) 2 credits. Lecture. Program director consent required.

This course focuses on issues important to conducting and understanding clinical research. The course serves as a foundation for student involvement in research that will span the professional program.

**PT 5444. Evidence-Based Practice Seminar I**

(PT 444) 2 credits. Lecture/Discussion. Program director consent required.

A course for Physical Therapy students focusing on clinical research related to physical therapy diagnosis and outcomes with focus on both acute and musculoskeletal care. Students will participate in meetings and discussions to facilitate their research projects.

**PT 5446. Evidence-Based Practice Seminar II**

(PT 446) 2 credits. Lecture/Discussion. Program director consent required.

A course for Physical Therapy students focusing on clinical research related to diagnosis, and prevention / treatment outcomes with emphasis on musculoskeletal and neuromuscular physical therapy. Students will participate in meetings and discussions to facilitate their research projects.

**PT 5448. Evidence-Based Practice Seminar III**

(PT 448) 2 credits. Discussion. Program director consent required.

A course for Physical Therapy students focusing on the completion of a research project. Students will work with peers and faculty mentors to complete a manuscript suitable for submission to a peer reviewed professional publication. This course serves as the culmination of Evidence-Based Practice Series.

**PT 5450. Fundamentals of Physical Therapy Examination**

(PT 450) 5 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5410, PT 5412, and PT 5414. Department consent required.

This course covers the fundamentals of physical therapist examination in the context of overall practice as described in the Guide to Physical Therapist Practice. Students will be introduced to basic tests and measures as well as to information relevant to their selection and interpretation. Students will apply the tests in laboratory and clinical settings and will learn to appropriately document their findings.

**PT 5451. Acute Care Management**

(PT 451) 6 credits. Lecture/Laboratory/Practicum. Prerequisite: PT 5450. Department consent required.

An exploration of the practice of Physical Therapists in the acute care setting. Students will develop competency in clinical evaluation of impairments and functional limitations, identification of appropriate intervention options, and implementation of a plan of care to improve performance of functional activities for patients commonly encountered in acute care practice settings. In addition, this course integrates curricular content in acute care with clinical practice through critical thinking, problem solving, and clinical experiences.

**PT 5452. Therapeutic Exercise and Physical Agents.**

(PT 452) 3 credits. Lecture/Laboratory. Department consent required.

An exploration of interventions commonly used by physical therapists in both inpatient and outpatient settings. Students will develop competency in selection and implementation of therapeutic exercise and physical agents as interventions to improve performance of functional activities for patients commonly encountered in a variety of settings. The assessment of therapeutic effects, and modification of the interventions is an integral components of this course.

**PT 5453. Musculoskeletal Examination**

(PT 453) 3 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5452 and PT 5462. Department consent required.

Provides the D.P.T. entry-level physical therapist with the knowledge and skill sets to effectively examine patients/clients with musculoskeletal dysfunctions. Elements of patient management include examination, evaluation and diagnosis with special attention to differential diagnosis and screening strategies. Critical appraisal of musculoskeletal test characteristics, critical thinking, and Evidence-Based Practice are emphasized. Applications will consider culturally diverse patient/client populations across the life span.

**PT 5454. Musculoskeletal Intervention**

(PT 454) 3 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5452 and PT 5462. Department consent required.

Provides the D.P.T. entry-level physical therapist with the knowledge and skill sets to effectively manage patients/clients with musculoskeletal dysfunctions. The Prognosis/Plan of Care, Intervention, and Outcomes of the Physical Therapy



Management Model are the focus of the course. Development of Clinical Practice Guidelines and Evidence-Based Practice are emphasized. Applications will consider culturally diverse patient/client populations across the life span.

**PT 5455. Essentials of Rehabilitation Practice**

(PT 455) 3 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5426 and PT 5464. Department consent required.

An exploration of the practice of Physical Therapists in the area of orthotics prosthetics, Diabetes and Spinal Cord Injury. Students will develop competency in clinical assessment of functional limitations, specifically in locomotion, identification of appropriate treatment options and implementation of interventions, through the use of orthotics and prosthetics, to improve performance of functional activities for patients with a variety of deficits.

**PT 5456. Neuromuscular Examination**

(PT 456) 3 credits. Lecture/Laboratory/Practicum. Prerequisites: PT 5426 and 5464. Department consent required.

Through comprehensive problem solving, students analyze patient situations where neuromotor dysfunction is a complicating factor. Students develop neurophysiological sound examination and evaluation skills integrating physical and psychological patient considerations. The skill set for examination will be consistent with foundational movement science under the evidenced based practice model.

**PT 5457. Neuromuscular Intervention**

(PT 457) 3 credits. Lecture/Laboratory/Practicum. Prerequisites: 5426 and PT 5464. Department consent required.

Through comprehensive problem solving, students analyze patient situations where neuromotor dysfunction is a complicating factor. Students develop neurophysiological sound treatment skills integrating physical and psychological patient considerations. The skill set for intervention will be consistent with foundational movement science under the evidenced based practice model.

**PT 5460. Introduction to Clinical Education**

(PT 460) 1 credit. Lecture. Prerequisite: PT 5451. Department consent required.

This two-week course is intended to provide students with a foundation for all future full time practical experience courses. Students will learn how evaluation methods and tools will be implemented during full time practica. Roles and responsibilities of persons associated with practica courses will be explored. Through lecture, discussion and written assignments, students will develop an understanding of the importance of professional behaviors, self-evaluation and personal reflection. A written professional portfolio will be initiated.

**†PT 5461. Acute Care Practicum**

(PT 461) 8 credits. Practicum. Prerequisites: PT 5451 and PT 5460. Department consent required.

Under close supervision by an experienced, licensed Physical Therapist, students will perform all patient management functions for patients in an acute, subacute care or homecare setting. The course is held off campus at individually assigned clinical facilities. Each student is assigned one or two clinical instructors who are physically present and immediately available to direct and supervise tasks that are related to patient/client management.

**PT 5462 Internal Integrated Musculoskeletal Clinical Practicum I**

(PT 462) 1 credit. Practicum. Department consent required.

A clinical experience that provides students the opportunity to integrate interventions learned in PT 452 in an outpatient setting. Students will develop and administer plans of care that include therapeutic exercise and physical agents for outpatients with various musculoskeletal conditions.

**PT 5463. Internal Integrated Musculoskeletal Clinical Practicum II**

(PT 463) 2 credits. Practicum. Prerequisite: PT 5462. Department consent required.

A clinical experience that provides students the opportunity to integrate interventions learned in PT 5453 and PT 5454 in an outpatient setting. Students will utilize examination and manual therapy skills in the development and implementation of plans of care for outpatients with various musculoskeletal conditions.

**†PT 5464. Musculoskeletal Practicum**

(PT 464) 8 credits. Practicum. Prerequisites: PT 5453 and PT 5454. Department consent required.

Under close supervision by an experienced, licensed Physical Therapist, students will perform all patient management functions for patients in an outpatient orthopedic setting. The course is held off campus at individually assigned clinical facilities throughout the country. Each student is assigned one or two clinical instructors who are physically present and available to direct and supervise all patient/client management performed by the student.

**PT 5466. Internal Integrated Neuromuscular Clinical Practicum**

(PT 466) 2 credits. Practicum. Department consent required.

A clinical experience that provides students the opportunity to integrate interventions learned in PT456 and PT 457 in a clinical setting. Students will utilize examination and intervention skills in the development and implementation of plans of care for patients with various neuromuscular conditions.

**†PT 5467. Neuromuscular Practicum**

(PT 467) 8 credits. Practicum. Prerequisites: PT 5456 and 5457. Department consent required.

Under close supervision by an experienced, licensed Physical Therapist, students will perform all patient management functions for patients in a rehabilitation facility. The course is held off campus at individually assigned clinical facilities throughout the country. Each student is assigned one or two

clinical instructors who are physically present and available to direct and supervise all patient/client management performed by the student.

**†PT 5468. Individualized Practicum**

(PT 468) 8 credits. Practicum. Department consent required.

Under close supervision by an experienced, licensed Physical Therapist, students will perform all patient management functions for patients in a facility providing Physical Therapy services. Student assignment is based on student interest and on site availability. The course is held off campus at individually assigned clinical facilities throughout the country. Each student is assigned one or two clinical instructors who are physically present and available to supervise all patient/client management performed by the student. The learning experience is intended to allow the student to gain clinical experience in an area relating to their individual professional interests.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

# PHYSICS

*Department Head:* Professor William C. Stwalley  
*Professors:* Best, Cormier, Côté, Dunne, Dutta, Eyley, Gai, Gibson, Gould, Hamilton, Javanainen, Kappers, Kharchenko, Kovner, Mallett, Mannheim, O'Donnell, Papadimitrakopoulos, Pease, Peterson, Rawitscher, Smith, and Swanson

*Research Professors:* Boggs, Budnick, Islam, Kessel, Michels, Roychoudhuri, and J. Schweitzer

*Associate Professors:* Blum, Campagnola, Dobrynin, Edson, Fernando, Huber, Jones, Joo, Sinkovic, Snyder, Wells, and Wolgemuth, and Yelin

*Assistant Professors:* M. Jain and P. Schweitzer

The Master of Science and Doctor of Philosophy degrees are offered.

**Admission.** For admission to either the M.S. or Ph.D. program, completion of a bachelor's degree normally is required. It is expected that the applicant will have majored in physics or in a related subject.

**The Master of Science Degree.** Each student in the Master's program follows an individual plan of study arranged jointly by the student and an advisory committee, based on the student's career goals as well as prior preparation. Candidates for the Plan B Master's degree are required to complete 24 credits of courses. Under Plan A, a thesis is required, as well as completion of 9 credits of Thesis Research courses as stipulated in the Standards and Degree Requirements section of this catalog.

**The Ph.D. Degree.** Each doctoral student's course of study is supervised by an advisory committee, headed by the student's major advisor. The committee and the student jointly plan a curriculum that is designed to provide the general knowledge of physics appropriate for the Ph.D. and also the specialized expertise necessary to conduct dissertation research. This research is conducted under the supervision of the major advisor and culminates in an original scientific contribution.

There are numerous research projects in the Department of Physics which provide graduate students with opportunities for conducting the scientific investigations necessary for the Ph.D. degree. These include atomic, molecular and optical physics (experimental and theoretical), condensed matter physics (experimental and theoretical), nuclear physics (experimental and theoretical), particle and field theory (including relativity and cosmology) and quantum optics (experimental and theoretical). Active research groups are engaged in each of these areas. Their work is described on-line at <www.phys.uconn.edu>. A brochure that describes the Department's graduate program also is available on-line.

**Special Requirements for the Ph.D.** The requirements for the Ph.D. include all the general requirements listed in the Standards and Degree Requirements section of this catalog. In addition, satisfactory completion of Physics 5302 (Electrodynamics II) and Physics 5403 (Quantum Mechanics III) is required for the Ph.D. degree.

The General Examination in physics consists of written and oral sections. A set of written examinations must be completed satisfactorily to qualify for admission to the oral part of the General Examination.

## COURSES OF STUDY

†**PHYS 5010. Independent Study**  
 (PHYS 300) 1-6 credits. Independent Study. This course may be taken, with change of topic, up to three times for a maximum of nine total credits.

A special reading course for graduate students.

**PHYS 5020. Research in Physics**  
 (PHYS 304) 1-6 credits. Laboratory.  
 Experimental and theoretical research in selected topics in physics. This course may be taken up to three times for a maximum of nine credits.

**PHYS 5050. Modern Physics for Teachers**  
 (PHYS 316) 3 credits. Lecture.  
 New teaching materials and techniques as developed by the Physical Science Study Committee for secondary school teachers of physics.

†**PHYS 5094. Physics Seminar**  
 (PHYS 310) 1 credit. Seminar.

**PHYS 5101. Methods of Theoretical Physics I**  
 (PHYS 311) 3 credits. Lecture.  
 Vector and tensor analysis, curvilinear coordinates, linear algebra, functions of complex variables, differential equations, special functions, elements of Green's functions.

**PHYS 5102. Methods of Theoretical Physics II**  
 (PHYS 312) 3 credits. Lecture. Prerequisite: PHYS 5101.

Abstract vector spaces, Hilbert space, group theory. Fourier series and integral representations, Theory of Green's functions and integral equations. Complex function theory.

**PHYS 5105. Methods of Experimental Physics**  
 (PHYS 314) 1-6 credits. Laboratory.  
 Experimental methods used in modern research are applied to experiments from various fields of physics, including: low temperature conductivity of metals, x-ray diffraction, acoustic attenuation, optical constants of metals, color centers in alkali halides, nuclear beta decay, Zeeman effects and others.

**PHYS 5201. Theoretical Mechanics I**  
 (PHYS 318) 3 credits. Lecture.  
 Classical mechanics: Lagrange equations, central force motion, rigid body motions, small oscillations, Hamilton equations, canonical transformation.

**PHYS 5202. Theoretical Mechanics II**  
 (PHYS 319) 3 credits. Lecture. Prerequisite: PHYS 5201.  
 Dynamics of continuous media, hydromechanics, elasticity, wave motion, wave interactions and scattering, non-linear processes.

**PHYS 5301. Electrodynamics I**  
 (PHYS 306) 3 credits. Lecture. Prerequisite: PHYS 5101.  
 Differential formulations of electrostatics and magnetostatics, electromagnetic induction. Maxwell equations, electromagnetic waves, application to wave guides, cavities, and dispersive media. Foundations of special relativity.

**PHYS 5302. Electrodynamics II**  
 (PHYS 321) 3 credits. Lecture. Prerequisites: PHYS 5201 and PHYS 5301.  
 Maxwell's equations with time dependent sources; radiation from relativistic charged particles; dynamical laws for charged particles; diffraction of electromagnetic waves.

**PHYS 5350. Computerized Modeling in Science**  
 (PHYS 305) 4 credits. Lecture.  
 Development and computer-assisted analysis of mathematical models in chemistry, physics, and engineering. Typical topics include chemical equilibrium, reaction rates, particle scattering, vibrating systems, least square analysis and quantum chemistry.

**PHYS 5401. Quantum Mechanics I**  
 (PHYS 322) 3 credits. Lecture. Prerequisites: PHYS 5101 and PHYS 5201.  
 Mathematical formulation and interpretation of quantum mechanics. Illustrative examples. Hydrogen atom. Dirac ket and bra vectors, matrix methods. Scattering theory.

**PHYS 5402. Quantum Mechanics II**  
 (PHYS 323) 3 credits. Lecture. Prerequisite: PHYS 5401.  
 Symmetry and angular momentum. Approximation methods for stationary and time-dependent problems, with applications. Relativistic theory of the electron.

**PHYS 5403. Quantum Mechanics III**  
 (PHYS 343) 3 credits. Lecture. Prerequisite: PHYS 5402.  
 Occupation number representation, electron gas, Hartree-Fock approximation, correlation energy, superconductivity, perturbation theory, Green's functions, Feynman diagrams.

**PHYS 5500. Statistical Mechanics**  
 (PHYS 324) 3 credits. Lecture. Prerequisite: PHYS 5401.  
 Ensembles, distribution function, partition function. Bose-Einstein and Fermi-Dirac distributions, fluctuations, applications to the properties of solids and liquids and to the kinetic theory of gases.

**PHYS 5600. Modern Physics**  
 (PHYS 327) 3 credits. Lecture. Prerequisite: PHYS 5401.  
 Experimental and theoretical milestones in the development of contemporary physics. Atomic, molecular, and optical physics including quantum

optics; condensed matter physics; nuclear and particle physics; and cosmology and astrophysics.

**PHYS 5621. Advanced Topics in Physics I**  
(PHYS 325) 1-6 credits. Lecture.

Selected topics in theoretical and experimental physics.

**PHYS 5622. Advanced Topics in Physics II**  
(PHYS 326) 1-3 credits. Lecture. Prerequisite: PHYS 5621.

Selected topics in theoretical and experimental physics.

†**GRAD 5930. Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†**GRAD 5950. Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†**GRAD 5960. Full-Time Master's Research**  
(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**  
(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**  
(GRAD 399) Non-credit.

**PHYS 6110. Atomic Physics**  
(PHYS 337) 3 credits. Lecture. Prerequisite: PHYS 5402.  
Coupling of angular momenta. Hartree-Fock theory of many electron atoms, fine structure and hyperfine structure. Introduction to group theory.

**PHYS 6120. Molecular Physics**  
(PHYS 338) 3 credits. Lecture. Prerequisite: PHYS 6110.

Heitler-London and molecular orbital theories for diatomic molecules, semi-empirical methods of polyatomic molecules.

**PHYS 6130. Quantum Optics**  
(PHYS 365) 3 credits. Lecture. Prerequisite: PHYS 5401.

Semiclassical theory of light-matter interactions. Quantum states of light. Generation, detection and interactions of nonclassical radiation.

**PHYS 6140. Principles of Lasers**  
(PHYS 370) 3 credits. Lecture

The physics of lasers, including optical pumping and stimulated emission, laser rate equations, optical resonators, non-linear optics, the Kerr effect and Faraday rotation. Applications to gas, crystal, glass, liquid, dye, semiconductor, chemical and ultraviolet lasers, Q-switching, mode-locking, and parametric devices.

**PHYS 6150. Semiconductor Optical Devices**  
(PHYS 368) 3 credits. Lecture. Prerequisite: PHYS 6201.

Semiconductor based optical devices such as lasers, amplifiers, modulators, and photodetectors, and their application to optical fiber transmission systems.

**PHYS 6201. Fundamentals of Solid State Physics I**  
(PHYS 377) 3 credits. Lecture.

Crystal structure, phonons, electronic band structure, metals, insulators and semiconductors.

**PHYS 6202. Fundamentals of Solid State Physics II**  
(PHYS 378) 3 credits. Lecture. Prerequisite: PHYS 5201.

Optical, magnetic and transport properties. Lattice defects. Non-crystalline solids.

**PHYS 6211. Condensed Matter Physics I**  
(PHYS 328) 3 credits. Lecture. Prerequisite: PHYS 5402.

Crystal structure; lattice vibrations; electronic band structure of solids; transport theory; basic properties of metals, semi-conductors and insulators; magnetism; super-conductivity.

**PHYS 6212. Condensed Matter Physics II**  
(PHYS 329) 3 credits. Lecture. Prerequisite: PHYS 6211.

Crystal structure; lattice vibrations; electronic band structure of solids; transport theory; basic properties of metals, semi-conductors and insulators; magnetism; super-conductivity.

**PHYS 6220. Advanced Solid State Physics**  
(PHYS 339) 3 credits. Lecture. Prerequisite: PHYS 5612 or PHYS 6342.

The many-body problem in solid state physics. The electron gas, normal metals, electron-phonon interactions, superconductivity, ferro- and antiferromagnetism and spin waves, polaron theory.

**PHYS 6234. Non-Equilibrium Properties of Solids**  
(PHYS 352) 3 credits. Lecture. Prerequisite: PHYS 6211.

Electrical and thermal conduction, thermoelectricity. Electrons and phonons. Perturbation techniques to estimate interaction rates; electron-phonon, phonon-phonon and imperfection scattering processes. Ultrasonic generation and attenuation, spin-lattice interactions.

**PHYS 6236. Microwave Physics I**  
(PHYS 335) 3 credits. Lecture. Prerequisite: PHYS 5301.

The principles of microwave and radio frequency techniques applied to investigation of the properties of matter.

**PHYS 6244. The Electrical Properties of Polymers**  
(PHYS 363) 3 credits. Lecture.

Experimental and theoretical aspects of electrical phenomena in polymers: DC and AC conductivity, dielectric constant, electrical breakdown, photoconductivity, etc. Extended and localized electron wavefunctions; band and hopping conduction.

**PHYS 6246. Nuclear Magnetic Resonance I**  
(PHYS 357) 3 credits. Lecture. Prerequisite: PHYS 5401.

Basic theory and experimental methods of NMR with emphasis on resonance and relaxation in metals. Brief discussion of interpretation of NMR in non-metallic solids, liquids, and gases.

**PHYS 6247. Nuclear Magnetic Resonance II**  
(PHYS 358) 3 credits. Lecture. Prerequisite: PHYS 6246.

Basic theory and experimental methods of NMR with emphasis on resonance and relaxation in metals. Brief discussion of interpretation of NMR in non-metallic solids, liquids, and gases.

**PHYS 6254. Low Temperature Physics I**  
(PHYS 361) 3 credits. Lecture.

Lectures and seminars on selected topics in low temperature physics; superfluidity and superconductivity, solid state, nuclear alignment and polarization, transport properties in solids.

**PHYS 6256. X-Ray Physics I**  
(PHYS 331) 3 credits. Lecture.

Symmetry of crystals. Production and properties of x-rays. Application of x-rays in the study of crystalline and amorphous solids by diffraction and spectroscopic techniques, including synchrotron radiation for studying atomic and electronic structures in materials.

**PHYS 6264. Semiconductor Physics**  
(PHYS 367) 3 credits. Lecture. Prerequisite: PHYS 5402 and PHYS 6201, which may be taken concurrently.

Semiconductors and semiconductor devices. Band structure, phonon scattering, velocity-field relations, effects of doping and magnetic fields, optical and transport properties.

**PHYS 6300. Astrophysics and Modern Cosmology**  
(PHYS 307) 3 units. Lecture. Instructor consent required. Preparation equivalent to PHYS 3202 and PHYS 3401 is expected.

Basic principles of contemporary astrophysics; applications to stars, galaxies, and modern cosmology.

**PHYS 6310. Relativity**  
(PHYS 342) 3 credits. Lecture.

Special relativity, tensor analysis, foundations of general relativity, Petrov classification of curved spacetimes, Schwarzschild and Kerr solutions, experimental tests and recent developments.

**PHYS 6320. Nuclei and Particles**  
(PHYS 355) 3 credits. Lecture.

Properties of nuclei and particles, conserved quantities, isospin, quark model, Fermi gas model, electroweak interaction, high energy scattering.

**PHYS 6331. Nuclear Physics I**  
(PHYS 340) 3 credits. Lecture. Prerequisite: PHYS 5402.

A quantum mechanical treatment of nuclear forces and nuclear structure, including the shell and collective models, and of reaction and radiation phenomena. The second semester is reserved for a discussion of selected topics on an advanced level.

**PHYS 6332. Nuclear Physics II**  
(PHYS 341) 3 credits. Lecture. Prerequisite: PHYS 6331.

A quantum mechanical treatment of nuclear forces and nuclear structure, including the shell and collective models, and of reaction and radiation phenomena. The second semester is reserved for a discussion of selected topics on an advanced level.

**PHYS 6341. Quantum Theory of Fields I**  
(PHYS) 3 credits. Lecture. Prerequisite: PHYS 5403.

Local gauge invariance, Lagrangian formulation, Noether currents, spontaneous breakdown of symmetry, Higgs mechanism and superconductivity, canonical quantization, Feynman diagrams, Green's functions.

**PHYS 6342. Quantum Theory of Fields II**  
(PHYS 345) 3 credits. Lecture. Prerequisite: PHYS 6341.

Topics chosen from the following: Path integral formalism, generating functionals, renormalization, abelian and non-abelian gauge theories (QED and QCD), electroweak theory, solitons, instantons.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## PHYSIOLOGY AND NEUROBIOLOGY

*Department Head:* Professor J. Larry Renfro  
*Professors:* Armstrong, Chapple, Chen, Crivello, de Blas, Gallo, Kraemer, LoTurco, Maresh, Moiseff, Pescatello, and Zinn  
*Associate Professors:* Bahr, Cantino, Conover, Nishiyama, Rubio, and Walikonis  
*Assistant Professors:* Mulkey and Proenza

Physiology and Neurobiology includes the following major areas of research: (1) *Neurobiology* – cellular and comparative neurobiology with emphasis on neural integration of behavior patterns, synaptic transmission, developmental neurobiology, glial cell biology, regulation and biophysics of ion channels, neuronal mechanisms of calcium and pH regulation, molecular neurobiology and functional neuroanatomy; and (2) *Physiology* – evolution of physiological adaptations in higher organisms, comparative aspects of osmotic and ionic regulation in vertebrates, transepithelial ion and water transport, renal physiology, muscle physiology, cardiovascular and respiratory physiology.

### Interdisciplinary Study

**Neurosciences.** This is an interdisciplinary area of concentration. Neuroscience is concerned with the structural and functional characteristics of the nervous system and its relation to the adaptive physiology and behavior of the organism. Students in this program may approach the full range of neuroscience studies through courses and research at the cellular, systemic, and organismic levels. A particular strength of the area is the analysis of behavior, its development, and its neurological bases. This area of concentration is offered in the fields of study of pharmaceutical science, physiology and neurobiology, and psychology. Application is made to the preferred field of study, but the applicant must be acceptable to the Neuroscience Committee.

**Biomedical Engineering Program.** The Department of Physiology and Neurobiology participates in a joint program with the School of Engineering for graduate students interested in interdisciplinary work in which biological and engineering disciplines are interrelated. Applicants may have primary training in biology or physical sciences. For information with regard to the biological engineering program, students should write to Dr. William Chapple, Unit 3156, Storrs, Connecticut 06269-3156.

### COURSES OF STUDY

**PNB 5301. Fundamentals of Neurobiology**  
(PNB 301) 3 credits. Lecture.

Major topics in neurobiology, including cellular neurophysiology, synaptic physiology, sensory and motor integration, molecular and developmental neurobiology.

**PNB 5302. Fundamentals of Physiology**  
(PNB 302) 3 credits. Lecture.

Introduction to integrative biology. Associations of molecules, cells and tissues and their integrated functions across all organizational levels. Application of language and basic concepts of physiology to the development of problem-solving skills.

**PNB 5314. Physiology of Excitable Cells**  
(PNB 314) 2 credits. Lecture.

In depth study of the molecular structure, function and regulation of ion channels and the mechanisms that control membrane potential and cell excitability. Reading and discussion focus on primary literature.

**PNB 5325. Biological Rhythms**  
(PNB 325) 3 credits. Lecture.

Neuroendocrine and environmental factors in the control of biological rhythmicity, especially circadian and annual rhythms. Emphasis on animals.

**PNB 5330. Hormones and Behavior**  
(PNB 330) 3 credits. Lecture.

Hormones and regulation of behaviors, reproductive, parental, social and aggressive behaviors, as well as migration, hibernation, and learning and memory.

†**PNB 5347. Electron Microscopy**  
(PNB 347) 1-3 credits. Lecture/Laboratory.

Lectures and laboratory exercises on the principles and practice of biological electron microscopy.

**PNB 5351. Projects in Electron Microscopy**  
(PNB 351) 1-3 credits. Independent study.

Electron microscopy as a research method in biological sciences.

**PNB 5390. Membrane Transport**  
(PNB 390) 3 credits. Lecture.

Fundamental mechanisms by which water and small molecules are transported across biological membranes. Biophysical and biochemical analysis of transport by diffusion, osmosis, channels, carriers and pumps. Physiological integration of different transport mechanisms.

**PNB 5395. Independent Study**  
(PNB 395) 1 credit. Independent study.

A reading course for those wishing to pursue special work in biology.

**PNB 5396. Investigation of Special Topics**  
(PNB 396) 1-3 credits. Independent study.

Advanced study in a field within Physiology and Neurobiology.

**PNB 5397. Research**  
(PNB 397) 1-6 credits. Independent study.

Conferences and laboratory work covering selected fields of Physiology and Neurobiology.

†GRAD 5930. **Full-Time Directed Studies (Master's Level)**  
(GRAD 397) 3 credits.

†GRAD 5950. **Master's Thesis Research**  
(GRAD 395) 1-9 credits.

†GRAD 5960. **Full-Time Master's Research**  
(GRAD 396) 3 credits.

GRAD 5998. **Special Readings (Master's)**  
(GRAD 398) Non-credit.

GRAD 5999. **Thesis Preparation**  
(GRAD 399) Non-credit.

†PNB 6400. **Seminar in Neurobiology**  
(PNB 400) 1 credit. Seminar.  
An in-depth study of selected topics in the molecular, cellular, and central aspects of neurobiology.

PNB 6402. **Seminar in Comparative Physiology**  
(PNB 402) 1 credit. Seminar.

†PNB 6403. **Seminar in Endocrinology**  
(PNB 403) 1 credit. Seminar.

PNB 6404. **Seminar in Biological Rhythms**  
(PNB 404) 1 credit. Seminar.

†PNB 6405. **Seminar in Research and Journal Presentations in Physiology and Neurobiology**  
(PNB 405) 1 credit. Seminar.  
Provides the opportunity for graduate students to present journal articles and their laboratory research in physiology and neurobiology to the department.

PNB 6417. **Developmental Neurobiology**  
(PNB 417) 3 credits. Lecture. Prerequisite: PNB 5301.  
Molecular mechanisms of neurodevelopment. Neural induction, cell fate determination, neurogenesis, axon targeting, neuronal migration, synapse formation and activity-dependent synaptic remodeling.

PNB 6418. **Integrative Neurobiology**  
(PNB 418) 3 credits. Lecture. Prerequisite: PNB 5301.  
Physiology of the central nervous system: information processing and central mechanisms in vertebrates and invertebrates; physiological aspects of behavior.

PNB 6423. **Human Reproduction**  
(PNB 423) 3 credits. Lecture.  
The physiology of human reproduction.

PNB 6424. **Reproductive Neuroendocrinology**  
(PNB 424) 3 credits. Lecture.  
Analysis of the functional interaction between the body's two regulatory systems, the nervous and endocrine systems, with respect to the regulation of female reproduction.

PNB 6426. **Molecular and Cellular Neurobiology**  
(PNB 426) 3 credits. Lecture. Prerequisite: PNB 5301.

The molecular basis of synaptic transmission and other signaling mechanisms of communication among nerve cells. Extracellular and intracellular molecular messengers and signal transduction mechanisms. Cellular functions involved in differentiation, proliferation and survival of nerve cells.

†GRAD 6930. **Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†GRAD 6950. **Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†GRAD 6960. **Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

GRAD 6998. **Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

GRAD 6999. **Dissertation Preparation**  
(GRAD 499) Non-credit.

## PLANT SCIENCE

*Department Head:* Professor Mary Musgrave  
*Professors:* Adams, Berkowitz, Brand, Guillard, Li, McAvoy, and Singha

*Associate Professors:* Alexopoulos, Auer, Beck von Bodman, Elliott, Miniutti, Morris, Schulthess, Schwab, Westa

*Assistant Professors:* Henderson, Kuzkovkina-Eischen, and Legrand

The Department of Plant Science offers M.S. and Ph.D. degree programs. Research is conducted in the following major areas: *Agronomy* (including turf management); *Horticulture* (including plant biotechnology); *Soil Science*, and *Landscape Architecture* (M.S. only). Research areas are highly diverse and continuously developing. Prospective applicants should check the department website ([www.canr.uconn.edu/plsci/](http://www.canr.uconn.edu/plsci/)) for current information on faculty research.

All applicants must provide results of the Graduate Record Examination general tests and three letters of recommendation with their application.

The M.S. program is available with either a thesis (Plan A) or non-thesis (Plan B) option, although most students are admitted under Plan A. Students with deficiencies in their undergraduate preparation may be expected to include preparatory coursework in their plan of study. All M.S. students must enroll in at least one semester of PLSC 5897, Graduate Seminar.

Applicants for the Ph.D. program should have adequate training and experience to enable them to perform independent research. Required coursework will depend on the nature of the research project and the student's background. A minimum of two years of full-time study beyond the master's degree (or equivalent) is expected. All Ph.D. students must enroll in at least two semesters of PLSC 5897, Graduate Seminar.

**Special Facilities.** The Department of Plant Science has research facilities in several buildings and field locations. Most laboratories are new or recently renovated and are well equipped. Several faculty laboratories are located in the college's Agricultural Biotechnology Laboratory. The Department also operates the University Plant Biotechnology Facility and the Soil Nutrient Analysis Laboratory that can be utilized for research purposes. The Plant Science Research Farm and Nursery is located within one mile of the main campus and contains 160 acres (65 hectares) and a small greenhouse range that are available for field research projects. The Floriculture greenhouse on the main campus provides about 15,000 square feet (1400 square meters) of growing area, and additional greenhouse space is associated with both the Agricultural Biotechnology Laboratory and the Plant Biotechnology Facility.

### COURSES OF STUDY

PLSC 5150. **Design and Analysis of Agricultural Experiments**  
(PLSC 350) 4 credits. Lecture/Laboratory.

The design and analysis of experiments commonly conducted in agricultural field, greenhouse, and laboratory research. Presentation of summarized data using computer generated graphics from printers, plotters, and film recorders will be covered. Emphasis

is placed on use of computers (mainframe and personal) and appropriate computer programs (e.g., SAS, Sigma Plot).

#### PLSC 5240. Plant Biotechnology

(PLSC 343) 3 credits. Lecture.

Principles of recombinant DNA and plant gene transfer technologies. Applications of plant biotechnology in agriculture, horticulture, forestry, human/animal health care, and the pharmaceutical industry. Social and environmental impacts of plant biotechnology.

#### PLSC 5250. Plant Gene Transfer Techniques

(PLSC 385) 3 credits. Laboratory.

Techniques of plant gene delivery and transgenic plant production. Verification and analysis of transgenic plants.

#### PLSC 5252. Physiology and Ecology of Trees

3 credits. Lecture. Instructor consent required. Also offered as NRE 5252.

An examination of the interactions between trees and their environment at the molecular, individual and forest stand scales. Lectures and reviews of current research span at least two spatial scales of organization for each course topic. Course topics include tree carbon balance, water relations, mineral nutrition, morphology, genomics, phenology, climate change and modeling.

#### PLSC 5298. Current Topics in Plant Biology

(PLSC 335) 1 credit. Lecture.

Informal discussions of current concepts, research and techniques in the areas of plant biotechnology, plant physiology and molecular biology.

#### PLSC 5410. Soil Chemistry Components

(PLSC 359) 4 credits. Lecture/Laboratory. Not open to students that have passed PLSC 3410.

Basic concepts of the physical chemistry of soil constituents. Topics include soil atmospheres, soil solutions, soil organic matter, soil mineralogy, and surface characteristics and analysis. Term paper required.

#### PLSC 5420. Soil Chemistry Reactions and Equilibrium

(PLSC 378) 3 credits. Lecture. Also offered as ENVE 5230.

Physical chemical characteristics of soil minerals and soil organic matter, and their reactivity with compounds present in the aqueous and vapor phase. Topics include: modern spectroscopic surface analyses, soil organic matter and its interactions with metals, redox reactions, solubility, derivation of ion-exchange equations, and kinetics of soil reactions. Term paper required.

#### PLSC 5460. Soil Analysis

(PLSC 377) 3 credits. Lecture/Laboratory.

A study of the theory and practice of analytical methods used in the determination of nutrient and related elements of soil.

#### †PLSC 5897. Seminar

(PLSC 397) 1 credit. Seminar.

#### PLSC 5898. Topics in Plant Science

(PLSC 305) 1-6 credits. Seminar.

Topics and credits to be published prior to the registration period preceding the semester offerings.

#### PLSC 5899. Independent Study

(PLSC 302) 1-6 credits. Independent Study.

#### †GRAD 5930. Full-Time Directed Studies (Master's Level)

(GRAD 397) 3 credits.

#### †GRAD 5950. Master's Thesis Research

(GRAD 395) 1 - 9 credits.

#### †GRAD 5960. Full-Time Master's Research

(GRAD 396) 3 credits.

#### GRAD 5998. Special Readings (Master's)

(GRAD 398) Non-credit.

#### GRAD 5999. Thesis Preparation

(GRAD 399) Non-credit.

#### †GRAD 6930. Full-Time Directed Studies (Doctoral Level)

(GRAD 497) 3 credits.

#### †GRAD 6950. Doctoral Dissertation Research

(GRAD 495) 1 - 9 credits.

#### †GRAD 6960. Full-Time Doctoral Research

(GRAD 496) 3 credits.

#### GRAD 6998. Special Readings (Doctoral)

(GRAD 498) Non-credit.

#### GRAD 6999. Dissertation Preparation

(GRAD 499) Non-credit.

## POLITICAL SCIENCE

*Department Head:* Professor Mark A. Boyer

*Professors:* Clifford, Farnen, Hanson, Hiskes, Lewis, Reiter, and Zirakzadeh

*Associate Professors:* Best, Kelly, Kingstone, Lefebvre, McDermott, Scruggs, Sterling-Folker, Van Cott, Waddell, and Yalof

*Assistant Professors:* Bayulgen, Cole, Dudas, Dyson, Hertel, Hettinger, Ladewig, Morrell, Moscardelli, Nunnally, Pressman, Simien, Singer, Turcotte, Venator Santiago, and Zheng

The Department of Political Science offers study leading to the degrees of Master of Arts and Doctor of Philosophy. Master's degree students usually take a less specialized program, including work in several areas of political science.

**Admission to the Master of Arts Degree Program.** All applicants are required to take the Graduate Record Examinations. Only those applicants showing high scholastic promise are admitted. Usually, an undergraduate major in political science (or an equivalent body of course work) is required for admission. However, exceptions are made for promising candidates who have majored in related subjects. Some undergraduate work in history, economics, and sociology also is desirable. Except where the M.A. degree clearly is intended to be a terminal degree, the admissions committee is reluctant to act favorably in the case of an applicant whose record shows no successful academic exposure to one or more foreign languages.

**Requirements for the Master's Degree.** After fulfilling the requirements for the master's degree, a final examination is administered. The final examination for the M.A. degree is both written and oral.

**Admission to the Ph.D. Degree Program.** Students pursuing the M.A. in Political Science who wish to continue for the Ph.D. degree are admitted to the doctoral program only upon recommendation of the committee administering the M.A. final examination. Those who have earned the M.A. degree elsewhere are admitted to pursue doctoral work here only with very convincing professional recommendations and demonstrated evidence of scholarly ability. Such applicants also must submit the results of the Graduate Record Examinations.

**Departmental Requirements for the Ph.D. Degree.** The Ph.D. program involves two distinct stages. Doctoral students first prepare for a comprehensive written and oral general examination. After passing this examination, they devote themselves to research and the writing of a dissertation. All doctoral students must prepare in two of the following areas: international relations, comparative politics, American politics, and political theory. As part of the Ph.D. general examination process, the student is expected to present a dissertation proposal that is considered by the advisory committee to be ready to defend.

All doctoral students are required to take, as early in their program as possible, Political Science 5393, Political Science 5395, and Political Science 5396.

Ph.D. students are required to have a competent reading knowledge of at least one foreign language appropriate to the general area of study *or*, upon recommendation of the advisory committee, at least

six credits of advanced work in a related area or a supporting area such as statistics. However, an advisory committee may require additional advanced work in a related or supporting area, alone or in conjunction with a foreign language.

**Special Facilities.** Students interested in comparative politics will find the Center for Latin American Studies and the Center for Slavic and East European Studies valuable resources. A vast archive of survey data from polls taken both in the United States and abroad is housed at the Roper Center, which is part of the Institute for Social Inquiry. Excellent computer facilities together with expert technical help from the Institute's staff provide ready access to these survey materials.

## COURSES OF STUDY

### **POLS 5000. Independent Study in Political Science**

(POLS 300) 1-6 credits. Independent Study.

### **POLS 5010. Investigation of Special Topics in Political Science**

(POLS 397) 1-3 credits. Seminar.

### **POLS 5100. Proseminar in Political Theory**

(POLS 304) 3 credits. Seminar.

Historical survey and analysis of fundamental concepts in political theory.

### **POLS 5105. Political Theory**

(POLS 301) 3 credits. Seminar.

Historical and conceptual analysis of selected political ideas such as justice, liberty, rights, political obligation, or the state; including an examination of one or more major schools or bodies of political thought from ancient to contemporary times.

### **POLS 5110. Seminar in American Thought and Ideology**

(POLS 307) 3 credits. Seminar.

### **POLS 5200. Proseminar in Comparative Government**

(POLS 335) 3 credits. Seminar.

Political institutions and processes compared. Derivation of generalizations.

### **POLS 5205. West European Politics**

(POLS 331) 3 credits. Seminar.

Contending approaches to the political systems of West European nations. Comparative analysis of industrialization, institutional structure, and political economy.

### **POLS 5210. Seminar in Latin American Politics**

(POLS 332) 3 credits. Seminar.

### **POLS 5215. Comparative Political Development**

(POLS 336) 3 credits. Seminar.

Development of political systems in relation to socio-economic level and other conditioning factors. Political stability and change.

### **POLS 5220. Seminar in African Politics**

(POLS 339) 3 credits. Seminar.

Focus on the rise of nationalism in post-war Africa, the process of decolonization, and the problems of economic growth and national integration. Attention will also be given to the role of ideology as a determinant in the choice of development policies.

### **POLS 5225. East European Politics**

(POLS 340) 3 credits. Seminar.

Comparative analysis of the political development, economic modernization, social stratification, and indigenous ideologies of post-Communist Eastern Europe.

### **POLS 5230. Development Administration**

(POLS 368) 3 credits. Seminar.

Strategies of implementing development in Latin America, Asia, and Africa; social, political, and cultural obstacles to administrative reform in developing nations; problems of technical assistance in overseas administration; theories of development administration.

### **POLS 5235. Comparative Democratization**

3 credits. Seminar.

Democratization and major approaches to regime change away from authoritarianism.

### **POLS 5240. Seminar in Comparative Politics**

(POLS 431) 3 credits. Seminar.

### **POLS 5300. Proseminar in International Relations**

(POLS 311) 3 credits. Seminar.

Current theories of and methodological approaches to international relations.

### **POLS 5305. Foreign Policy Analysis**

(POLS 325) 3 credits. Seminar.

Analysis of foreign policy processes from a comparative, theoretical perspective.

### **POLS 5315. International Security**

(POLS 322) 3 credits. Seminar

Political and military issues as they intersect at the international level, such as war, terrorism, alliances, and intervention.

### **POLS 5320. International Conflict and Cooperation**

(POLS 323) 3 credits. Seminar.

Examination of theories and methodologies relating to the study of international conflict and cooperation. Topics include deterrence, negotiation and bargaining, theories of conflict and war, and approaches to conflict resolution.

### **POLS 5325. International Political Economy**

(POLS 324) 3 credits. Seminar.

Major problem areas in which politics, economics, and business intersect at the international level — trade, foreign investment, and monetary relations. The politics and mechanisms of U.S. foreign economic policy.

### **POLS 5330. International Organization and Law**

(POLS 326) 3 credits. Seminar.

International cooperation to resolve economic, social, and political transnational problems.

### **POLS 5335. U.S. Foreign Policy in the Middle East**

(POLS 328) 3 credits. Seminar.

Examination of U.S. political, economic and strategic interests and aims in the Middle East.

### **POLS 5340. Politics and Security in the Middle East**

(POLS 329) 3 credits. Seminar.

Examination of security issues in the Middle East and the responses of regional actors and external powers.

### **POLS 5345. Foreign Policies of the Russian Federation and the Former USSR**

(POLS 321) 3 credits. Seminar.

Regional and global roles of the former USSR and postCommunist Russia.

### **POLS 5390. Economic Rights**

3 credits. Seminar. Also offered as ECON 5128 and HRTS 390.

Economic Rights include the right to an adequate standard of living, the right to work, and the right to basic income guarantees for those unable to work. These rights are grounded in international law - particularly in the Universal Declaration of Human Rights and the International Covenant on Economic, Social, and Cultural Rights. This class will explore the conceptual bases, measurement, and policy applications of economic rights. Specific topics will include: child labor, the right to development, non-governmental initiatives, and the institutionalization of economic rights (e.g., constitutionalization versus statutory implementation versus discretionary policies).

### **POLS 5400. Proseminar in American Politics**

(POLS 381) 3 credits. Seminar.

Theory and practice of American government and politics, with an emphasis on various theoretical and methodological perspectives.

### **POLS 5405. National Decision-Making Process: Presidency and Congress**

(POLS 384) 3 credits. Seminar.

The interaction of the institutionalized Presidency and the Congress in the formulation and execution of public policy. Emphasis given to current issues and problems.

**POLS 5406. Seminar in the American Political System**

3 credits. Seminar.

Examination of empirical research in American politics, including institutions and processes.

**POLS 5407. Special Topics in American Political Institutions and Policy**

3 credits. Seminar

The institutions and policy-making process of American government.

**POLS 5408. Special Topics in American Political Behavior**

3 credits. Seminar.

The political behavior of the American public, including public opinion, voting behavior, and other forms of participation.

**POLS 5409. Special Topics in American Race, Gender and Ethnic Politics**

3 credits. Seminar.

The politics of American race, gender and ethnicity, with a focus on disadvantaged groups and their influence on the political process.

**POLS 5410. Black Feminist Theory and Politics**

(POLS 305) 3 credits. Seminar.

Major debates at the core of black feminist theory, emphasizing the ways in which interlocking systems of oppression uphold and sustain each other in contemporary U.S. politics.

**POLS 5415. Administrative Ethics**

(POLS 320) 3 credits. Seminar.

Examination of models and standards of ethics in public administration, decision-making techniques and tools, and analyses of selected, contemporary dilemmas confronting public administration and public policy.

**POLS 5420. Public Opinion and American Democracy**

(POLS 341) 3 credits. Seminar.

Theories of democracy and what they imply about the public's capabilities and role; empirical research on the American public and public opinion in the context of democratic theory.

**POLS 5425. American Political Parties**

(POLS 342) 3 credits. Seminar.

The development, organization, and role of political parties in the United States, with implications for public policy.

**POLS 5430. Politics, Society, and Educational Policy**

(POLS 345) 3 credits. Seminar.

The analysis of the interactions among educational policy, politics and other social forces. In-sights and concerns from politics and other social sciences disciplines will be applied to different levels and types of schooling.

**POLS 5435. Proseminar in Public Policy**

(POLS 346) 3 credits. Seminar.

Major works in U.S. public policy, with comparative illustrations of general principles.

**POLS 5440. Proseminar in Public Administration**

(POLS 360) 3 credits. Seminar.

Theory and structure of administration and the public service.

**POLS 5445. Public Budgeting**

(POLS 373) 3 credits. Seminar.

An examination of the development and structure of the public financial sectors; the principles and roles of operating and capital budgets in public organizations; and introduction to the relationships between funding mechanisms and public policy.

**POLS 5450. Politics of Organization and Bureaucracy**

(POLS 375) 3 credits. Seminar.

**POLS 5455. Public Opinion and Public Policy**

(POLS 386) 3 credits. Seminar.

Theoretical and empirical study of public opinion and its role in policy formation.

**POLS 5460. Social Policy**

(POLS 394) 3 credits. Seminar.

**POLS 5505. Seminar in Public Law**

(POLS 352) 3 credits. Seminar.

Selected topics in public law, the administration of justice, and jurisprudence.

**POLS 5510. Judicial Decision-Making**

(POLS 353) 3 credits. Seminar.

The judicial decision-making process in terms of methods and models developed in the framework of the behavioral sciences.

**POLS 5515. Constitutional Interpretation**

(POLS 351) 3 credits. Seminar.

An exploration of the theories and process of constitutional interpretation in the United States, with an emphasis on the role the Supreme Court plays in defending and enforcing civil liberties.

**POLS 5600. Nature of Political Inquiry**

(POLS 393) 3 credits. Seminar.

The scope of political science, modes of inquiry, the role of concepts and theory. Graduate students are urged to take the course in their first semester.

**POLS 5605. Seminar in Quantitative Methods of Political Science**

(POLS 395) 3 credits. Seminar.

Introduction to the data analysis techniques most often used by political scientists. Requires no previous background in statistics.

**POLS 5610. Research Design in Political Science**

(POLS 396) 3 credits. Seminar.

Introduction to quantitative and non-quantitative empirical research design in political science.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**POLS 6100. Research Seminar in Political Theory**

(POLS 401) 3 credits. Seminar.

Investigation of special topics in political theory, with emphasis on the preparation and completion of original research projects.

**POLS 6400. Research Seminars in American Politics**

(POLS 441) 3 credits. Seminar.

**POLS 6500. Research Seminar in Judicial Process**

(POLS 451) 3 credits. Seminar.

**POLS 6610. Research Seminar in Quantitative Methods**

(POLS 493) 1-6 credits. Seminar. Prerequisite: POLS 5605.

Research in quantitative applications to political data.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.



## POLYMER SCIENCE

*Program Director:* Associate Professor Gregory A. Sotzing

*Professors:* Papadimitrakopoulos, Shaw, Sung, and Weiss

*Research Professor:* Scola

*Associate Professors:* Adamson, Asandei, Burkhard, Dobrynin, Parnas, Seery, and Sotzing

*Assistant Professors:* Kasi and Lin

Work leading to the degree of Master of Science and Doctor of Philosophy is offered in the interdisciplinary field of polymer science in the Institute of Materials Science ([www.ims.uconn.edu/polymer](http://www.ims.uconn.edu/polymer)).

**Admission to Degree Programs.** In addition to the basic admission requirements of the Graduate School, an applicant should submit Graduate Record Examinations (GRE) General Test scores at the time of application. A sound undergraduate major in science and/or engineering normally is required for entrance to the degree programs.

**The M.S. Program.** Other than the GRE General Test scores, there are no special requirements for admission to the master's program beyond those of the Graduate School. Selection of Plan A (thesis) or Plan B (non-thesis) is made after consultation with the advisory committee.

**The Ph.D. Program.** Admission to the doctoral program is based upon a careful assessment of the student's potential for creative research in polymer science. There are no special requirements for the doctoral program beyond those of the Graduate School, other than the GRE General Test scores.

**Facilities.** The Institute of Materials Science, (IMS) has well-equipped, environmentally controlled research laboratories that are continually being upgraded. These include a clean room for surface and interface research, a monochromic source, variable angle ESCA, a relaxation spectrophotometer, and a tuneable UV/visible pulsed Nd:YAG laser. The IMS Microscopy Laboratory has a new JEOL 6335F cold field emission gun SEM with an automated digital interface and a fully automated digital JEOL 2010 FaSTEM. The polymer processing area includes a Brabender Prep Center, a Brabender Plasti-Corder torque rheometer, twin screw extruder/mixer, pelletizer, and an injection molding machine. Among recently acquired instruments and facilities particularly relevant to polymer research are a Rheometrics ARES controlled strain rheometer, a PAAR Physica UDS-200 controlled stress rheometer and a Rheometric System IV, H/P 5890 and H/P 6890 Gas Chromatograph/Mass Spectrometers, and a Bruker GADDS wide-angle diffraction instrument, Bruker D5005 and D8 Advance power diffractometers, a Bruker Anton-Parr, a Renishaw Ramascope System, a Nicolet Magna 560 FT/IR, TA Instruments STA 600, T6A 500, and DSC 100. There are many other large and small instruments too numerous to list.

The Institute also operates a state-of-the-art materials simulation laboratory with a parallel cluster based on more than 24 PCs of the latest architecture. Students also have access to the main University computer system, as well as dozens of PCs, Macs, and Unix work stations.

## COURSES OF STUDY

Course offerings are shown below. These are co-sponsored by departments in the sciences and engineering. Special Topics (Chemistry 5394) is offered each semester. The subject of these courses varies widely and depends on student and faculty interest and availability. In addition, the program sponsors weekly seminars of outstanding speakers representing various study areas in polymer science and engineering. Topics offered have included Liquid Crystals, Inorganic Polymers, Nanomaterials, Biopolymers, Polymers for Energy Storage and Generation, and Lifetime Prediction of Materials.

### Chemical Engineering

- 5351. Polymer Physics
- 5352. Polymer Properties
- 5355. Polymer Structure and Morphology
- 5356. Adhesion
- 5358. Composite Materials
- 5367. Polymer Rheology
- 5368. Polymer Rheology and Processing Laboratory

### Chemistry

- 5380. Polymer Synthesis
- 5381. Polymer Physical Chemistry
- 5382. Polymer Characterization I
- 5384. Polymer Characterization II
- 5385. Reactions of Polymers
- 5394. Investigation of Special Topics
  - Inorganic Polymers
  - Polymer Biomaterials
  - Polymer Photonics
  - Polymer Spectroscopy
  - Conducting Polymers

### Molecular and Cell Biology

- 5013. Structure and Function of Biological Macromolecules
- 5015. X-ray Structure Analysis

### Physics

- 6244. The Electrical Properties of Polymers

## PROFESSIONAL STUDIES

*Director:* Dr. Susan W. Nesbitt

*Program Head:* Associate Professor Peter Diplock

*Associate Professor:* Sullivan

*Assistant Professor:* Allen

The Master of Professional Studies (M.P.S.) is a flexible, convenient on-line degree program. This unique graduate study opportunity is available to students from anywhere in the world and at a time that fits into each student's schedule. Working adults can complete all degree requirements within two years although the typical time to complete the program is three years.

The M.P.S. degree program is specifically designed for individuals and practitioners with established career paths who are interested in developing marketable skills to meet evolving workforce demands, in seeking professional development, and in expanded promotional opportunities.

The degree program provides skills and knowledge for immediate application in the following fields of study:

### Homeland Security Leadership (HSL).

The Homeland Security Leadership field of study prepares graduates to provide strategic leadership in the field of homeland security. Emphasis is on understanding the complexities of homeland security in terms of policy, strategy, resources capabilities, and leadership. This degree prepares graduates to work in field operative and administrative homeland security positions in law enforcement, fire service, emergency management, corporate security, transportation security, and public health preparedness.

The Master of Professional Studies with a field of study in Homeland Security Leadership is a cohort-based program and is open only to U.S. citizens. At the present time, the courses are only open to students who are matriculated in the Homeland Security field of study. This program has a residency requirement.

### Human Resource Management (HRM).

The Human Resource Management field of study is designed for beginning and mid-career HR professionals or those interested in making a transition to the field. Graduates will be qualified to assume professional labor or management related HRM positions in both the private and public sector. This program has a residency requirement.

**Humanitarian Services Administration (HSA).** The Humanitarian Services Administration field of study prepares graduates to work in organizations involved in humanitarian response and development initiatives. Graduates will be qualified to work in disaster relief and sustainability areas. This program has a residency requirement.

**Occupational Safety and Health Management (OSHM).** The Occupational Safety and Health Management field of study prepares graduates to work in and manage safety and health departments within a variety of industries. Graduates will be qualified to direct the day-to-day operations of the safety and health initiatives of

their employers. This program has a residency requirement. **New students are not being admitted at this time.**

Additional information is available at <<http://continuingstudies.uconn.edu/mps/index.html>>.

## COURSES OF STUDY

### GRADUATE PROGRAM IN PROFESSIONAL STUDIES COURSES

#### GPPS 5300. Independent Study

(GPPS 300) 1 - 3 credits. Independent Study.

Independent study in a topic related to the graduate program in Professional Studies as designated and approved by the instructor assigned to oversee and grade the project.

#### GPPS 5301. Special Topics in Professional Studies

(GPPS 301) 1 - 3 credits. Lecture. With a change of content, this course may be taken for credit twice.

The instructor assigned will designate the special topic(s) related to the graduate program in Professional Studies and oversee and grade students' work in the course.

#### GPPS 5325. Issues in Economic Development

(GPPS 325) 3 credits. Lecture.

This course concerns economic, social, and demographic change in those countries comprising the less wealthy regions of the South. It examines development from linear (neoclassical), structuralist (political economy), and other perspectives, and emphasizes relationships between "advanced" and "developing" countries within the context of the global economy. In addition to theoretical grounding, the course provides practice in preparing development profiles of individual countries.

#### GPPS 5347. Program Evaluation

(GPPS 347) 3 credits. Lecture.

This course is intended to provide students with skills required to apply the methods of science to the assessment of social programs. Here a social program refers to organized, goal-directed activities designed to address a social problem. The goal of this course is to provide you, the student, with enough skill that you are able to design and implement evaluations of programs. The extent to which you are able to do this without assistance reflects largely your familiarity with scientific methods. Some of the more technical forms of impact studies may require additional study, or assistance from consultants.

#### GPPS 5352. Systemic Analysis

(GPPS 352) 3 credits. Lecture.

Provides students with a foundational understanding of the complex and dynamic relations between issues and the systems that cause them. Systemic analysis trains students to understand in the operational dynamics of the social and structural dimensions of a society or group.

#### GPPS 5357. Quantitative Analysis

(GPPS 357) 3 credits. Lecture.

This course is designed to help students develop skills necessary to understand and utilize research based on quantitative methods while building fundamental skills in quantitative analysis. The course will include basic univariate statistics, bivariate statistics and basic multivariate statistics including basic analysis of variance and basic multiple regression analysis. This course stresses the use of Microsoft Excel for performing statistical analysis.

#### GPPS 5361. Strategic Staffing and Talent Management

(GPPS 361) 3 credits. Lecture.

This course presents the theoretical frameworks and practical tactics for the acquisition, deployment, and retention of the talent necessary to achieve the strategic and tactical objectives of the business. Topics will include strategic staffing, human resource planning, recruitment, assessment, selection decision-making strategies, succession planning and retention strategies. The importance of linking staffing and talent management to business strategies, objectives, and competitive challenges will be emphasized.

#### GPPS 5389. M.P.S. Internship

(GPPS 389) 3 credits. Field Studies. Prerequisite: Open only to students enrolled in the Master of Professional Studies degree program.

The internship will provide professional experience in the student's field of study in a private or public organization. Students will select the organization and specific internship position with the approval of the major advisor. Students will be expected to perform professional duties for a minimum of 160 hours during the semester. Prior to the beginning of the internship, student will develop a set of professional objectives for the internship experience. Students will maintain a log of experiences and activities during the internship. At the conclusion of the internship, students will write a paper evaluating the experience gained in light of the stated objectives.

#### GPPS 5395. M.P.S. Residency Program

(GPPS 395) 0 credits. Discussion. Corequisite: GPPS 5397.

The Master of Professional Studies (M.P.S.) program requires students to complete a professional residency. The residency is a milestone towards the completion of the MPS degree. Consistent with the criteria for the MPS Capstone Project, each residency will be subject to the approval of the student's advisory committee. Appropriate residencies are those designed to: (a) provide students with an opportunity to develop a sense of affiliation and identification with the program and the university; (b) provide students with an opportunity for scholarly dialogue related to their capstone project; or (c) provide students with an opportunity for professional socialization by developing relationships with peers, faculty, and practitioners in the field. Examples of appropriate residencies include but are not limited to

sessions at the Storrs campus, attendance and participation in approved regional national or international professional conferences.

#### GPPS 5397. M.P.S. Capstone Project

(GPPS 397) 3-6 credits. Independent Study.

Towards the end of the M.P.S. program, students will select, with faculty approval, a topic for a major project that demonstrates the student's ability to define, analyze, synthesize, evaluate, and recommend actions or solutions to deal with a major issue, problem, or opportunity within the field of study. Capstone Projects may include job-related field projects, integrative analyses of professional literature, and comprehensive project proposals for adoption by third parties. In all cases, the Capstone Project is intended to demonstrate an extensive understanding of the topic area selected, the ability to develop and integrative and systemic analysis of a problem, and the ability to identify appropriate solutions and recommendations. A written report documenting all aspects of the project will be presented for faculty approval.

### HOMELAND SECURITY LEADERSHIP COURSES

#### HSL 5310. Introduction to Homeland Security

(HSL 310) 3 credits. Lecture.

Provides an understanding of the operational and organizational dynamics of terrorism. By the end of the course, students should be able to design effective measures for countering and responding to terrorism.

#### HSL 5311. Terrorism, Asymmetrical Conflict and Homeland Security

(HSL 311) 3 credits. Lecture.

This course will provide learners with an intellectual framework for engaging in ongoing self-directed learning within the Homeland Security domain. By the end of the course, students should be able to design effective measures for countering and responding to terrorism based on an understanding of the organizational dynamics of terrorism.

#### HSL 5312. Intelligence for Homeland Security: Organizational and Policy Challenges

(HSL 312) 3 credits. Lecture/Discussion.

This course will examine contemporaneous issues facing the intelligence community and its role in homeland security. The emphasis will be on critical thinking of issues related to policy development, implementation, and intelligence support to senior decision makers in the homeland security community. By the end of this course, students will have had the opportunity to address policy, organizational and substantive issues pertaining to homeland security and intelligence; interact with each other, and author well researched papers.

#### HSL 5313. Critical Infrastructure Protection in Homeland Security

(HSL 313) 3 credits. Lecture/Discussion.

This course develops a network theory of vulnerability analysis and risk assessment called "modelbased vulnerability analysis" that is used to extract the critical nodes from each sector, model the nodes' vulnerabilities by representing them in the form of a fault-tree, and then applying fault and financial risk reduction techniques to derive the optimal strategy for protection of each sector. At the completion of this course, students will be able to apply the model-based vulnerability technique to any critical infrastructure within their multi jurisdictional region.

**HSL 5315. Contemporary Issues in Homeland Security Leadership**  
(HSL 315) 3 credits. Lecture.

This course is designed to support the overarching goals of the Homeland Security Leadership program by providing an intellectual framework for engaging in ongoing self-directed learning within the Homeland Security domain; developing a cadre of leaders across the Homeland Security continuum who share substantive skills in analysis, interpretation, policy development, and administration of approved policy; and to complement other more operationally oriented training programs.

**HUMAN RESOURCE MANAGEMENT COURSES**

**HRM 5300. Independent Study**  
(HRM 300) 1-3 credits. Independent Study.

Independent study in a topic related to the Human Resources Management certificate program as designated and approved by the instructor assigned to oversee and grade the project.

**HRM 5301. Special Topics in Occupational Safety and Health**  
(HRM 301) 1-3 credits. Lecture.

The instructor assigned will designate the special topic(s) related to the Human Resources Management certificate and oversee and grade the students' work in the course.

**HRM 5304. Employment Law**  
(HRM 304) 3 credits. Lecture.

This course addresses the applicable federal and state laws, the different forums (federal court, state courts, Equal Employment Opportunity Commission, and state Commissions on Human Rights and Opportunities), and prevention of claims through the diversity training, a system of reporting/handling disputes, and the proper employer response. This course will not address the NLRB, collective bargaining agreements, or union rights.

**HRM 5340. Negotiations and Administration**  
(HRM 340) 3 credits. Lecture.

This course provides the student with the fundamental skills needed to participate fully in any situation requiring bargaining skills.

**HRM 5341. Labor Relations and the Law**  
(HRM 341) 3 credits. Lecture.

This course will cover the basic legislation that impacts today's workplace in the public as well as the

private sector. Legislation that prevents and remedies employment discrimination will be included.

**HRM 5342. Introduction to Alternative Dispute Resolution Process**  
(HRM 342) 3 credits. Lecture.

This course provides the student with the fundamental skills needed to understand and participate fully in alternative dispute resolution.

**HRM 5351. Human Resources and Public Policy**  
(HRM 351) 3 credits. Lecture.

This course examines the government's influence on the workplace and the impact of public policy on the human resource function within organizations. The course is geared towards developing a better understanding of public policy frameworks, processes, and analytical methods, and their impact on HR issues, problems, challenges, and the resulting actions required in the practice of Human Resources Management.

**HUMAN SERVICES ADMINISTRATION COURSES**

**HSA 5300. Independent Study**  
(HSA 300) 1-3 credits. Independent Study.

Independent study in various topics related to the HSA certificate program as designated and approved by the instructor assigned to oversee and grade the project.

**HSA 5301. Special Topics**  
(HSA 301) 1-3 credits. Lecture.

The instructor assigned will designate the special topic(s) related to the Humanitarian Services Administration certificate and oversee and grade the students' work in the course.

**HSA 5302. Seminar on Complex Humanitarian Emergencies**  
(HSA 302) 3 credits. Seminar.

This seminar offers an in-depth examination of both theoretical and applied aspects of complex humanitarian emergencies. It provides students with a comprehensive, multidimensional understanding of the needs of displaced persons and systems and practices currently in place to meet these needs.

**HSA 5303. Poverty and Public Health**  
(HSA 303) 3 credits. Lecture.

Provides students with a foundational understanding of the complex and dynamic relationships between poverty and poor health among the poor, worldwide. It examines classic and current studies on poverty and public health from an historical and interdisciplinary perspective (Public Health, Epidemiology, Social Medicine, and Social Economics), and reviews the ways in which the government and non-governmental organizations have addressed the problem. The course will prepare students to engage in thoughtful debate about needed changes in values, perspectives and interventions in order to address and ameliorate the health problems of the economically poor.

**HSA 5304. Nutrition during Human Emergencies**

(HSA 304) 3 credits. Lecture.

The course examines the cycle of malnutrition and disease, and major food and nutrition challenges faced by refugee and displaced populations. It covers types of feeding and nutrition supplementation programs in emergencies, and nutritional assessment as a tool to design, target and evaluate feeding and supplementation programs in emergencies. The course addresses feeding of special populations such as: infants, pregnant and lactating women, and the elderly during emergencies; international agencies, non-government organizations, and government programs involved with food aid and relief; and food as a human right.

**HSA 5305. Principles of Sustainability**  
(HSA 305) 3 credits. Lecture.

This course will provide students with an understanding of the basic principles of environmental, social, and economic sustainability and will assist students to develop the ability to apply these principles to current issues of sustainability.

**HSA 5312. Issues in Humanitarian Studies**

(HSA 312) 3 credits. Seminar.

This seminar offers an opportunity for students to examine current issues of Global Human Development from the perspective of non-governmental organizations (NGOs), private voluntary organizations, international organizations (IOs), multi-governmental aid and humanitarian assistance agencies, the U.S. military and government sponsored aid organizations. Students will gain a comprehensive, multidisciplinary understanding of issues facing these organizations and stresses that are currently forcing many to reevaluate their current policies and procedures.

**HSA 5322. Applied Organizational Management**

(HSA 322) 3 credits. Lecture. BGS students only.

This course will help students to develop management and leadership skills for working within an organization by understanding and analyzing some rational management techniques, concepts of organization and supervisory skills that are useful for effective organizations.

**HSA 5323. Community Development for Local Capacity Building**

(HSA 323) 3 credits. Lecture.

This course provides the student with the essentials of community development and the skills of local capacity building. Local capacity building skills are needed by Humanitarian workers in order to foster sustainable community development.

**HSA 5324. Gender and International Development**

(HSA 324) 3 credits. Lecture.

This course provides the student with essential understanding of the factors that shape the social, political and economic roles of women in developing countries. The course will include considerations of

specific projects aimed at integrating women into community development and the costs and benefits of various development alternatives as perceived by outside agencies and by the women themselves.

**HSA 5325. Advocacy and Grassroots Development**

(HSA 325) 3 credits. Lecture.

This course addresses the importance of advocacy in the sustainable development process. Students will be introduced to the concept of advocacy, its role and functions in a sustainable development and empowerment. Students will be given the opportunity to explore ways and means to develop effective advocacy programs.

**HSA 5332. International Human Rights**

(HSA 332) 3 credits. Lecture.

The course will address the evolution of international human rights and of the legal instruments designed for their promotion and protection. It will study the theoretical foundations of the idea of human rights in various civilizations and cultures, evaluate its legacy within the western and non-western traditions, and examine its meaning and relevance in the contemporary world.

**HSA 5377. Environmental Compliance and Regulations**

(HSA 377) 3 credits. Lecture.

Compliance and knowledge of a whole new generation of environmental regulations is required of all managers. This course begins with general compliance obligations, common law, trespass, nuisance and negligence. The major Federal environmental laws affecting companies and agencies are reviewed along with even more stringent State and local regulations. Also presented is a view of the severe civil and criminal penalties liabilities attached to environmental regulations, and a discussion of the sharply increasing punishments for non-compliance. The final section of the course will outline strategies for compliance with specific comments on proactive environmental management as a method for reducing legal exposure from environmental issues. It is required of managers. It empowers private citizens.

**INFORMATION SCIENCE AND KNOWLEDGE MANAGEMENT COURSES**

**ISKM 5300. Independent Study**

(ISKM 300) 1 - 3 credits. Independent Study.

Independent study in a topic related to the Information Science and Knowledge Management certificate program as designated and approved by the instructor assigned to oversee and grade the project.

**ISKM 5301. Special Topics**

(ISKM 301) 1 - 3 credits. Lecture.

The instructor assigned will designate the special topic(s) related to the Information Science and Knowledge Management certificate and oversee and grade the students' work in the course.

**OCCUPATIONAL SAFETY AND HEALTH COURSES**

**OSH 5300. Independent Study**

(OSH 300) 1 - 3 credits. Independent Study.

Independent study in a topic related to the Occupational Safety and Health Certificate program as designated and approved by the instructor assigned to oversee and grade the project.

**OSH 5301. Special Topics in Occupational Safety and Health**

(OSH 301) 1 - 3 credits. Lecture.

The instructor assigned will designate the special topic(s) related to the Occupational Safety and Health Certificate program and oversee and grade students' work in the course.

**OSH 5321. Seminar in Occupational Safety and Health Management**

(OSH 321) 3 credits. Seminar.

This course is an in-depth study of the impact of issues such as the changing demographics, and globalization of regulations, on promoting prevention of injuries and illness to workers, and protection of property and the environment in the workplace. This course is taught as a series of active seminars requiring students to research, write, and discuss papers.

**OSH 5322. Industrial Pollution Management**

(OSH 322) 3 credits. Lecture.

This course provides students with management and applied techniques to prevent and control pollution from industrial activities. It includes legal aspects of pollution prevention and control, setting up pollution prevention programs, performing pollution prevention assessments, performing economic evaluations and management principles in controlling industrial pollution.

**OSH 5325. Systems Safety Analysis**

(OSH 325) 3 credits. Lecture

This course will acquaint students with empirical methods and techniques for proactively identifying, assessing, and eliminating or controlling safety-related hazards to acceptable levels.

**OSH 5326. Managing Environmental Systems**

(OSH 326) 3 credits. Lecture.

This course will provide guidance and detailed information on developing environmental management systems with special reference to ISO 14001; measuring corporate needs, advantages and disadvantages; liability issues; and internal and external auditing.

**OSH 5376. Occupational Safety and Health**

(OSH 376) 3 credits. Lecture.

This is a graduate course that provides the student with the rationale for providing an occupationally safe and healthy work environment for employees. These skills are needed to be able to work effectively in the

area of human resources and employee development as well as industrial relations since workers have been provided by law with specific safety and health rights.

**OSH 5378. Advanced Industrial Hygiene**

(OSH 378) 3 credits. Lecture.

This is a graduate-level course in the field of industrial hygiene. It is directed at protecting workers' health through the recognition, evaluation and control of hazards in the work environment.

**OSH 5380. Loss Control Methods**

(OSH 380) 3 credits. Lecture

This course offers a detailed study of loss control research methods and application techniques with emphasis on the control of hazards using safety engineering methods in a variety of industrial settings.

**OSH 5381. Advanced Loss Control and Management Theory**

(OSH 381) 3 credits. Lecture. Prerequisite: OSH 5380.

This course provides students with opportunities to apply management and loss control techniques to analyze and address occupational safety and health issues. Topics in this course include: epidemiology concepts in analyzing occupational safety and health injuries and illnesses; hazard analysis; prevention and control of hazards; tools of accident prevention; safety and health training; motivating safety and health; and communicating safety.

**OSH 5382. Analysis of Occupational Safety and Health Law Regulations**

(OSH 382) 3 credits. Lecture.

This course provides the substance for understanding the Occupational Safety and Health laws and regulations, the regulatory process; and the research data and analyses required to promulgate or revise a law or regulations.

**ALL SECTIONS**

**+GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**+GRAD 5950. Master's Thesis Research**

(GRAD 395) 1 - 9 credits.

**+GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

## PSYCHOLOGY

*Department Head:* Professor Charles A. Lowe  
*Associate Department Head and Coordinator of Graduate Studies:* Professor Etan Markus

*Distinguished Professors:* Fein, Kenny, and Salamone  
*Professors:* Barnes-Farrell, Burton, Carello, Chaffin, Crawford, Fisher, Fowler, Green, Holzworth, Johnson, Kalichman, Lillo-Martin, Kranzler, Maxson, Miller, Naigles, Pratto, and Swadlow

*Research Professor:* Michaels

*Associate Professors:* Barton, Chrobak, Cruess, Dixon, Fitch, Henning, Leach, Magley, Magnuson, Marsh, Mellor, Park, Quinn, Rueckl, Tabor, Treadwell, Volgushev, and Williams

*Assistant Professors:* Agocha, Connelly, Copenhaver, Eigsti, Frank, Gorin, Kay, Milan, Read, and Wargo Aikins

The Department of Psychology offers study leading to the degree of Doctor of Philosophy in the several areas described below. There is a pervading emphasis on the acquisition of a general background in experimental findings and theoretical interpretations. All students conduct independent experimental projects prior to research for the dissertation. Opportunities are provided for preprofessional experience in teaching, research on grant-supported projects, and with clinical agencies. The Departmental website is <http://web.uconn.edu/psychology/>.

**Behavioral Neuroscience.** This area of concentration offers study that focuses on the biological basis of behavior, through research participation, seminars, and formal course work. Research programs make use of a variety of approaches – of neurophysiology, neurochemistry, neuroanatomy, neuroendocrinology, genetics, ethology, and behavioral analysis – to study problems in sensation, perception, emotion, motivation, learning, motor activity, aggression, sex differences, reproductive behavior, communication, brain lateralization, and the organization of sensory cortex.

**Clinical Psychology.** The clinical program is designed to produce psychologists able to work on a scientific and professional level, with special competence in research, diagnosis, and therapy. At least one year of internship at an approved facility is required. The program has APA accreditation. The program emphasizes both child/family and adult interventions and also provides a neuropsychology area of emphasis.

**Developmental Psychology.** Training in the conduct of research and the analysis of theory in developmental psychology is superimposed on a broad background in general psychology. Areas given emphasis include cognitive development, social development, language acquisition, infancy, and quantitative methods for developmental psychology.

**Perception/Action/Cognition.** Two areas of specialized study are offered: (1) the ecological approach to perception and action, and (2) language and cognition. Facilities exist for research and training on many topics, including: the perceptual control of action, coordinated movement, psycholinguistics, speech perception and production, neurobiological and psychophysical studies, and the philosophical and theoretical foundations of perception, action, and cognition. Emphasis in

psycholinguistics is provided in cooperation with the Department of Linguistics.

**Industrial/Organizational Psychology.** This area of concentration is concerned with the development, application and extension of psychological facts, methods, and principles to the problems of business, government and industry. Students can choose to emphasize personnel psychology, organizational psychology, occupational health psychology, or human factors/ergonomics in their research and course work. All students take the same core courses in the first year of study, and all students are required to be actively engaged in research during their entire course of study. An approved one-year field research experience is required.

**Neurosciences.** This is an interdisciplinary area of concentration. Neuroscience is concerned with the structural and functional characteristics of the nervous system and its relation to the adaptive physiology and behavior of the organism. Students in this program may approach the full range of neuroscience studies through courses and research at the cellular, systemic, and organismic levels. A particular strength of the area is the analysis of behavior, its development, and its neurological bases. This area of concentration is offered in the fields of study of biobehavioral science, pharmaceutical science, physiology, and psychology. Application is made to the preferred field of study, but the applicant must be acceptable to the Neurosciences Committee.

**Social Psychology.** This division provides excellent training in both laboratory and field research methods and statistics and broad coverage of the major theoretical paradigms of social psychology. Curriculum requires exposure to three levels of analysis: the social person (including identity, social cognition, attitudes, emotions), the person and others (including groups, close relationships, and organizations), and the social context (including intergroup relations, gender, and health). Research areas include dyadic relations (e.g., close relationships, person perception, gender), social inequality (including stigma, stereotyping and discrimination, prejudice), and health psychology (including risk assessment, information, motivation skills, intervention research).

**Admission Requirements.** Well qualified candidates are encouraged to apply for the Ph.D. degree.

Requirements for admission include basic courses in statistics, general psychology, and experimental psychology. Applicants must present scores on the three parts of the general Graduate Record Examination.

The application for admission and financial support may be obtained on the Graduate School Web site at: <http://www.grad.uconn.edu/applications.html>. There is only one application form for both admission and financial aid consideration. There is not a separate application form for Psychology, however the Psychology Department requires application materials in addition to the materials required by the Graduate School. The Psychology Department admissions requirements and procedures may be found on the Web at: [http://web.uconn.edu/psychology/academics/graduate/graduate\\_program.html](http://web.uconn.edu/psychology/academics/graduate/graduate_program.html).

The application deadline for Clinical Psychology is December 1. The application deadline for Social Psychology and Industrial/Organizational

Psychology is December 15. The deadline for all other Psychology graduate programs is January 1. For questions regarding graduate programs, please call (860) 486-2057 or send an e-mail message to [debra.vardon@uconn.edu](mailto:debra.vardon@uconn.edu).

**Facilities.** Research facilities include five computer based laboratories for data collection, programming and on-line research capabilities, and several experimental rooms dedicated to empirical research data collection. In addition, research capabilities exist in laboratories at affiliated research institutions such as Haskins Laboratories (New Haven), the Institute of Living (Hartford), and the University of Connecticut Health Center.

A wide variety of approved centers are available for clerkship, practicum and intern training in clinical and industrial psychology, and for work experience for advanced students. These resources include several national corporations, VA hospitals, community clinics, and trauma centers. Opportunities for work with developmentally disabled individuals living in the community also exist.

### COURSES OF STUDY

**PSYC 5100. History of Psychology** (PSYC 391) 3 credits. Lecture. Open to Psychology graduate students, others with permission.

Intellectual antecedents to contemporary clinical, developmental, experimental, and social psychology.

**PSYC 5101. Motivation** (PSYC 340) 3 credits. Lecture. Also offered as COMM 5101.

Theories of motivation considered in relation to their supporting data.

**PSYC 5102. Psychology of Women and Gender** (PSYC 344) 3 credits. Lecture.

A survey of research and theory on the interpretation of sex differences; gender, status, and power, and women's life span development.

**PSYC 5120. Health Psychology** (PSYC 309) 3 credits. Lecture.

Interaction of biological, psychological, and social factors in health. Topics include disease prevention and health promotion, psychosocial factors in treatment of illness, and stress and coping processes.

**PSYC 5121. Health Psychology Research Methods** (PSYC 403) 3 credits. Lecture. Prerequisites: STAT 3115Q and STAT 5105, or equivalent statistics course preparation as determined by the instructor.

Research designs, methods, and data analysis strategies used in health promotion and disease prevention research (e.g., case control studies, randomized clinical trials).

**PSYC 5122. Clinical Health Psychology** (PSYC 402) 3 credits. Seminar.

Examines the interaction of biological, psychological, and social factors in health and the application of psychological interventions for physical illness, psychological problems secondary to physical illness, and health promotion.

**PSYC 5123. Occupational Health Psychology** (PSYC 401) 3 credits. Seminar. Prerequisite: STAT 5105 or NURS 5020 or PUBH 5434.

Introduction to research in occupational health and the field of occupational health psychology. Topics include work stress, worker participation in hazard management, epidemiology of occupational exposures, workplace incivility, and design of safe work environments.

**PSYC 5130. Causal Modeling in Psychology** (PSYC 349) 3 credits. Lecture. Prerequisite: STAT 5105.

The analysis of data to test causal theories, the use of factor analysis to test models of measurement, and the comparison of alternative models is discussed.

**PSYC 5131. Meta Analysis: Theory and Practice**

(PSYC 420) 3 credits. Seminar. Prerequisite: STAT 5105 or equivalent course.

Methods of research synthesis, including the literature review and the place of quantitative methods in drawing conclusions from existing empirical research. Introduces the statistical techniques of meta-analysis, which integrates the results of independent studies addressing the same hypothesis.

**PSYC 5140. Foundations in Neuropsychology** (PSYC 325) 3 credits. Lecture.

An introduction to neuropsychology, including functional neuroanatomy, neurochemistry, neuropharmacology and cognitive/emotional function and dysfunction.

**PSYC 5141. Neuropsychological Assessment** (PSYC 326) 3 credits. Lecture. Prerequisite: PSYC 5140.

An introduction to clinical neuropsychological assessment, including review of neuroanatomy and neuropsychological functions, common syndromes of neuropsychological dysfunction, specific tests to measure neuropsychological functions and professional issues for the neuropsychologist.

**PSYC 5170. Current Topics in Psychology** (PSYC 301) 1-6 credits. Seminar.

Selected topics in psychology are studied with particular attention to recent developments in the field.

**PSYC 5200. Behavioral Neuroscience Research Seminar** (PSYC 356) 2 credits. Seminar.

Seminar on current research, with intra- and extra-mural colloquium speakers.

**PSYC 5228. Neuropsychopharmacology** (PSYC 328) 3 credits. Lecture.

This course will review the anatomy and physiology of the CNS and then discuss the effects of pharmacological agents on it. Topics include general anaesthetics, hypnotics and sedatives, anticonvulsants, alcohol, muscle relaxants, tranquilizers, hallucinogens, and narcotics. Student presentations will treat topics relating the CNS and behavioral pharmacology.

**PSYC 5251. Neural Foundations of Learning and Memory** (PSYC 351) 3 credits. Lecture.

Examination of the processes involved in habituation, conditioning, learning, and memory through a study of the neural elements and systems involved in their production and maintenance.

**PSYC 5257 Physiological Psychology Laboratory** (PSYC 357) 3 credits. Laboratory.

Techniques used in the study of physiological psychology, including ablation, electrical and chemical stimulation, and electrophysiological recording of the nervous system.

**PSYC 5261. Animal Behavior** (PSYC 361) 3 credits. Lecture.

A survey of the scientific study of animal behavior, with an emphasis on evolutionary and developmental mechanisms underlying non-human behavior patterns.

**PSYC 5270. Current Topics in Behavioral Neuroscience** (PSYC 358) 1-6 credits. Lecture.

Special problems or areas of research are studied with particular attention to recent developments in the field.

**PSYC 5284. Human Behavior Genetics** (PSYC 384) 3 credits. Lecture.

Concepts and methods in human behavioral genetic analyses with emphasis on normal variations, psychopathologies, and ethical issues.

**PSYC 5285. Neurobiology of Aging: Changes in Cognitive Processes** (PSYC 385) 3 credits. Lecture.

Neural basis of age-related changes in learning and memory. Both the normal aging process and age-related pathologies examined. Encompasses both animal models and human data.

**PSYC 5300. Research Seminar in Clinical Psychology**

1 credit. Seminar. Open to graduate students in Clinical Psychology, others with permission.

Advanced seminar presentations by faculty, graduate students, and visiting speakers on current theoretical developments and empirical research in clinical psychology.

**PSYC 5301. Practicum in Interviewing and Cognitive Assessment** (PSYC 302) 3 credits. Practicum. Open to graduate students in Clinical Psychology and to others with instructor consent.

An introduction to psychological assessment with supervised practice in administering and interpreting clinical interviews and psychological tests.

**PSYC 5302. Adult Psychopathology** (PSYC 303) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

Theoretical and descriptive overviews of mental disorder that afflict adults, emphasizing etiology, diagnosis, and conceptualization.

**PSYC 5303. Child Psychopathology** (PSYC 307) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

An examination of diagnosis, etiology, and prognosis in child psychopathology.

**PSYC 5304. Practicum in Personality Assessment** (PSYC 310) 3 credits. Practicum.

Supervised practice in administration and interpretation of clinical tests and case history material, report writing and discussion of implications of diagnostic data for therapeutic procedures.

**PSYC 5305. Psychodynamics** (PSYC 311) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

Criteria for the evaluation of personality theories. An analysis of the major methods of psychotherapy and of the personality theories on which they are based.

**PSYC 5306. Professional Issues in Clinical Psychology**

(PSYC 306) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

An examination of the relations among the law, ethical issues, and professional practices of clinical psychologists and of other providers of mental health services.

**PSYC 5307. Empirically Validated Methods of Psychotherapy**

(PSYC 316) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

Instruction and supervised practice of empirically validated, psychotherapeutic techniques and treatments.

**PSYC 5311. Group Psychotherapy** (PSYC 324) 3 credits. Lecture.

Theories and methods of group psychotherapy.

**PSYC 5332. Research Design and Test Construction**

(PSYC 321) 3 credits. Lecture. Open to graduate students in Clinical Psychology and to others with instructor consent.

Theoretical issues and practical problems in developing valid measures of personality variables

and in designing experimental and quasi experimental research.

**PSYC 5370. Current Topics in Clinical Psychology**

(PSYC 320) 3 credits. Seminar. Open to graduate students in Clinical Psychology and to others with instructor consent.

†**PSYC 5399. Clinical Psychology Research Group**

1 credit. Seminar. Instructor consent required. Open only to graduate students in Clinical Psychology.

Discussion of ongoing research of faculty and graduate students.

**PSYC 5400. Research Seminar in Developmental Psychology**

1 credit. Seminar. Instructor consent required. Open only to graduate students in Psychology.

Current research in developmental psychology, with intra- and extramural speakers and directed readings.

**PSYC 5410. Advanced Developmental Psychology**

(PSYC 336) 3 credits. Lecture.

This course undertakes, at an advanced level, a developmental treatment of child behavior on the basis of experimental findings and psychological theory.

**PSYC 5420. Cognitive Development**

(PSYC 333) 3 credits. Lecture.

Current theory and research on children's conceptual development.

**PSYC 5430. Developmental Ethology**

(PSYC 332) 3 credits. Lecture.

Introduction to conceptual, theoretical, and empirical issues based upon an ethological and biopsychological approach to development across species. Topics include nature-nurture, behavioral embryology, early experience, continuity-discontinuity, and performance versus epigenesis.

**PSYC 5440. Development of Language**

(PSYC 338) 3 credits. Lecture. Open to Psychology graduate students, others with permission.

Experimental and descriptive study of the child's language processes, with emphasis on acquisition, structure, meaning, thought, and the influence of verbal processes on nonverbal behavior.

**PSYC 5450. Infancy and the Effects of Early Experience**

(PSYC 339) 3 credits. Lecture.

Data and theory concerning the effects of early experience in infancy on behavioral and physiological development. Cross-species comparisons are emphasized.

**PSYC 5460. Social and Personality Development**

(PSYC 308) 3 credits. Seminar.

Fundamental research and theory on social

behavior, social cognition, and interpersonal relations in the preschool period (2-6 years) and in middle childhood (6-12 years). Early childhood precursors and consequences in adolescence. Both normative and atypical development.

**PSYC 5470. Current Topics in Developmental Psychology**

(PSYC 335) 3 credits. Seminar.

Selected topics in developmental psychology are studied with particular attention to current research and theoretical trends.

**PSYC 5500. Research Seminar in Language and Cognition**

(PSYC 305) 1 credit. Seminar. Also offered as LING 5010.

**PSYC 5512. Ecology of Language and Cognition**

(PSYC 312) 3 credits. Lecture.

The scope and content of an ecological theory of language are outlined. Conventional theories of language, ecological theories of perceiving and acting and relevant portions of social psychological, anthropological, and linguistic theory are explored.

**PSYC 5513. Memory**

(PSYC 313) 3 credits. Lecture.

Contrasts associationist, cognitive, connectionist, and cognitive neuroscience approaches to issues involving short-term memory, long-term memory, and the representation of knowledge.

**PSYC 5514. The Mental Lexicon**

(PSYC 314) 3 credits. Lecture.

The role of the mental lexicon in the perception and production of words, including the representation and use of knowledge about phonology, morphology, orthography, and semantics.

**PSYC 5515. Connectionist Models**

(PSYC 315) 3 credits. Lecture.

Connectionist models in psychology and computational neuroscience. Topics include learning, memory, and language processes in both intact and damaged networks.

**PSYC 5541. Reading Acquisition and Reading Disorders**

(PSYC 341) 3 credits. Lecture.

Examination of theories and research: Aspects of literacy and stages of acquisition; cognitive prerequisites for reading and writing; individual differences in learning and the problem of dyslexia.

**PSYC 5553. Introduction to Nonlinear Dynamics**

(PSYC 353) 3 credits. Lecture.

Basic concepts and methods of nonlinear dynamics systems theory applied to behavioral time-series data.

**PSYC 5554. Advanced Nonlinear Dynamics for the Behavioral Sciences**

(PSYC 360) 3 credits. Lecture. Prerequisite: PSYC 5553.

Advanced concepts and methods of nonlinear dynamics systems theory applied to behavioral time-series data.

**PSYC 5564. Dynamics of Language and Cognition**

(PSYC 364) 3 credits. Lecture.

Application of dynamical systems theory to language modeling.

**PSYC 5567. Cognition**

(PSYC 367) 3 credits. Lecture.

An introduction to theories of human cognition.

**PSYC 5568. Psychology of Language**

(PSYC 368) 3 credits. Seminar.

Psychological aspects of linguistic structure, with particular attention to phonology.

**PSYC 5569. The Neuropsychology of Language**

(PSYC 359) 3 credits. Lecture.

An examination of language and speech in relation to the biological systems that serve communicative processes in man.

**PSYC 5570. Current Topics in Cognitive Science**

(PSYC 376) 3 credits. Lecture.

Special topics in cognitive systems theory are reviewed with particular emphasis on techniques for the intrinsic measurement of systems behavior including information processing capacities and goal achievements. Students are required to apply the techniques discussed to an ongoing research topic of their own choosing.

**PSYC 5571. Sensation and Perception I**

(PSYC 369) 3 credits. Lecture.

Relations among physical, physiological, and psychological variables in selected sensory and perceptual processes. Attention is given to problems of measurement, empirical findings, and theoretical interpretations.

**PSYC 5572. Sensation and Perception II**

(PSYC 370) 3 credits. Lecture. Prerequisite: PSYC 5571.

A continuation of Psychology 5571.

**PSYC 5574. Control and Coordination of Action**

(PSYC 374) 3 credits. Lecture.

Covers the ecological approach; movement as the product of a representational/computational system; intentionality; physical principles of self-organization and cooperativity; task dynamics. Problems in the physiology of activity, prosthetics and robotics are addressed.

**PSYC 5575. Introduction to Cognitive Systems**

(PSYC 375) 3 credits. Lecture.

Survey of the fundamental concepts of machine theory, cybernetics, structural stability theory, and natural systems theory with respect to their role in modeling cognitive systems.

**PSYC 5583. Sentence and Discourse Processing**

(PSYC 383) 3 credits. Lecture.

How psychological theories of perception and learning provide insight into language processing at the level of sentence structure and discourse structure.

**†PSYC 5600. Research and Practice of Industrial/Organizational Psychology**

1 credit. Seminar. Instructor consent required. This course may be repeated to a maximum of 12 credits.

Current research and practice in industrial/organizational psychology, with intra- and extramural speakers.

**PSYC 5601. Proseminar in Industrial/Organizational Psychology I**

(PSYC) 3 credits. Seminar. Open to doctoral students in Industrial/Organizational psychology, others with permission.

Introduction to research and practice in the field of I/O psychology; personnel psychology, organizational psychology, human factors/ergonomics, and judgment and decision making.

**PSYC 5602. Proseminar in Industrial/Organizational Psychology II**

(PSYC 347) 3 credits. Seminar. Open to doctoral students in Industrial/Organizational psychology, others with permission.

Introduction to research and practice in the field of I/O psychology; personnel psychology, organizational psychology, human factors/ergonomics, and judgment and decision making.

**PSYC 5611. Work Motivation**

(PSYC 378) 3 credits. Seminar. Prerequisite: PSYC 5613.

Major theoretical approaches to work motivation, and their implications for the design of work settings and the treatment of workers.

**PSYC 5612. Leadership in the Workplace**

(PSYC 379) 3 credits. Seminar. Prerequisite: PSYC 5613.

Theoretical and research issues associated with leadership in the workplace. Classical and current theories of leadership, research in leadership development, and evaluation of various leadership models.

**PSYC 5613. Organizational Psychology**

(PSYC 382) 3 credits. Seminar. Open to doctoral students in Industrial/Organizational Psychology, others with permission.

Major research lines in organizational behavior (work motivation, leadership, work attitudes, job design, turnover, absenteeism), with attention to emerging areas (e.g., women in management). Emphasis on research methods and analytic strategies.

**PSYC 5614. Personnel Psychology**

(PSYC 387) 3 credits. Lecture. Open to doctoral students in Industrial/Organizational Psychology, others with permission.

Techniques of personnel psychology: recruitment, selection, placement, evaluation, training, development, and related areas.

**PSYC 5615. Human Factors**

(PSYC 388) 3 credits. Seminar. Open to doctoral students in Industrial/Organizational Psychology, others with permission.

Theories of design and analysis of man-machine systems in an industrial/organizational context. Special emphasis on the human as an information-processing sub-system operating with other people and machines in complex systems. Application of psychological principles to design of industrial workplaces, military systems, and consumer products; and to the design of simulation systems for training.

**PSYC 5616. Human Judgment and Decision Process**

(PSYC 390) 3 credits. Lecture. Open to doctoral students in Industrial/Organizational Psychology, others with permission.

Examination of social judgment methodology, judgmental heuristics and biases, process tracing, bootstrapping, behavioral decision theory, and multi-attribute utility measurement.

**PSYC 5617. Occupational Health and Safety**

(PSYC 393) 3 credits. Lecture. Prerequisite: PSYC 5615.

Research methods, theories and findings related to the impact of work duties and environmental conditions on occupational safety and health.

**PSYC 5618. Selection and Placement**

(PSYC 394) 3 credits. Seminar. Prerequisite: PSYC 5614.

Theory and research on employee selection and placement. Selection models, employee testing, statistical methods in selection and placement, equal opportunity and EEOC guidelines and related ethical issues.

**PSYC 5619. Performance Appraisal**

(PSYC 395) 3 credits. Seminar. Prerequisite: PSYC 5614.

Methods and issues in performance rating in organizations. Classic studies and current models of performance evaluation are used to explore factors which enhance or hinder the accurate gathering, evaluation, and communication of employee performance information.

**PSYC 5620. Design and Analysis of Human-Machine Systems**

(PSYC 396) 3 credits. Seminar. Prerequisite: PSYC 5615.

The basis, in theories of perception and learning, for design of complex human-machine systems.

**PSYC 5621. Simulation and Training**

(PSYC 397) 3 credits. Seminar. Prerequisite: PSYC 388.

The theoretical basis for techniques of effective training of human operators in complex human-machine systems.

**PSYC 5622. Work Systems and Performance** (PSYC 400) 3 credits. Seminar. Prerequisite: PSYC 5615.

Research methods, theories and findings related to the impact of work duties, schedules, psycho-social variables and circadian psychophysiology on human performance.

**PSYC 5670. Current Topics in Industrial/Organizational Psychology**

(PSYC 377) 3 credits. Seminar.

Selected topics in industrial/organizational psychology are studied with particular attention to current research and theoretical trends. Topics vary by semester.

**†PSYC 5699. Research Team in Industrial/Organizational Psychology**

1-3 credits seminar. Instructor consent required. Prerequisite: Admission to a graduate degree program in Psychology. This course may be repeated to a maximum of 12 credits.

Planning and execution of both individual and collaborative research projects in industrial/organizational psychology.

**PSYC 5700. Proseminar in Social Psychology**

(PSYC 406) 1 credit. Instructor consent required.

This course is repeatable to a maximum of ten credits. Open only to students admitted to pursue graduate study in social psychology.

Presentations on current research in all areas of social psychology.

**PSYC 5701. Experimental Social Psychology**

(PSYC 342) 3 credits. Seminar.

A critical overview of the various laboratory methods and techniques in social psychology.

**PSYC 5702. Field Research Methods**

(PSYC 348) 3 credits. Seminar. Prerequisite: PSYC 5701.

An examination of various methods of field research, focusing on design, analysis, theory, and practical issues.

**PSYC 5703. Advanced Social Psychology**

(PSYC 337) 3 credits. Lecture. Open to Social Psychology graduate students, others with permission.

An overview of the field of social psychology organized around the major underlying theoretical orientations. Several positions are critically examined along with representative empirical work.

**PSYC 5770. Current Topics in Social Psychology**

(PSYC 346) 3 credits. Seminar.

Topics vary by semester. Recent topics have included Social Cognition, Small Groups, Health Psychology, Emotion, Problems in Personality, and Ecological Social Psychology.

**PSYC 5800. Research in Psychology**

(PSYC 304) 1-6 credits. Independent Study.



**PSYC 5801. Independent Study in Psychology**

(PSYC 300) 1-6 credits. Independent Study.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**PSYC 6130. Measurement and Scaling**

(PSYC 392) 3 credits. Lecture. Prerequisite: STAT 5105.

History and theories of psychological measurement and scaling. Application of unidimensional scaling models (e.g., Thurstone, Guttman, and Likert scaling, hierarchical cluster analysis, multidimensional scaling, and factor analysis) to psychological research problems.

**PSYC 6141. Practicum in Neuropsychological Assessment**

(PSYC 327) 3 credits. Practicum. Prerequisites: PSYC 5301, PSYC 5140, and PSYC 5141.

Field placements in clinical neuropsychology. Students will be placed in area hospitals, rehabilitation centers, or on campus, where they will perform neuropsychological evaluations under supervision and attend clinical rounds and team meetings.

**†PSYC 6300. Clerkship in Clinical Methodology**

(PSYC 329) 1-6 credits. Practicum.

Supervised clinical training in a community facility.

**†PSYC 6301. Practicum in Adult Psychotherapy**

(PSYC 330) 1-3 credits. Practicum. Open to students in Clinical Psychology.

Supervised psychotherapy training with adults including diagnostic procedures.

**†PSYC 6302. Practicum in Child Psychotherapy**

(PSYC 331) 1-3 credits. Practicum. Open to students in Clinical Psychology.

Supervised psychotherapy training with children and parents including diagnostic procedures.

**PSYC 6303. Didactics of Supervision and Consultation**

(PSYC 318) 3 credits. Lecture. Open to students in Clinical Psychology. Prerequisites: PSYC 5301, PSYC 5304, PSYC 6301, and PSYC 6302.

Exposure to theories, models, and empirical data pertinent to providing quality supervision of the psychodiagnostic and psychotherapeutic activities of mental health professionals.

**PSYC 6304. Practicum in Clinical Supervision**

(PSYC 319) 3 credits. Practicum. Open to students in Clinical Psychology. Prerequisites: PSYC 5301, PSYC 5304, PSYC 6301, and PSYC 6302.

Supervised training in supervising psychodiagnostic and psychotherapeutic activities of less advanced clinical psychology students.

**PSYC 6310. Internship in Clinical Psychology**(PSYC 495) 0 credits. Practicum. *Consent required.*

Students assume professional psychological assessment, psychotherapeutic, and consultation responsibilities under the direct supervision of licensed clinical psychologists.

**PSYC 6505. Teaching Experimental Psychology**

(PSYC 405) 3 credits. Practicum.

The lecture method applied to teaching undergraduate courses in experimental psychology (introductory, cognition, learning and memory, sensation and perception) and giving conference presentations. Attention is given to presentation style and content.

**PSYC 6730. The Self in Social Psychology**

3 credits. Seminar.

Social psychological perspectives on the self. Early psychological/sociological views on the structure of the self, symbolic interactionism, self-concept and self-esteem, social comparisons, self-discrepancies, self-regulation and automaticity, and the self within the culture are some of the topics discussed.

**PSYC 6731. Person Perception**

(PSYC 380) 3 credits. Seminar.

An examination of the social psychological literature dealing with person perception and cognition, organized around the historical development and current status of attribution theory and research.

**PSYC 6732. Attitude Organization and Change**

(PSYC 372) 3 credits. Lecture. Open to Psychology graduate students, others with permission.

An overview of the field of attitude theory and research focusing on problems of attitude formation, attitude organization, and attitude change.

**PSYC 6733. Social Cognition**

(PSYC 386) 3 credits. Lecture.

Study of causal attribution, stereotyping, evaluating, judgment and decision-making, persuasion, expectancies, memory, attention as they pertain to social life.

**PSYC 6750. The Social Psychology of Stigma**

3 credits. Seminar.

Classic and current theories and research on stigma are covered. General stigma processes as well as group-specific (e.g., race, gender, mental illness) issues will be discussed.

**PSYC 6752. Interpersonal Relations**

(PSYC 371) 3 credits. Lecture. Prerequisite: PSYC 5701.

The study of affect, cognition, and behavior in two-person relationships.

**PSYC 6771. Intergroup Relations**

(PSYC 343) 3 credits. Lecture.

Marxism, social identity theory, realistic group conflict theory, elite theory, equity theory, relative deprivation, authoritarian personality, social dominance theory and evolutionary theory as it pertains to intergroup and gender relations.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

# PUBLIC HEALTH

The degrees of Master of Public Health and Doctor of Philosophy are offered.



## The Master of Public Health (M.P.H.) Degree

*M.P.H. Program Director:* Associate Professor David Gregorio

*Professors:* Babor, Bruder, Chapman, Faghri, Ferris, Fifield, Fortinsky, Handwerker, Heffley, Lewis, Perez-Escamilla, Rajan, Reisine, Santerre, Schensul, Storey, and Tennen

*Associate Professors:* Asencio, Aseltine, Beazoglou, Cherniak, Covault, Dicks, Erickson, Ford, Gregorio, Kramer, Kurz, Lazzarini, Morse, Pendry, Petry, Pfeiffer, Salazar, Stevens, Trapé-Cardoso, Van Hoof, Walsh, Weber, and Wetstone

*Assistant Professors:* Burluson, Dangman, Eberle, Guha, Huntington, Leger, Meyer, Pfeiffer, Segal, Swede, Thibodeau, Ungemack, Vernon, and Warren

The Master of Public Health is a professional degree program, accredited by the national Council on Education for Public Health, for individuals seeking training and experience in applied public health practice. The program faculty represents the population-based health sciences. Students must earn a total of 48 credits distributed among core, elective, and capstone activities. The core curriculum (24 credits) consists of the basic public health disciplines: social and behavioral sciences, epidemiology, biostatistics, health administration and environmental health, along with courses on public health law, research methods and the Practicum, a service learning activity. Elective course offerings (15-21 credits) emphasizing applied public health practice provide students with the understanding, knowledge, experience, skills and values necessary to function successfully as a public health practitioner. Within this overall framework, students are able to select from course content reflecting faculty interest in health systems administration, law and policy, epidemiology, occupational/environmental health, and applied practice methods. The capstone requirement may be met through a research thesis (9 credits) or an applied practice project or essay (3 credits).

The program is tailored to the needs of working professionals who wish to pursue part-time evening study. It also offers the opportunity to complete degree requirements simultaneously within the Schools of Medicine, Dental Medicine, Law, Social Work and Nursing.

For admission, applicants must demonstrate a strong academic record, background and/or experience relevant to public health, well-articulated career goals relevant to public health, and a commitment to the health of the community. A complete application includes official transcripts, a personal letter of application, and three letters of recommendation (preferably at least one

academic letter). Submission of GRE (or MCAT, LSAT, DMAT, or GMAT) scores is highly encouraged. Information is available from: MPH Program Director, University of Connecticut Health Center, Farmington, CT 06030-6325, email: [mph@nso.uconn.edu](mailto:mph@nso.uconn.edu), Web address: [http://publichealth.uconn.edu/acprgms\\_mph\\_overview.php](http://publichealth.uconn.edu/acprgms_mph_overview.php).



## The Doctor of Philosophy (Ph.D.) Degree in Public Health

*Ph.D. Program Director:* Professor Ann Ferris  
*Occupational and Environmental Health Sciences*

*Concentration Co-Chairs:* Professor Lawrence Silbart and Associate Professor Nicholas Warren  
*Social and Behavioral Health Sciences Concentration Chair:* Professor Susan Reisine

*Professors:* Asencio, Babor, Broadhead, Bruder, Cherniak, Duffy, Erickson, Faghri, Ferris, Fifield, Fisher, Fortinsky, Harkness, Hesselbrock, Morris, Perez-Escamilla, Pescatello, Reisine, Rodriguez, Rosenberg, Schensul, Silbart, Singer, Snyder, Stevens, and Tennen

*Associate Professors:* A. Anderson, Aneskevich, Aseltine, Asencio, Bahr, Britner, Grant, Henning, Manautou, Morse, O'Connell, Shelton, Storey, Trape-Cordoso, Warren, and Wright

*Assistant Professors:* Copenhagen, Dangman, Meyer, and Peterson

The Doctor of Philosophy degree program in Public Health is a full-time, interdisciplinary degree program. This cross-campus doctoral program prepares future public health leaders with the skills needed to enhance health in human populations. The Social and Behavioral Health Sciences concentration offers students specialized instruction in the theory and methods that emphasize the social, psychological and behavioral influences on health, illness, and injury. The concentration in Occupational and Environmental Health Sciences focuses on exposures to physical and chemical agents, biological exposures, ergonomic impacts, accident/safety risks and psychosocial factors.

For admission to the doctoral program in public health, students must demonstrate a commitment to public health, and have successfully completed courses in at least three of the five core competencies in public health (Biostatistics, Epidemiology, Occupational/Environmental Health, Behavioral Sciences, and Health Services Administration) before matriculating in the program. Students are required to complete a minimum of 45 credits, including a required seminar series (4 credits). There is a core program in discipline-specific theory, advanced research methods, and additional elective courses to complete the plan of study. After completion of course work, students take a general examination, prepare and defend a dissertation proposal, then write and defend a doctoral dissertation, which fulfills 15 credits. For more information please visit <http://www.publichealth.uconn.edu>.



## COURSES OF STUDY

### M.P.H. COURSES

**PUBH 5400. Introduction to Public Health** (PUBH 400) 3 credits. Lecture.

Provides an introduction to the discipline, its scientific foundations, and its relationship to other fields including clinical medicine. The basic concepts and skills necessary for a practitioner of public health are explained. Students gain a better appreciation of epidemiology to guide public health interventions and the development of public health policy.

**PUBH 5401. Principles of Epidemiology** (PUBH 401) 3 credits. Lecture.

Introduction to epidemiological concepts and methods as applied to public health research, community diagnosis, prevention, health planning and evaluation studies. Intensive use of exercises in descriptive and analytic epidemiology based on current investigations.

**PUBH 5402. Introduction to Biostatistics** (PUBH 402) 3 credits. Lecture.

An introductory presentation of the fundamentals of biostatistical theory and application, aimed at developing competence in the use of statistics, probability distributions, hypothesis testing, inference and estimation as applied to the most commonly used techniques in parametric and nonparametric statistical methods. Critical appraisal of research reported in journal articles serves as an application of learned techniques.

**PUBH 5403. Health Administration** (PUBH 403) 3 credits. Lecture.

Examination of past, present, and proposed approaches to the organization and management of health care services. Emphasis is on the role and functioning of the manager and the evolution of health care policy and trends as they affect managerial roles.

**PUBH 5404. Environmental Health** (PUBH 404) 3 credits. Lecture.

Explores the policy, political and public health implications of such issues as air pollution, drinking water, exposure to hazardous chemicals, indoor air pollution, food protection, lead poisoning, housing, international issues, etc. Provides the student with some basic technical information and familiarity with terms for a better understanding of policy and political decisions and health effects of environmental exposures.

**PUBH 5405. Social and Behavioral Foundations of Public Health** (PUBH 405) 3 credits. Lecture.

An introductory survey emphasizing basic social science concepts in the analysis of public health including orientations toward health, disease and health care, the origins and distribution of health care resources, and the role of social movements and research in improving public health.

**PUBH 5406. Law and Public Health**  
(PUBH 406) 3 credits. Lecture.

An introduction to the American legal system as it relates to health care and public health. Sessions present important applications of law to health including the powers of state governments, public health at the federal level, hospital, physician and HMO liability, emergency care and medical research, mental health law, reproductive health and the right to privacy, the right to refuse treatment and end of life issues, privacy and confidentiality in health care, infectious disease law and disability discrimination, and public health policy and advocacy.

**†PUBH 5407. Practicum in Public Health**  
(PUBH 407) 1-3 credits. Practicum.

Under faculty guidance, students undertake an organized set of activities that responds to an identified need of a public health agency or health-related organization. The activities may involve the policy development, planning, implementation, administration or evaluation of public health services, or a combination of such activities. Students should be appropriately advanced before initiating the practicum.

**PUBH 5408. Introduction to Epidemiology and Biostatistics I**

(PUBH 408) 3 credits. Lecture. Open to students admitted to MPH program, others with consent of instructor.

This is the first of a two-course sequence introducing students to concepts and methods of epidemiology, biostatistics and public health research. Topics include nature of variability, common probability distributions, causal reasoning, control of bias and confounding, descriptive and analytic design of observational and experimental studies, principles of disease screening and clinical efficacy.

**PUBH 5409. Introduction to Epidemiology and Biostatistics II**

(PUBH 409) 3 credits. Lecture. Open to students admitted to MPH program, others with consent of instructor. Completion of PUBH 5408 required.

This continuation of a two-course sequence on basic epidemiology, biostatistics and public health research addresses hypothesis generation, data collection methods, point and confidence interval estimation, inference testing, correlation/regression analysis, multivariable interaction, effect modification, power and meta-analysis. Evaluation of study designs, research methods and statistical procedures in clinical and public health literature will be stressed.

**PUBH 5410. Fundamentals of Strategic Planning**

(PUBH 410) 3 credits. Lecture.

Fundamentals of strategic planning for public and non-profit organizations emphasizing the development of mission and vision statements, stakeholder analysis, scanning of internal and external environments; formulation and implementation of goals and objectives, definition of strategic issues, program planning, and evaluation. Introduction to related concepts in long range planning and group decision making. A group strategic planning project caps the course.

**PUBH 5412. Health Regulation**  
(PUBH 412) 3 credits. Lecture.

Focus is on the relationship between law and health care. Regulation of practice, practitioners and facilities. Legal aspects of alternative delivery systems including managed care. Legal and ethical dimensions of the health care provider-client relationship also are addressed.

**PUBH 5414. Health Economics**  
(PUBH 414) 3 credits. Lecture.

An introduction to economic theory and various applications of economics in the analysis of the U.S. health care system.

**PUBH 5416. Principles of Quality Improvement**  
(PUBH 416) 3 credits. Lecture.

Quality improvement (QI) is the art and science of improving quality of care by continuously making small improvements in key steps or processes. Because systems of care are inherently complex, people need tools and methods to recognize and prioritize what changes are necessary and to know how to implement and evaluate such changes. Several basic principles or concepts underlie QI efforts, such as variation, leadership, systems thinking, and the psychology of motivation. This course will describe critical principles and concepts important to QI and will illustrate their practical application to health care settings.

**PUBH 5419. Public Health Agencies**  
(PUBH 419) 3 credits. Lecture.

Takes organization and management theory into practice. The focus is on governmental and non-profit agency management and administration. Emphasis is on developing and defending budgets, personnel management, working within the political context, with the community and with multiple agencies.

**PUBH 5430. Public Health Informatics**  
(PUBH 430) 3 credits. Lecture.

An overview of the basic information skills required to clarify a health-related information need and identify and use appropriate information resources to select materials that answer that need. The course will include discussions of health-related networks and information resources, demonstrations of their appropriate use, class exercises and a semester project. Enrollment limited to 12.

**PUBH 5431. Public Health Research Methods**

(PUBH 431) 3 credits. Lecture.

Introduction to conceptualization, methods, and analysis in public health research including: formulation of research questions and hypotheses, development of research and analytic models, use of qualitative (interviewing and observation) and quantitative (secondary and survey data) data collection methods, and qualitative and quantitative data analysis leading to the formulation of research projects.

**PUBH 5433. Health Program Evaluation**  
3 credits. Lecture.

Methods of evaluating the implementation and impact of health programs. Topics include: specification of program objectives and components, experimental and quasi-experimental evaluation designs, collection and analysis of program data, and the dissemination and application of evaluation results.

**PUBH 5434. Topics in Intermediate Biostatistics**

(PUBH 434) 3 credits. Lecture.

An introduction to the interplay of experimental design and data analysis. Begins with a review of statistical estimation and testing. Topics include analysis of variance, linear regression, and power analysis. Applications are emphasized through the demonstration and use of statistical software.

**PUBH 5435. Statistical Methods in Epidemiology**

(PUBH 435) 3 credits. Lecture.

An introduction to the statistical methods most commonly used in analyzing data from epidemiological studies. The course begins with a review of basic epidemiology and statistics. Subsequently, the focus is on contingency table methods and logistic regression with emphasis on dose-response relationships, interaction and confounding. Computer software for data analysis is demonstrated.

**PUBH 5437. Epidemiological Research Appraisal**

(PUBH 437) 3 credits. Lecture.

A research seminar on uses, strengths and limitations of epidemiological methodology. Major studies in infectious disease, chronic disease and health care epidemiology are critically analyzed. The goal is to promote sound judgment of the scientific validity of epidemiological evidence.

**PUBH 5438. Investigation of Disease Outbreaks**

(PUBH 438) 3 credits. Lecture.

Provides students with the basic skills and perspectives necessary to investigate acute disease outbreaks. The emphasis is on the use of epidemiology to investigate outbreaks of infectious diseases, guide public health interventions, and develop public health policy. Students will participate in an outbreak investigation conducted by the state health department.

**PUBH 5450. Public Health Practice**

(PUBH 450) 3 credits. Lecture.

Discussion of initiatives to define the practice of public health, including the Institute of Medicine (IOM) Report on the Future of Public Health and the Public Health Service's "essential functions" of public health. Includes review of expenditures studies and estimates of actual public health infrastructure resource needs, as well as discussion of appropriate future roles for public health.

**PUBH 5451. Maternal and Child Health Services**

(PUBH 451) 3 credits. Lecture.

Maternal and child health services are examined, highlighting the past successes and future challenges to the health care delivery system. Current topics which include nutritional influences, reproductive technology, injury control, domestic violence, child abuse/neglect, emerging infections, perinatal risk behaviors and mental health provide case studies for evaluation of maternal and child health policy development.

**PUBH 5452. Injury and Violence Prevention**  
(PUBH 452) 3 credits. Lecture.

Injury and violence are major preventable public health problems with predictable patterns. The purpose of this course is to familiarize the student with the epidemiological literature of intentional and unintentional injuries. The course is designed to focus on the knowledge and skills required to design, implement, and evaluate scientifically sound community injury prevention and control programs.

**PUBH 5453. Chronic Disease Control**  
(PUBH 453) 3 credits. Lecture.

Chronic diseases are examined from clinical, epidemiological and program planning perspectives. Diseases examined include: selected neoplastic diseases, cardiovascular diseases, chronic obstructive pulmonary diseases, cerebrovascular disease and diabetes. The role of public health agencies, for profit and non-profit entities in research, education, and risk reduction activities also are covered.

**PUBH 5454. Infectious Disease Control**  
(PUBH 454) 3 credits. Lecture.

Overview of microbiology. Agent-host environment relationship in causation and control of infectious diseases. Epidemiological patterns of major infectious diseases, with emphasis on sexually transmitted diseases, respiratory conditions and nosocomial infections.

**PUBH 5455. Health Education**  
(PUBH 455) 3 credits. Lecture.

Methods for planning, presenting, and evaluating health education programs in communities, schools and worksites. Includes use of the Precede Model, setting of goals and objectives, behavior modification theory, group processes, teaching techniques and activities for developing and presenting workshops or courses.

**PUBH 5461. Healthcare Law and Ethics**  
(PUBH 461) 3 credits. Lecture.

An analysis and evaluation of the legal rights of patients and providers in the health care process. Specific topics may include: nature of rights, consent to treatment, contraception, abortion, sterilization, involuntary commitment, and allocation of limited medical resources.

**PUBH 5462. International Health**  
(PUBH 462) 3 credits. Lecture.

Examines primary health care as a model suited to the health needs of developing nations. Provides a broader understanding of the genesis of illness in

developing countries and analyzes the kind of care required to have an impact on these illnesses.

**PUBH 5463. Comparative Health Systems**  
(PUBH 463) 3 credits. Lecture.

An analysis of national health systems in relation to their socio-economic, political, cultural, and epidemiologic contexts. The examination of alternative approaches to organizing scarce health care resources serves as an integrating theme.

**PUBH 5465. Occupational Health**  
(PUBH 465) 3 credits. Lecture.

Recognition and prevention of occupational disease and injuries, including social and political aspects and policy issues such as OSHA and Workers' Compensation laws. Overview of some of the major occupational disease issues. Approaches of industrial hygiene, ergonomics, and occupational epidemiology to understanding and preventing occupational health hazards.

**PUBH 5466. Industrial Hygiene**  
(PUBH 466) 3 credits. Lecture.

The skills required to recognize, evaluate and control occupational hazards. Review of hazards associated with a variety of work processes and jobs. Students learn how to take an occupational history, to research the hazards associated with an industry, and to conduct a plant walk-through. Control methods, such as ventilation and personal protective equipment, are evaluated.

**PUBH 5467. Occupational and Environmental Disease**  
(PUBH 467) 3 credits. Lecture.

Clinical introduction to occupational disease, including diagnostic strategies and patient management techniques. Review of the diseases of primary target organs, including the range of syndromes from that organ, appropriate diagnostic techniques, and treatment options.

**PUBH 5468. Occupational and Environmental Epidemiology**  
(PUBH 468) 3 credits. Lecture.

Topics include the history of occupational epidemiology, causal models, occupational exposure classification systems, environmental epidemiology, cohort mortality studies, cross-sectional surveys, case-control studies, ecologic studies, and statistical and methodological issues in research design and their solutions.

**PUBH 5472. Disability and Public Health**  
(PUBH 472) 3 credits. Lecture.

Examines both developmental and acquired disabilities from a public health perspective. Public health issues of cognitive and physical disability, including: prevention, diagnostic and definitional considerations, epidemiological and statistical controversies, legal and ethical aspects, treatment considerations and research concerns.

**PUBH 5473. Women, Public Health and Reproduction**  
(PUBH 473) 3 credits. Lecture.

The history of reproduction and public health issues in the U.S.; underlying ethical issues in modern reproductive health care and key components of opposing views; major financial, social and emotional considerations in policy making and the increasing role that reproductive health plays in public health as a whole.

**PUBH 5474. Urban Health**  
(PUBH 474) 3 credits. Lecture.

Comprehensive overview of historical forces and social factors related to the health status of African-Americans, Hispanics, and other minority groups in American society. Although much of the course content examines current minority health issues, the use of theory and research to identify underlying causes and to suggest practical strategies/interventions for addressing these problems is a major focus.

**PUBH 5475. Public Health and Policy in an Aging Society**  
(PUBH 475) 3 credits. Lecture.

This course examines the demographics of aging; organization, financing and delivery of health services for older adults; formal and informal caregiving; retirement and housing policy; and end of life care. Policy and ethical aspects of these topics will be explored. The course will be research-oriented, integrating empirical evidence to illustrate central concepts. Familiarity with basic principles of research design, including ability to critically read and synthesize scientific literature, is important.

**PUBH 5476. Community Mental Health**  
(PUBH 476) 3 credits. Lecture.

Overview of mental illness, substance abuse and related conditions, including epidemiological patterns and interventions. Chronic mental patients, the homeless mentally ill and other special groups. The community mental health movement and role of government. Regulations and mental health law.

**PUBH 5495. Independent Study in Public Health**  
(PUBH 495) 1-9 credits. Independent Study.

An individual course for those wishing to pursue special topics in the public health sciences under faculty supervision.

**PUBH 5497. Graduate Seminar in Public Health**  
(PUBH 497) 1-6 credits. Seminar.

**PUBH 5499. Capstone Project in Public Health**  
3-6 credits. Independent Study. Program director consent required.

†GRAD 5930. Full-Time Directed Studies (Master's Level)  
(GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research  
(GRAD 395) 1 - 9 credits.

†GRAD 5960. **Full-Time Master's Research**  
(GRAD 396) 3 credits.

GRAD 5998. **Special Readings (Master's)**  
(GRAD 398) Non-credit.

GRAD 5999. **Thesis Preparation**  
(GRAD 399) Non-credit.

### PH.D. COURSES

PUBH 6490. **Public Health Seminar**  
(PUBH 490) 1 credit. Seminar. This course is repeatable to a maximum of four credits.

This student-centered seminar series will meet weekly in both the Fall and Spring semesters of the student's first 2 years and will introduce the students to a broad range of faculty and outside speakers in public health. The seminar will follow a cycle where students read and discuss papers for an upcoming presenter, the next week the speaker will present and participate in discussion and questions and answers, and the following week there will be a student presentation. During their fourth semester, students will present an overview of the literature supporting their proposed research project. This seminar is common to all students in the doctoral program in public health.

PUBH 6491. **Advanced Topics in Social and Behavioral Foundations of Public Health**  
(PUBH 491) 1 credit. Discussion. Co-requisite: PUBH 405.

This seminar course will be given in parallel with the MPH survey course, Social and Behavioral Foundations of Public Health (PUBH 405) with the goal of more in-depth exploration of the topics presented in the survey course. The objective is to gain a more advanced understanding of the concepts and theories in the social and behavioral sciences and their ability to explain patterns of health, illness and health care utilization, practices and policies. In conjunction with the survey course, the biopsychosocial paradigm of health and illness will provide the conceptual framework for integrating the societal, interpersonal, and intrapersonal factors that influence the public's health.

PUBH 6492. **Advanced Topics in Health Promotion, Disease and Disability Prevention**  
(PUBH 492) 1 credit. Discussion. Co-requisite: GPAH 324.

An in-depth examination of health promotion and disease and disability prevention policies, programs and strategies. This course will involve continued examination of important national and international issues in health promotion and disease and disability prevention that compliment those raised in GPAH 324. Students will critically analyze the health promotion and disease and disability prevention scientific literature relating to a critical issue of their choice. The format for this critique will be a seminar presentation and a written scientific synthesis.

PUBH 6493. **Occupational and Environmental Health: Exposures, Risk and Prevention**  
3 credits. Lecture.

Exposure pathways, risk analysis techniques and prevention strategies relevant to both occupational and environmental settings. Lectures reinforced by discussion of case studies presented by students.

PUBH 6497. **Graduate Seminar in Public Health**  
(PUBH 497) 1-6 credits. Seminar.

†GRAD 6930. **Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†GRAD 6950. **Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†GRAD 6960. **Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

GRAD 6998. **Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

GRAD 6999. **Dissertation Preparation**  
(GRAD 499) Non-credit.

## PUBLIC POLICY

*Department Head:* Associate Professor Amy K. Donahue

The Department of Public Policy offers two master's degree programs: Master of Public Administration and Master of Arts in the field of Survey Research.

### Master of Public Administration

*Program Director:* Professor William Simonsen  
*Associate Professors:* Bifulco, Brunner, Dautrich, Donahue and Robbins  
*Assistant Professor:* Craemer

The Master of Public Administration (M.P.A.) program provides students with a dynamic and integrated approach to the study of public policy and management. The M.P.A. Program is committed to preparing students for leadership positions in public policy and management through a personalized education that is both theoretically rich and skills-based. The M.P.A. program is accredited by the National Association of Schools of Public Administration and Public Affairs (NASPAA). The M.P.A. website can be accessed at this address: <<http://www.dpp.uconn.edu>>.

**Admission.** Admission to the M.P.A. program is selective. Considerations for admission include a bachelor's degree from an accredited college or university; a strong academic record; and verbal, quantitative, and analytical scores from the Graduate Record Examinations (GRE). Acceptable TOEFL exam scores for international students are required. A personal letter, current resume and three letters of recommendations are also required.

The Admissions Committee begins the review of applications on **February 15th** for Fall admission and on **November 15th** for Spring admission.

Admissions materials can be found at this website: <http://www.dpp.uconn.edu>.

**Plan of Study.** The student's plan of study is individually developed in consultation with a major advisor to meet his or her goals and interests.

A focused approach is the program's framework for teaching public management, analytical techniques, and public policy. The curriculum is organized into a set of core courses, a field internship, and area of specialization, and a capstone project.

Problem-oriented courses prepare students for decision-making in public management. The program develops the skills managers need to diagnose problems, collect and analyze information, plan, choose among policy alternatives, communicate findings, implement programs, and manage change.



### Master of Arts in Survey Research

*Program Director:* Professor William Simonsen  
*Associate Professors:* Bifulco, Dautrich, Donahue and Robbins  
*Assistant Professor:* Craemer

The Master of Survey Research (MSR) Program at the University of Connecticut offers the Master of

Arts degree in the field of study of Survey Research. The program provides students with a dynamic and integrated approach to the field of survey methodology. The quality of our academic program is the product of an outstanding faculty and the resources of a research university. The use of practical experiences as a learning tool, combined with theory, analysis, and case studies in the classroom, make our program job-relevant and intellectually challenging.

The program is designed to serve students with a diverse range of backgrounds that places them in a wide variety of occupations. Our program views survey research as a tool that can be utilized in multiple fields.

**Admission.** Admission to the M.A. program in Survey Research is selective. Considerations for admission include a bachelor's degree from an accredited college or university; a strong academic record; and verbal, quantitative, and analytical scores from the Graduate Record Examinations (GRE). Acceptable TOEFL exam scores for international students are required. A personal letter, current resume and three letters of recommendations are also required.

The Admissions Committee begins the review of applications on **February 15th** for Fall admission.

Admissions materials can be found at this website: <http://www.dpp.uconn.edu>.

## COURSES OF STUDY

### Public Policy (PP)

**PP 5300. Independent Study**  
(PP 300) 1-6 credits. Independent Study.

†**PP 5301. Special Readings in Public Policy**  
(PP 301) 1-6 credits. Special Readings.

**PP 5315. Capstone in Public Administration I**  
(PP 315) 1 credit. Seminar.

Development of the research question, bibliography, and methodology for the capstone project.

**PP 5316. Capstone in Public Administration II**  
(PP 316) 3 credits. Seminar.  
Research and writing of the capstone project.

**PP 5317. Capital Financing and Budgeting**  
(PP 317) 3 credits. Seminar.  
Examination of the municipal bond market, capital budgeting techniques, and related public policy issues.

**PP 5318. Financial Management for Public and Nonprofit Organizations**  
(PP 318) 3 credits. Seminar.

Management of financial resources in public service organizations. Topics include variance analysis, public sector and nonprofit accounting, financial statement analysis, and forecasting.

**PP 5319. Program Development and Evaluation**  
(PP 319) 3 credits. Seminar.

Techniques for evaluating and improving organizational performance and the ability to deal with

the challenges posed by changing environments. Topics include strategic planning, program development, program implementation, evaluating effectiveness, and performance measurement and improvement.

**PP 5320. Ethics in Policy and Management**  
(PP 320) 3 credits. Seminar.

Ethics in public policy and management, including contemporary ethical dilemmas and decision-making tools and techniques.

**PP 5321. State and Local Fiscal Problems**  
(PP 321) 3 credits. Seminar.

Analytical tools and concepts to evaluate policies related to government revenues, the delivery of public services, and intergovernmental relations.

**PP 5322. Evaluating Public Programs**  
(PP 322) 3 credits. Seminar.

The tools and concepts important to evaluation research.

**PP 5323. Leadership and Management of Nonprofit Organizations**  
(PP 323) 3 credits. Seminar.

The theory and practice of effective leadership and management of nonprofit organizations.

**PP 5324. Resource Development for Nonprofit Organizations**  
(PP 324) 3 credits. Seminar.

Important concepts in the fundraising process unique to local, national and international nonprofit organizations.

**PP 5325. Labor Relations and Public Financial Management**  
(PP 325) 3 credits. Seminar.

Overview of the interrelation of two key fields of public administration: finance and labor relations.

**PP 5330. The Practice of Survey Research**  
(PP 380) 6 credits. Seminar.

The practice and use of survey research in the United States and throughout the world. The structure, culture and professional norms of the survey community. The role of public opinion polling in government and public policy-making.

**PP 5332. Advanced Quantitative Methods**  
(PP 382) 3 credits. Seminar.

Advanced statistics for survey research analysis.

**PP 5333. Principles and Methods of Survey Research II**  
(PP 383) 3 credits. Seminar.

Advanced theory and statistics for survey research.

**PP 5334. Focus Groups**  
(PP 384) 3 credits. Seminar.

Introduction to focus group research.

**PP 5341. Public Opinion and Democratic Process**  
(PP 341) 3 credits. Seminar.

American public opinion in the context of democratic theory.

**PP 5342. Policy Analysis**  
(PP 391) 3 credits. Seminar.

Approaches and techniques used to evaluate public programs and public policy.

**PP 5344. Social Policy**  
(PP 394) 3 credits. Seminar.

Examination of the concepts and principles of public policy analysis, with applications to important social issues.

**PP 5358. Administrative Law**  
(PP 358) 3 credits. Seminar.

The basis legal framework of administrative organization and the rules governing administrative powers and their exercise; also the legal procedures for the enforcement of bureaucratic responsibility in the democratic state.

**PP 5360. Information Technology Management for Public Policy**  
1 credit. Lecture.

Overview of practices and issues in managing the use of information technology in public service organizations.

**PP 5361. Theory of Public Organization**  
(PP 361) 3 credits. Seminar.

An examination of organization theory and research findings; their relation to public organizations.

**PP 5362. Organizations and Management**  
(PP 362) 3 credits. Seminar.

The application of organization theory and research findings; their relation to public organizations.

**PP 5363. Administrative Functions of Local Government**  
(PP 363) 3 credits. Seminar.

An examination of the characteristic managerial problems of the several functions of local government such as police, fire, traffic, public works, parks, health, recreation. The course is designed for individuals planning to work with citizen agencies, in agencies for governmental management, or in journalism.

**PP 5364. Governmental Financial Administration**  
(PP 364) 3 credits. Seminar.

Techniques, practice, and organization of the financial functions in governmental administration, including revenues administration, fund operation, debt operations, records administration, purchasing, audits, and financial reports.

**PP 5365. Human Resource Management**  
(PP 365) 3 credits. Seminar.

The structures, processes, and principles of human resource management and labor-management relations in the public service, and examination of contemporary human resource policies and challenges.

**PP 5367. Problems in Intergovernmental Administration**

(PP 367) 3 credits. Seminar.

Examination of intergovernmental relations as an administrative system, with emphasis on current problems.

**PP 5370. Applied Research Design**

(PP 370) 3 credits. Seminar.

Research design for organizational management and policy analysis and evaluation. How to communicate, execute and evaluate research. Skills in selecting appropriate analytic procedures and properly interpreting and reporting results.

**†PP 5372. Introduction to Public Administration Skills**

(PP 372) 1 credit. Seminar.

Provides basic skills and competencies important to completing the MPA program and for future professionals in the public service.

**PP 5373. Budgeting in Public Service Organizations**

(PP 373) 3 credits. Seminar.

Processes and techniques of public budgeting; the principles and roles of budgets in public service organizations; analytic tools, concepts, and principles of budget analysis and decision making.

**PP 5375. Analytic Tools for Public Problems**

(PP 375) 3 credits. Seminar.

The analytic tools necessary to evaluate the activities of government.

**PP 5376. Applied Quantitative Methods**

(PP 376) 3 credits. Seminar. Open only to students in the Master of Public Administration or the M.A. in Survey Research programs.

Statistical reasoning, tools, and techniques for effective public management.

**PP 5377. Qualitative Methods in Public Policy**

3 credits. Lecture.

Development and design of qualitative research.

**PP 5379. Principles and Methods of Survey Research**

(PP 379) 3 credits. Seminar.

Exploration of the theory and practice of survey research, including sampling, questionnaire design, analysis and reporting results.

**PP 5385. Attitude Formation**

3 credits. Lecture.

Theories of attitude formation and attitude change.

**†PP 5390. Supervised Internship**

(PP 369) 3-9 credits. Practicum. Open only to students in the Master of Public Administration and the M.A. in Survey Research programs.

Experience in a public organization under competent supervision.

**PP 5397. Special Topics in Public Policy**

(PP 397) 1-6 credits. Lecture.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

## SOCIAL WORK

*Dean:* Professor Salome Raheim*Associate Dean for Academic Affairs:* Assistant

Professor Catherine M. Havens

*Professors:* Davidson, Fisher, Gitterman, Healy,

Humphreys, Johnson, and Klein

*Research Professor:* Frisman*Associate Professors:* Bullock, Comer, Cordero, Dicks,

Drachman, Heller, Kurz, Lyon, Malcolm, Negroni,

Parks, Simmons, and Wayne

*Assistant Professors:* Harding, Havens, Letendre, Libal,

Medina, Papallo, Smith, Spath, Thomas, and

Werkmeister-Rozas

The University of Connecticut School of Social Work promotes social and economic justice by providing high quality graduate education in social work. The School shares with other units of the University the pursuit of excellence in teaching, research and scholarship, the vision of an expanded international role, and a commitment to public service that bring the knowledge of the University to the people of the State. The School of Social Work offers courses of study leading to the degrees of Master of Social Work and Doctor of Philosophy.

**The Ph.D. Program.** The goal of the doctoral program in Social Work is to equip future social work leaders with the expert scholarly and research skills needed to provide intellectual leadership and direction to the profession. The program provides a rigorous curriculum designed to prepare social workers for careers as faculty in colleges and universities and as researchers. The curriculum reflects the particular attention given to the unique role of theory and research in the traditions of professional social work in relation to applied practice and to knowledge building.

The course of study consists of 54 graduate credits. Ten core courses (30 credits) provide the students with competency in advanced research methods and statistics, social science theories and practice theories, while the balance consists of two elective courses (6 credits) in related disciplines, dissertation preparation seminar (3 credits) and dissertation research (15 credits). It is expected that program completion will require three to five years for full-time students.

**The Ph.D. Admission Procedure.** Applicants to the Ph.D. program in Social Work must have an M.S.W. degree and a minimum of two years post - M.S.W. experience in social work.

In addition to the admission standards of the Graduate School, all applicants are required to submit scores from the General Test of the Graduate Record Examinations, three letters of professional reference, a personal statement, curriculum vitae, and a writing sample. All items should be sent in one packet directly to the Graduate Admissions Office, University of Connecticut, 438 Whitney Road Extension, Unit 1006, Storrs, CT 06269-1006. All applicants are advised to visit the UConn School of Social Work website <<http://www.ssw.uconn.edu>> for more detailed information about the Ph.D. Program and application materials.

**The M.S.W. Program.** The primary goal of the M.S.W. program is to prepare competent professional practitioners to help people to enrich their lives, improve their communities, and contribute to social justice. To prepare MSW graduates for advanced practice in a variety of settings, the curriculum emphasizes knowledge and method skills for social work in micro-level practice (i.e. helping individuals, families, and groups to mobilize their personal and environmental resources to reach their goals) and macro-level practice (i.e. administration, policy formulations, organizational and environmental changes through group and community advocacy and social actions).

The course of study requires that each student earn 18 of the program's 60 credits in field education through supervised placements in agencies where they learn to integrate theory and practice. All students are required to complete courses in Human Oppression (BASC 5300), Research I (BASC 5330), Research Methods in Social Work Practice (RSCH 5332), Analysis of Social Welfare Policy (BASC 5350), Human Behavior in the Social Environment: Macro Theories (BASC 5360), Human Behavior in the Social Environment: Micro Theories (BASC 5361), Macro Foundation Practice (BASC 5390) and Micro Foundation Practice (BASC 5391). In addition to the required foundation courses and advanced research course, students specialize in one of the following advanced major concentrations: casework, group work community organization, administration or policy practice. Electives and independent study enable students to meet their interests in focused areas of the profession. B.S.W.s from a social work program accredited by the Council on Social Work Education may be eligible for course exemptions or for the Advanced Standing Option. The School does not grant social work course credit for life experience or previous work experience. The M.S.W. Program at the School of Social Work is accredited by the Council on Social Work Education.

**The M.S.W. Admission Procedure.** Applications for admission to the M.S.W. program should be sent directly to the School of Social Work. A more detailed description of the M.S.W. program, admission procedures, and financial aid information are available at the School of Social Work website <<http://www.ssw.uconn.edu>> and in the current view book of the School of Social Work which can be obtained from the Admissions Office, University of Connecticut School of Social Work, 1798 Asylum Avenue, West Hartford, Connecticut 06117. Phone: (860) 570-9118.

**Dual Degree Programs.** Reflecting the School's commitment to interdisciplinary teaching and practice, dual degree programs are offered with the University of Connecticut Schools of Law (J.D.), Business (M.B.A.) and Medicine (M.P.H.). A joint degree program is also offered with the Yale Divinity School. There are separate admission applications for these programs.

**The STEP Program.** The School of Social Work also has a non-degree program, STEP (Staff Training and Education for the Profession), that is

available to students who hold a bachelor's degree. Students are encouraged to test their interest in the social work degree by taking courses in STEP. Students who then matriculate may be able to apply up to 14 credits earned through STEP toward the M.S.W. degree. Non-credit courses also are held on a variety of specialized social work topics.

## COURSES OF STUDY



### Master of Social Work Courses



#### Social Work Foundation Courses

#### **BASC 5300. Human Oppression: The African-American and Puerto Rican Perspective**

(BASC 300) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for students in the M.S.W. program. Must be taken prior to or concurrent with first year of field education.

Examines economic, political, social and cultural forces operating at global, national and local levels, which generate and maintain oppression based on race and ethnicity in the United States. The course will focus on the oppression of the Black and Latino populations in the United States, highlighting the African-American and Puerto Rican experiences and perspectives. It will provide a framework for analyzing and understanding oppression. A historical perspective will be utilized to explore past and current oppression related to race and color, culture and ethnicity, social class, gender, sexual/emotional orientation and religion. Intercultural, intracultural, psychosocial, social and political responses to oppression will be addressed throughout the course.

#### **BASC 5301. Special Populations**

(BASC 301) 1 credit. Lecture. Open to students in the M.S.W. Advanced Standing Option. Co-requisite: CSWK 5340 or GRWK 5340 or POPR 5340 and CSWK 5301 or GRWK 5301 or POPR 5310. This course is required of all students in the Advanced Standing Option and is to be taken in the summer prior to the beginning of full time study for the M.S.W. degree.

The goal of the course is to provide an opportunity for students to understand and to critically analyze human oppression and issues that are relevant to social work practice methods. The course will examine demographic, economic, political, social and cultural forces operating at national and local levels highlighting the African-American and Puerto Rican experiences and perspectives. The focus of the class is the application of the knowledge of special populations to the social work practice methods. The course will combine lectures by the instructor and invited speakers, and class discussions. At times, small groups will be used to encourage students to examine their personal and professional interactions with oppression, and to discuss their implications for social work practice.

#### **BASC 5330. Research I**

(BASC 330) 2 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Must be taken prior to or concurrent with first year of field education. Meets one of the pre-requisites for RSCH 5332.

Prepares M.S.W. students to understand research methodology including basic statistics and computer application; critically review research studies; learn how to utilize research to solve social problems and enhance social work practice, and to understand the role of the practitioner/researcher in social work.

#### **BASC 5350. Analysis of Social Welfare Policy and Social Service Delivery Systems**

(BASC 350) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for students in the M.S.W. program. Must be taken prior to or concurrent with first year of field education. Policy Practice students must take this course prior to or concurrent with POPR 5301: Policy Practice: Process, Use of Data and Information Technology.

This course will provide a critical analysis of the historical roots of American social welfare policy, the formulation of policy, and the economic and political determinants of contemporary policy development. Examination and analysis of the inter-relationship between social welfare policy, the service delivery systems, and practice implications for private and public agencies and programs. The course also includes the examination of international issues in social welfare policy and social service delivery. Students will analyze and apply the results of policy research relevant to social service delivery; understand and demonstrate policy practice skills in regard to economic, political and organizational systems; use them to influence, formulate, and advocate for policy consistent with social work values, and identify financial, organizational, administrative, and planning processes required to deliver social services.

#### **BASC 5360. Human Behavior in the Social Environment: Macro Theories**

(BASC 360) 2 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. This course is one of two required courses for students in the M.S.W. program on human behavior in the social environment. Both courses must be taken prior to or concurrent with the first semester of the first year of field placement.

The required courses in human behavior in the social environment emphasize social work's "person-and-environment" frame of reference. Although the focus of analysis differs, this course emphasizes the social and physical environment. Major themes stressed throughout the course include theories and research about the interdependence of persons and their environments (physical and social), political, economic, and cultural contexts, including values and ethical issues, in which our social welfare institutions function. Cultural and ethnic diversity, institutional prejudice, especially racism and sexism, issues of social, economic, and political justice and the process of social change will be stressed. Values and ethical



issues relevant to macro social work will also be considered.

**BASC 5361. Human Behavior in the Social Environment: Micro Theories** (BASC 361) 2 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. This course is one of two required courses for students in the M.S.W. program on human behavior in the social environment. Both courses must be taken prior to or concurrent with the first semester of the first year of field placement.

Focuses on the individual and the family in transaction with social, economic, political, and cultural contexts and forces. Content areas emphasize current theories, empirical evidence to support these theories, ethical implications, and critical analysis. The course is organized around a systems perspective through a biopsychosocial lens. Variations arising from culture, ethnicity, social class, gender, sexual orientation are considered in this course.

**BASC 5390. Macro Foundation Practice** (BASC 390) 3 credits. Lecture. Open to students in the M.S.W. program. Prerequisites: BASC 5360 and BASC 5361 or must be taken as corequisites. Co-requisites: BASC 5391, FED 5351, and FED 5301. Required course for students in the M.S.W. program.

The focus of this course is on macro practice foundation knowledge and skills associated with generalist practice in administration, community organizing and policy practice. It explores the history and place of macro methods in the evolution of the social work profession. Students are introduced to the unique language and perspective of macro practice as a capacity building and strength based intervention. The course includes definitions of and ways to analyze communities, organizations and policies. Emphasis is given to strategies and tactics for achieving change in communities, organizations and policies, to improving services for populations at risk, and promoting diversity and distributive justice, including an international context. Particular ethical and value mandates and dilemmas associated with macro practice are identified throughout the course.

**BASC 5391. Micro Foundation Practice** (BASC 391) 3 credits. Lecture. Open to students in the M.S.W. program. Prerequisites: BASC 5360 and BASC 5361 or must be taken as co-requisites. Co-requisites: BASC 5390, FED 5351, and FED 5301. This course is one of the two foundation practice courses taken with the first semester of the first year of field placement. Required course for students in the M.S.W. program.

This course is designed to provide a history of and a foundation for micro social work theory and practice emphasizing ecological, strengths and capacity building perspectives. It provides knowledge, values and skills associated with generalist practice with individuals, families and groups within the context of organizations and communities. The course examines the mission of the social work profession and its value and ethical base, including its commitment to diversity, populations-at-risk and social and economic justice. Strategies for helping client-systems will

include: preparing for practice; developing mutual working agreements; engaging, assessing and formulating goals; implementing interventions; monitoring and evaluating progress; and terminating services. The course emphasizes integration of course content with field experience.

#### FOUNDATION FIELD

**FED 5301. Field Education Seminar I** (FED 301) 0 credits. Seminar. Open to students in the M.S.W. program. Co-requisite: FED 5351. Required course for students in the M.S.W. program.

This seminar helps students prepare for and make optimum use of their field education experience. Topics include the roles and responsibilities of the student within the agency setting, exploration and development of learning contracts, and the educational assessment of self as a learner in the profession. The seminar is used to identify issues that arise in the field and ways to deal with them.

†**FED 5302. Field Seminar II** (FED 302) 1 credit. Seminar. Open to students in the M.S.W. program. Prerequisites: FED 5351 and FED 5301. Co-requisites: FED 5352 and ADMN 5301 or CSWK 5301 or GRWK 5301 or CORG 5301 or POPR 5301. Required course for students in the MSW program.

This seminar helps students prepare for and make optimum use of their field education experience. Areas of seminar content include such topics as the roles and responsibilities of the student within the agency setting, exploration and development of learning contracts, and the educational assessment of self as a learner in the profession. The seminar identifies issues that arise in the field and ways to deal with them.

†**FED 5351. Field Education Foundation I** (FED 351) 4 credits. Practicum. Open to students in the M.S.W. program. Co-requisites: BASC 5390, BASC 5391, and FED 5301.

Teaches students basic skills in social work practice with systems of all sizes including individuals, groups, organizations, and communities. This field experience course provides the foundation for the development of advanced skills in specific social work methods in advanced field experiences.

†**FED 5352. Field Education Foundation II** (FED 352) 4 credits. Practicum. Open to students in the M.S.W. program. Prerequisites: FED 5351 and FED 5301. Co-requisites: ADMN 5301 or CSWK 5301 or GRWK 5301 or CORG 5301 or POPR 5301 and FED 5302.

Continues to develop basic skills in social work practice with systems of all sizes, while adding increased emphasis on the students' development of skills in the students' major method.



#### Social Work Advanced Concentration Courses

##### ADVANCED RESEARCH COURSE

**RSCH 5332. Research Methods in Social Work Practice** (RSCH 332) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. The prerequisites for this course may be met in one of the following ways: 1) successful completion of (minimum grade of B) a basic undergraduate or graduate research course during the previous six years; 2) successful completion (C or better) of BASC 5330 - Research I; or 3) successful completion (achieving a score of 70% or better) on a standard competency examination prepared and administered by the research curriculum committee of the School. Required course for students in the M.S.W. program. Policy Practice students must take this course prior to or concurrent with POPR 5301: Policy Practice: Process, Use of Data and Information Technology.

This course builds on students' prior research knowledge acquired through undergraduate training, previous elective graduate coursework or self study. This course will provide students with: 1) an understanding of various "families" of research methods to equip them to evaluate social work practice with systems of all sizes and to be able to understand and interpret basic published social work research; 2) the knowledge to identify data collection methods that are appropriate to the research design being employed; and 3) an understanding of true experimental designs as a means for addressing strong causal inference with oppressed groups.

##### ADVANCED FIELD SEMINARS

**FED 5310. Field Education Seminar III** (FED 310) 0 credits. Seminar. Open to students in the M.S.W. program. Prerequisites: FED 5352 and FED 5302. Co-requisite: CSWK 5353 or GRWK 5353 or ADMN 5353 or CORG 5353 or POPR 5353. Required course for students in the M.S.W. program.

This seminar helps students prepare for and make optimum use of their field education experience. Topics include the roles and responsibilities of the student within the agency setting, exploration and development of learning contracts, and the educational assessment of self as a learner in the profession. The seminar is used to identify issues that arise in the field and ways to deal with them.

†**FED 5311. Field Education Seminar IV** (FED 311) 1 credit. Seminar. Open to students in the M.S.W. program. Prerequisite: CSWK 5353 or GRWK 5353 or ADMN 5353 or CORG 5353 or POPR 5353 and FED 5310. Co-requisite: CSWK 5354 or GRWK 5354 or CORG 5354 or ADMN 5354 or POPR 5354. Required course for students in the M.S.W. program.

This seminar helps students prepare for and make optimum use of their field education experience. Areas of seminar content include such topics as the roles and responsibilities of the student, field instructor and faculty advisor, exploration and development of the learning contract, and the educational assessment of self as a learner in the profession.

†**FED 5350. Field Education Seminar V** (FED 350) 1 credit. Seminar. Open to students in the M.S.W. program. Prerequisites: FED 5352 and FED 5302. Co-requisite: CSWK 5355 or GRWK 5355 or ADMN 5355 or CORG 5355 or POPR 5355.

This seminar helps students prepare for and make optimum use of their field education experience. Topics include the roles and responsibilities of the student within the agency setting, exploration and development of learning contracts, and the educational assessment of self as a learner in the profession. The seminar is used to identify issues that arise in the field and ways to deal with them. Required course for students in the M.S.W. program completing a Block Field Placement.

### ADVANCED CONCENTRATION COURSES

#### *Administration*

#### **ADMN 5301. Managing People: Communication Skills in Supervision, Personnel Management and Leadership**

(ADMN 301) 3 credits. Lecture. Open to M.S.W. students in the Administration concentration. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 301. Co-requisite: FED 5352 and FED 5302. Required course for students in the Administration concentration.

This course covers leadership theory and analysis, supervision, personnel/human resource management, with emphasis on interactional skills. The course prepares students to function effectively in supervisory and administrative roles and to use themselves in creative professional ways in exercising leadership in human service settings.

#### **ADMN 5302. Managing Money: Financial Management Strategies and Fiscal Responsibilities for Social Administrators**

(ADMN 302) 3 credits. Lecture. Open to M.S.W. students in the Administration concentration. Prerequisites: ADMN 5301, FED 5352, and FED 5302. Co-requisite: ADMN 5353 and FED 5310. Required course for students in the Administration concentration.

This course instructs on the fundamental principles and processes in financial management processes, budgeting systems, preparation and execution of budgets, basics of accounting, use of computer spread sheets, managerial accounting, financial statements, cost analysis, inventory and fixed asset accounting, funding sources, financial performance measures, internal control and external audits, fiduciary relationships and responsibilities, liabilities in 501(c) 3, ethics in finance, collaborating and leveraging of resources.

#### **ADMN 5303. Creating and Managing Opportunities in the Organization's Internal and External Environment**

(ADMN 303) 3 credits. Lecture. Open to M.S.W. students in the Administration concentration. Prerequisites: ADMN 5302, ADMN 5353, and FED

5310. Co-requisite: ADMN 5354 and FED 5311. Required course for students in the Administration concentration.

The course focuses on selected internal and external challenges and opportunities for the social work administrator. These include staff relations and organizational climate, the use and organization of the organization's physical environment, the voluntary board, public relations, and strategic alliances. The course gives students opportunities to develop a range of knowledge and skills in work with staff, volunteers, the media, and partners in the community to maximize opportunities to enhance the organization and its services to clients and the community.

#### **ADMN 5316. Women in Social Welfare Administration**

(ADMN 316) 2 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Emphasizes issues for women in social welfare administration. Covers barriers faced by women in seeking administrative positions and promotions; advancement opportunities for women; research findings on gender and management; career planning; and development of practice strategies for solving administrative dilemmas. Addresses concerns of special groups of women, including issues of race, age, and sexual orientation.

#### **ADMN 5319. Computer Applications in Human Service Agencies**

(ADMN 319) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Emphasizes concepts and techniques of computer use, application areas of the electronic technologies for the full range of social work agency needs, principles of computer system design and development, and in particular, methods of managing the computer process. All students enrolling in this course are expected to have basic computing skills such as operating a computer and word processing. For those who do not have these requisite skills, help is available at the computer center located in the School of Social Work.

#### **ADMN 5327. Current Topics in Administrative Skills**

(ADMN 327) 1-3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Intensive skill-oriented workshop on various topics in administration. Varied topics each semester include budgeting, marketing, staff development, conflict management, working with boards, and grant writing.

#### **ADMN 5335. Staff Development and Training**

(ADMN 335) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Offered in a workshop format, focuses on skill building in planning, developing, and implementing training in human service organizations. In addition, examines selected organizational and management issues related to staff development. Facilitates learning through discussion, small group exercise, and a training project to be carried out in the student's agency (either field placement or place of employment).

#### †**ADMN 5353. Field Education in Administration III**

(ADMN 353) 4 credits. Practicum. Open to M.S.W. students in the Administration concentration. Prerequisites: FED 5352 and FED 5302. Corequisites: ADMN 5302 or POPR 5310 and FED 5311. Required course for students in the Administration concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice. Required course for students in the Administration concentration and must be taken concurrently with advanced Administration method courses.

#### †**ADMN 5354. Field Education in Administration IV**

(ADMN 354) 4 credits. Practicum. Open to M.S.W. students in the Administration concentration. Prerequisites: ADMN 5353 and FED 5310. Corequisites: ADMN 5303 and FED 5311. Required course for students in the Administration concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice. Required course for students in the Administration concentration and must be taken concurrently with advanced Administration method courses.

#### †**ADMN 5355. Block Placement in Administration**

(ADMN 355) 8 credits. Practicum. Open to M.S.W. students in the Administration concentration. Prerequisites: FED 5352 and FED 5302. Co-requisites: POPR 5310 and FED 5350.

Field Education in Administration for well-prepared students who have completed all course requirements except the second year of field education and the appropriate method course.

#### *Casework*

#### **CSWK 5301. Casework Helping Process: The Work and Ending Phases**

(CSWK 301) 3 credits. Lecture. Open to M.S.W. students in the Casework concentration. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Co-requisite: FED 5352 and FED 5302.

Builds upon foundation theory of ecological strengths and capacity building perspectives and the method base of social work practice. Course content focuses on the interventive facet and transactional nature of the casework process in helping people with a wide range of life transition stressors and environmental obstacles. Substantial attention is paid to working with people of special populations. Students focus upon the development of critical thinking and decision-making skills and the ability to be self-observant.

#### **CSWK 5302. Casework Practice Approaches: Differential Applications**

(CSWK 302) 3 credits. Lecture. Open to M.S.W. students in the Casework concentration. Prerequisites: CSWK 5301, FED 5352, and FED 5302. Co-

requisite: CSWK 5353 and FED 5310. Required course for students in the Casework concentration.

This course builds upon knowledge, skills, and values developed previously and deepens the understanding of theoretical, method, and empirical bases of casework practice, while maintaining simultaneous concern for people and environments. The course examines the ways that assessment and interventive strategies are informed by different theoretical orientations and research findings. Students continue to develop skills related to work with special populations and to develop professional self awareness.

**CSWK 5303. Casework with Vulnerable and Resilient Populations**

(CSWK 303) 3 credits. Lecture. Open to M.S.W. students in the Casework concentration. Prerequisites: CSWK 5302, CSWK 5353, and FED 5310. Co-requisite: CSWK 5354 and FED 5311. Required course for students in the Casework concentration.

This course consolidates casework theory and methods established in the prior casework courses. The unifying concept in this course is the application of differential casework interventions with vulnerable and resilient populations over the life course. The course will also focus on contemporary issues and ethical dilemmas affecting professional function, roles and identity. Students are challenged to locate and critically examine empirical and practice theory literature necessary for working with different populations.

**CSWK 5340. Skills Laboratory in Casework Practice**

(CSWK 340) 1 credit. Lecture. Open to M.S.W. students in the Advanced Standing option in the Casework concentration. Co-requisites: CSWK 5301 and BASC 5301. Required course for students in the Advanced Standing Option in the Casework Concentration and must be taken in the summer prior to the beginning of full-time study for the M.S.W. degree.

Students will have the opportunity to identify, practice, and critique a range of assessment, intervention skills. Students will use materials and cases from the concurrent CSWK 301 course to further develop their casework skills.

**CSWK 5345. Clinical Conditions with Children and Adolescents**

(CSWK 345) 3 credits. Lecture. Open to students in the M.S.W. program. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Students in the Casework concentration are required to take this course or CSWK 5346. Casework majors may take both courses using one of them toward elective credit. Students from other concentrations who meet the prerequisites may take this course as an elective. Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

Addresses values, knowledge, and skills required for social work practice with children and adolescents who experience varied biopsychosocial problems related to mental disorders, as well as practice with their families. It helps students to think

about practice situations in a spirit of inquiry, maintaining awareness of the complexity of psychiatric conditions and the limitations of our knowledge about them. Students become familiar with current psychiatric classification systems and learn a range of assessment and intervention skills. Students demonstrate the ability to access the most recent empirical and practice knowledge, and to develop skills related to work in a variety of social work practice settings where mental challenges are encountered. Mental disorders are addressed in the context of larger biopsychosocial systems. Attention is paid to differences arising from such variables as age, gender, ethnicity, race, religion, sexual orientation, and physical ability.

**CSWK 5346. Clinical Conditions with Adults and Older Adults**

(CSWK 346) 3 credits Lecture. Open to students in the M.S.W. program. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Students in the Casework concentration are required to take this course or CSWK 5345. Casework majors may take both courses using one of them toward elective credit. Students from other concentrations who meet the prerequisites may take this course as an elective. Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

This is a practice course which pays equal attention to the values, skills, and knowledge required for social work practice with adults and older adults who have a range of bio psychosocial problems related to mental disorders. Students will learn a range of assessment and intervention skills and become familiarized with current psychiatric classification systems. Students will demonstrate the ability to access the most recent empirical and practice knowledge and to develop skills related to work in a variety of mental health settings. Mental disorders will be learned within the context of the larger bio psychosocial system and attention is paid to differences based upon such variables as age, gender, ethnicity, religion, sexual orientation, and physical ability.

**†CSWK 5353. Field Education in Social Casework III**

(CSWK 353) 4 credits. Practicum. Open to M.S.W. students in the Casework concentration. Prerequisites: FED 5352 and FED 5302. Corequisites: CSWK 5302 and FED 5310. Required course for M.S.W. students in the Casework concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice. Required course for students in the Casework concentration and must be taken concurrently with advanced Casework method courses.

**†CSWK 5354. Field Education in Social Casework IV**

(CSWK 354) 4 credits. Practicum. Open to M.S.W. students in the Casework concentration. Prerequisites: CSWK 5353 and FED 5310. Corequisites: CSWK 5303 and FED 5311. Required course for M.S.W. students in the Casework concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice

**†CSWK 5355. Block Placement in Casework (CSWK 355)** 8 credits. Practicum. Open to M.S.W. students in the Casework concentration. Prerequisites: FED 5352 and FED 5302. Corequisites: CSWK 5302, CSWK 5303, and FED 5350.

Field Education in Casework for well-prepared students who have completed all course requirements except the second year of field education and the appropriate method course.

**CSWK 5365. Family Therapy: Theory and Practice**

(CSWK 365) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Provides a knowledge of significant theories, theorists, practice skills and techniques for family therapy, as well as the growing professional self-awareness of the therapist. Provides: a) opportunities for study of the used of family therapy with particular problem situations; b) critical study of changes in current theories, emerging theories and integration of theories; c) analysis of research in family therapy; d) an ongoing seminar for discussion of cases.

**Community Organization**

**CORG 5301. Essential Theory and Intervention Practice in Community Organization**

(CORG 301) 3 credits. Lecture. Open to M.S.W. students in the Community Organization concentration. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Co-requisites: FED 5352 and FED 5302. Required course for students in the Community Organization concentration.

This course builds on content covered in micro and macro foundations of social work practice and reviews in greater depth community organization history, values and assumptions, Rothman models of organizing, roles of the community social worker, and strategies used by community organizers to bring about change. The course promotes in-depth understanding of the various types of communities and enhances skills for community analysis. Essential information for grassroots organizing and community and coalition building is covered. It incorporates content on providing community based services to oppressed population groups, including leadership development and advocacy. Furthermore, it highlights the importance of power theory and dynamics in selecting models and strategies for intervention. The importance of relationship building and attention to process tasks and goal achievement are covered.

**CORG 5302. Theory and Practice of Social Movements For Community Organizers**

(CORG 302) 3 credits. Lecture. Open to M.S.W. students in the Community Organization concentration. Prerequisites: POPR 5310, CORG 5353, and FED 5310. Co-requisite: CORG 5354 and FED 5311. Required course for students in the Community Organization concentration.

This course will integrate Community Organization foundation and advanced method practice knowledge, values and skills. Students will be asked to select an agency-based Community Organization assignment that they have been working on during the academic year as the basis for a capstone assignment. An outline for this assignment will be distributed and discussed in class. Appropriate literature that will help students in conceptualizing and writing their capstone assignments will also be distributed and discussed. The course will concentrate on addressing social movement theory and implications for social change and community social work. A minimum of two social movements will be analyzed and one or more social movement related projects will be selected as an in-class project(s).

### **CORG 5312. Political Advocacy**

(CORG 312) 3 credits. Lecture. Open to M.S.W. students in Community Organization and Policy Practice concentrations. Pre- or co-requisites: FED 5352 and FED 5302. The requisites for this course differ for each of these concentrations. This is a required course for students in the Community Organization and Policy Practice concentrations.

This course builds on the concepts and interventions introduced in the Macro Foundation Practice course. The content covers political decision-making groups, including executive, legislative, judicial and private agency decision-making. The ways macro practitioners use power and political analysis is discussed. Emphasis is on the design, implementation and evaluation of a political advocacy strategy to improve the life situations of populations at risk, such as lobbying, preparing and delivering testimony to a public policy making group and forming and maintaining coalitions. Ethical requirements and dilemmas in doing political advocacy are integrated throughout the course.

### **†CORG 5353. Field Education in Community Organization III**

(CORG 353) 4 credits. Practicum. Open to M.S.W. students in the Community Organization concentration. Prerequisites: FED 5352 and FED 5302. Co-requisites: POPR 5310 and FED 5310. Required course for M.S.W. students in the Community Organization concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

### **†CORG 5354. Field Education in Community Organization IV**

(CORG 354) 4 credits. Practicum. Open to M.S.W. students in the Community Organization concentration. Prerequisites: CORG 5353 and FED 5310. Co-requisites: CORG 5302 and FED 5311. Required course for M.S.W. students in the Community Organization concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

### **†CORG 5355. Block Placement in Community Organization**

(CORG 355) 8 credits. Practicum. Open to M.S.W. students in the Community Organization concentration.

Prerequisites: FED 5352 and FED 5302. Co-requisites: POPR 5310 and FED 5350.

Field Education in Community Organization for well-prepared students who have completed all course requirements except the second year of field education and the appropriate method course.

### **CORG 5370. Grassroots Neighborhood Organizing**

(CORG 370) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

Provides intensive instruction for students who wish to become practitioners or trainers in grassroots neighborhood model of organizing. Examines Alinsky's model of organizing and the refinement of that model.

### **Group Work**

#### **GRWK 5301. Essentials of Social Group Work Practice**

(GRWK 301) 3 credits. Lecture. Open to M.S.W. students in the Group Work concentration. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Co-requisite: FED 5352 and FED 5302. Required course for students in the Group Work concentration.

Provides knowledge, theories, and practice principles common to social group work. Focuses on knowledge and practice methods that are used to identify and understand procedures and processes essential to planning, developing and working with small groups in various agency-based settings, dealing with a range of issues and diverse peoples. Social and behavioral sciences and group work literature, empirical data and practice wisdom serve as the foundation for organizing course content and activities.

#### **GRWK 5302. Differential Group Work: Populations and Settings**

(GRWK 302) 3 credits. Lecture. Open to M.S.W. students in the Group Work concentration. Prerequisites: GRWK 5301, FED 5352, and FED 5302. Co-requisite: GRWK 5353 and FED 5310. Required course for students in the Group Work concentration.

Designed to increase the depth of understanding of the content of GRWK 5301: Essentials of Social Group Work Practice. This course focuses on the application of group work processes, properties and group work skills to group work practice with groups that are established for different purposes and with populations that differ according to age, culture and need for group work services. This course will also examine the impact of different settings as the context for group work practice.

#### **GRWK 5303. Advanced Group Work Practice Methods and Techniques**

(GRWK 303) 3 credits. Lecture. Open to M.S.W. students in the Group Work concentration. Prerequisites: GRWK 5302, GRWK 5353, and FED 5310. Co-requisite: GRWK 5354 and FED 5311. Required course for students in the Group Work concentration.

The overall emphasis of this course will be on a critical analysis and sound examination of the social group work method B -- its underlying theories, knowledge, research supported practices, ideological commitments, and basic tenets and principles. The primary focus is on the development of advanced practice methods and techniques.

#### **GRWK 5311. Group Processes**

(GRWK 311) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for students in the Group Work concentration.

The purpose of this course is to help students develop a conceptual frame of reference for understanding small group processes. The focus of study is mainly on establishing a theoretical and conceptual appreciation of how small groups function. Students will develop an increasingly wide range of conceptual tools to identify and assess group processes. Students will gain a better understanding of small group interaction as it impacts individuals, interpersonal relationships and interactions with others beyond the group. Experiential as well as didactic study methods will be used.

#### **GRWK 5340. Skills Laboratory in Social Group Work Practice**

(GRWK 340) 1 credit. Lecture. Open to M.S.W. students in the Advanced Standing option in the Group Work concentration. Co-requisites: GRWK 5301 and BASC 5301. Required of students in the Advanced Standing Option with Group Work Method Concentration and must be taken in the summer prior to the beginning of full-time study for the M.S. W. degree.

Its primary focus is to offer students an opportunity to demonstrate how to apply (i.e., simulate practice experiences) some of the knowledge and theory presented in GRWK 301 - Essentials of Social Group Work Practice in practice situations. Students will participate in exercises and use procedures to enhance and assess current practice skill levels. Exercises and other instructional aids will center on particular elements pertinent to basic competencies in social group work practice including group formation, entering an established group, work within the group's process and achieving group goals. As well, attention is focused on group work within the context of the agency setting and its philosophical stance toward this method of practice.

#### **GRWK 5341. Group Work with Substance Abusing Women**

(GRWK 341) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

Provides 1) a basic orientation to current knowledge on problems of women substance abusers, and 2) opportunities for students to develop clinical group work skills in working with the population. Provides specific kinds of group experiences which deal with restoration and improvement of self-image, interpersonal competence and coping skills of substance abusing women through experiencing the use of an array of practical techniques in class.

**GRWK 5342. Group Work Practice in Therapeutic Settings**

(GRWK 342) 3 credits. Lecture. Open to students in the M.S.W. program. Prerequisite: CSWK 5301 or GRWK 5301.

Seminar on use of groups for therapeutic purposes in settings such as mental health clinics, residential treatment centers, counseling services, etc. Students share responsibility for the examination of material from their own clinical practice with groups.

**GRWK 5348. Understanding and Working with Violent Youth**

(GRWK 348) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Researches knowledge and practical experiences of the forces that unattach and disconnect at-risk violent youth from their families and society. Shows effective intervention and prevention methods and programs from a multi-disciplinary approach. Incorporates and integrates into practice the knowledge and skills necessary to more effectively provide group work services to at-risk youth.

**†GRWK 5353. Field Education in Group Work III**

(GRWK 353) 4 credits. Practicum. Open to M.S.W. students in the Group Work concentration. Prerequisites: FED 5352 and FED 5302. Co-requisites: GRWK 5302 and FED 5310. Required course for students in the Group Work concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

**†GRWK 5354. Field Education in Group Work IV**

(GRWK 354) 4 credits. Practicum. Open to M.S.W. students in the Group Work concentration. Prerequisites: GRWK 5353 and FED 5310. Co-requisites: GRWK 5303 and FED 5311. Required course for students in the Group Work concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

**†GRWK 5355. Block Placement in Group Work**

(GRWK 355) 8 credits. Practicum. Open to M.S.W. students in the Group Work concentration. Prerequisites: FED 5352 and FED 5302. Corequisites: GRWK 5302, GRWK 5303, and FED 5350.

Field Education in Group Work for well-prepared students who have completed all course requirements except the second year of field education and the appropriate method course.

**Policy Practice****POPR 5301. Policy Practice: Process and Finances**

(POPR 301) 3 credits. Lecture. Open to M.S.W. students in the Policy Practice concentration. Prerequisites: BASC 5390, BASC 5391, FED 5351, and FED 5301. Co-requisite: FED 5352 and FED 5302.

Required course for students in the Policy Practice concentration.

Course content includes the definition of policy practice, the phases of policy practice and the skills needed for policy practice especially advanced analytical and interactional skills, including the conscious use of self in practice, as well as persistence, creativity, and pragmatism and taking appropriate risks in the pursuit of policy practice goals. Other content includes the use of large data sets, data management systems, quantitative analysis, qualitative methods, especially focus groups. Emphasis is given to the use of policy practice to achieve distributive justice and implement and evaluate effective social service policies for populations at risk. Ethical requirements and dilemmas in policy practice are integrated throughout the course.

**POPR 5302. Policy Practice: Careers, Contexts, and Quantitative Analysis**

(POPR 302) 3 credits. Lecture. Open to MSW students in the Policy Practice concentration. Prerequisites: POPR 5301, POPR 5353, POPR 5310, and RSCH 5332. Co-requisite: POPR 5354 and FED 5311. Required course for students in the Policy Practice concentration.

The course will begin with content on career planning. Students will be helped to understand the complexity of social service funding, including the sources of funds and the mechanisms for transferring funds to social service programs, including federal and state tax policies and implication for social service programs. Critical current issues such as the growth of faith-based and profit-making social service strategies will be debated. Other topics will include the use of the media and public relations expertise, cutting edge social theories, micro and macro economic theories, and global economic policies and how they impact social service policies. Students will be expected to demonstrate an ability to integrate and critically evaluate their practice skills as they prepare to leave the program. Emphasis will be given to the use of policy practice intervention strategies to achieve distributive justice and effective service policies for populations at risk. Ethical requirements and dilemmas in policy practice will be integrated throughout the course.

**POPR 5310. Program Planning, Development, and Evaluation**

(POPR 310) 3 credits. Lecture. Open to M.S.W. students in the Policy Practice, Administration, and Community Organization concentrations. Pre- and co-requisites differ for each of these major concentrations. Refer to the Social Work Student Handbook for details. Required course for students in the ADMN, CORG and POPR concentrations.

This course covers a broad range of knowledge and skills needed to develop sound program proposals and to plan, manage, and evaluate social programs. These include assessing social and community needs; setting goals within the context of strategic plans; writing measurable objectives; designing program implementation and evaluation strategies, developing a program budget, and identifying funding sources. The

course will address value and ethical issues in program development, as well as constraints and opportunities that support or constrain program planning.

**POPR 5340. Program Planning, Development and Evaluation Skills Laboratory**

(POPR 340) 1 credit. Lecture. Open to students in the M.S.W. Advanced Standing Option in the Administration, Community Organization, and Policy Practice concentrations. Co-requisites: POPR 5310 and BASC 5301. Required of Advanced Standing Option students with ADMN, POPR, and CORG concentrations and must be in the summer prior to the beginning of full-time study for the M.S.W. degree.

Focuses on gaining knowledge and skills in the elements of program planning and proposal writing, and includes application of these through development of a program proposal for funding. The skills laboratory will provide an additional opportunity for students to apply knowledge and skills through a proposal review and evaluation exercise. The exercise will be conducted on the last day of the course after the students' final projects have been submitted. The instructor will choose one final project for the purposes of the review exercise with the student's name removed. (Note: more than one proposal can be selected offering an opportunity for ranking them in the exercise.)

**†POPR 5353. Field Education in Policy Practice III**

(POPR 353) 4 credits. Practicum. Open to M.S.W. students in the Policy Practice concentration. Prerequisites: FED 5352 and FED 5302. Co-requisites: POPR 5310 or CORG 5312 and FED 5310. Required course for students in the Policy Practice concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

**†POPR 5354. Field Education in Policy Practice IV**

(POPR 354) 4 credits. Practicum. Open to M.S.W. students in the Policy Practice concentration. Prerequisites: POPR 5353 and FED 5310. Co-requisites: POPR 5302 and FED 5311. Required course for students in the Policy Practice concentration.

Focuses primarily on the student's major method, emphasizing preparation for competent, advanced specialized practice.

**†POPR 5355. Block Placement in Policy Practice**

(POPR 355) 8 credits. Practicum. Open to M.S.W. students in the Policy Practice concentration. Prerequisites: FED 5352 and FED 5302. Co-requisites: POPR 5310 and FED 5350.

Field Education in Policy Practice for well-prepared students who have completed all course requirements except the second year of field education and the appropriate method course.

## Social Work Elective Courses

### Direct Service

#### DSEL 5320. Direct Practice in School for Children with Educational Disabilities and Their Families

(DSEL 320) 3 credits. Lecture. Open to students enrolled in the M.S.W. program and MSW graduates. HBEL 5348, Emotional and Behavioral Disorders of Childhood and Adolescence is strongly recommended as a foundation, or to be taken concurrently.

Meets state requirements for school work certification, approved by the Bureau of Certification and Professional Development. The practice of social work in schools requires that the social worker possess knowledge and skills to provide social work services for students with educational impairments and their families. To provide such service, the social worker must be able to engage in effective partnerships with parents and other multi-disciplinary team members and possess a repertoire of interventions appropriate for this population. Presents and discusses controversies and issues relative to labeling and testing procedures, such as the impact of racial and ethnic differences. Covers six areas of impairment as designated by law (Emotionally Impaired, Mentally Impaired, Learning Disabled, Autistic Impaired, Physically and Otherwise Health Impaired, and Speech and Language Impaired). Stimulates further study in impairment areas and lays a basic knowledge and skill foundation of social work services appropriate for these populations.

#### DSEL 5325. Direct Practice in Health

(DSEL 325) 3 credits. Lecture. Open to students in the M.S.W. Program. Co- or Prerequisite: CSWK 5301.

Examines practice concepts and principles in working with patients, families, and patient and caretaker's groups, in a variety of health care settings: acute care, chronic care, inpatient and ambulatory care, nursing homes, hospice, and community-based services. Studies issues and trends in practice including prevention (AIDS as a prime example); team work and other forms of interdisciplinary collaboration; organizational innovation; new practice roles; new ethical and moral dilemmas in health care practice. Views content from an ecological perspective on practice.

#### DSEL 5328. Social Work Practice with Children

(DSEL 328) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

This course is designed to help students develop knowledge and skills in preventive work as well as clinical work with children. It briefly examines major theoretical orientations and research findings in working with children. Aspects of ecological theory, psychosocial theory, cognitive-behavioral theory as well as theories of group development are presented. Key issues of child development are summarized. Major social work settings that provide services to

school age children are described and their impact on services addressed. The major emphasis of this course is on: 1) students' understanding of the importance of program media either as tools or as an end in themselves (program media include, but are not limited to drawing, simple arts and crafts, cooking, drama, games, music, nature walks, puppet-shows, role plays, sand trays, doll houses, story-telling and writing, sports etc.); 2) students' development of skills in selecting these program media to achieve certain practice goals, and 3) students' development of ease and leadership skills in utilizing a variety of program media in working with children.

### Human Behavior

#### HBEL 5300. Substance Abuse I: Introduction to Alcohol and Other Drugs

(HBEL 300) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

Examines the special issues and problems in dealing with alcohol and drug abuse. Focuses on: developing a conceptual framework of drug abuse and addiction; major classifications of drugs; examining high risk populations with an emphasis on their unique problems and needs; integrating knowledge with practice by giving careful consideration to treatment issues such as identification, assessment, referral, therapeutic strategies, treatment modalities and settings; providing information on the role of federal, state, and voluntary organizations which impact on prevention, education and treatment programs.

#### HBEL 5301. Substance Abuse II: Prevention and Treatment of Alcohol and Other Drug Abuse

(HBEL 301) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Prerequisite: HBEL 5300. Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

Builds upon HBEL 300, an overview of the various classes of drugs and the acute and chronic effects of drugs on human behavior and the body. Focuses on traditional and new intervention techniques that could be applied to social work practice. Provides knowledge of clinical applications and the empirical validation of effectiveness of major intervention strategies used in treatment of addictions.

#### HBEL 5325. Social Work Perspectives on the Status of Women in Society

(HBEL 325) 3 units. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Examines cultural assumptions about women; the theories which support these assumptions and the socializing agents that maintain them; new ways of thinking about woman's role, about alternative social arrangements, and about implications for social work intervention.

**HBEL 5327. Ethnic Minorities and the Social Work Profession: Black Experience** (HBEL 327) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on Black Studies for Social Work Practice. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

Considers the Black Experience from historical, social, political, and economic perspectives. Addresses the evolution of male/female roles and relationships, the genesis of Black family patterns, and the consequences for social work practice. Examines the impact of poverty and discrimination in a context of international and national cultural factors.

#### HBEL 5328. Ethnic Minorities and the Social Work Profession: The Puerto Rican/Latino/a Experience

(HBEL 328) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on Puerto Rican/Latino/a Studies Social Work. Elective course for Substantive Area: Focused Area of Study on International Issues in Social Work. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

Considers the Puerto Rican experience in the United States from the historical, social, political, economic, and cultural perspectives. Examines the impact of poverty, migration, and discrimination on individuals, families and communities.

#### HBEL 5344. Aging and Mental Health

(HBEL 344) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work Practice with Older Adults.

Uses ecological theory as a framework for understanding the psychological processes of adaptation and the mental health needs of the elderly. Analyzes various service arrangements in terms of their usefulness in rehabilitation and prevention.

#### HBEL 5347. Black Family Life

(HBEL 347) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Black Studies for Social Work Practice. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

Examines the Black family from an historical and current perspective, focusing on the individual and collective social, cultural, and psychological contents within which behavior is expressed and by which it is significantly influenced; the adaptive, resilient behavior utilized by Black family units for survival and success; the Black family as a varied and complex system interacting with other systems within the wider society; myths related to the behavior and functioning of Black families.

#### HBEL 5352. Death and Dying

(HBEL 352) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Elective course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice. Elective course for Substantive Area: Focused Area of Study on Social Work Practice. with Older Adults.

Focuses on dying as experienced by persons of all ages (not only the elderly) and on its psychological concomitants, such as rage and grief, bereavement and mourning; suicide and suicide prevention; dying as a career with identifiable states, as well as the concept of death as a social phenomenon.

**HBEL 5357. Social Gerontology**

(HBEL 357) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on Social Work Practice with Older Adults.

Considers the societal aspects of aging, including the social psychological concomitants of adjustments, changing roles, and systems of social relationships. Includes an overview of the economic aspects of aging and the service delivery system.

**HBEL 5362. Social Work Practice with Women**

(HBEL 362) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Examines the special issues involved in direct practice with women clients. Focuses on actual practice using student presentations and addressing the personal social problems that arise out of the significant role definitions and behavioral expectations for women. Reviews and analyzes theoretical perspectives that inform practice with special emphasis on implications for effective development and design.

**HBEL 5365. Forensic Social Work: Introduction to Law and Social Work**

(HBEL 365) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Focuses on the interrelatedness of legal and social problems. Examines selected federal and state statutes, judicial decisions, and administrative relations which impact the daily lives of individuals and groups. Explores legal principles and authorization which underlie and provide parameters for social work practice. Reviews social work theories, skills and contributions which have influenced the general welfare of individuals, families and communities. Focuses on the development of more comprehensive social work intervention and advocacy. Examines the adjudication process and its increasing influence on social policy making. Analyzes professional legal issues in social work practice.

**HBEL 5370. New Perspectives on Lesbians and Gay Men**

(HBEL 370) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Examines the problems of America's homosexual minority. Presents homophobia (fear of homosexuals or homosexuality) as a prejudice held by all people,

gay and straight, in a society which holds that heterosexuality is the "normal" and "acceptable" behavior and attitude. Intended to expand the students' awareness of how homophobic attitudes affect them and their relationships with other people in both professional and non-professional settings.

**HBEL 5373. Violence Against Women: A Cultural Heritage**

(HBEL 373) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Examines the connections between violence against women and the power distributions within society. Special focus on sexual assault, battering, sexual harassment, prostitution and pornography. Analysis considers social, political, and economic dynamics that affect the individual. Discusses the connection between violence and other social problems: sexism, racism, and classism.

**HBEL 5376. Puerto Rican and Latina Women and Their Reality**

(HBEL 376) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Puerto Rican/Latino/a Studies Social Work. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Emphasizes the double oppression that the Puerto Rican woman faces. Analyzes the double burden that she confronts when seeking to maintain her identity as a Puerto Rican and as a woman in a society which discriminates against both groups. Equal emphasis is placed on issues of racism, classism, and heterosexuality since these issues create an even stronger burden on Puerto Rican women. Special consideration is given to Puerto Rican cultural aspects of the socialization process of males and females with a focus on rigid adherence to sex roles (e.g., machismo - marianismo).

**HBEL 5380. Current Topics in Family and Children's Services**

(HBEL 380) 1-3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Examines selected issues and topics in family and children's services. Each course offering provides an in-depth examination of policy and/or practice in one specialized area such as sexual abuse, parent education, school social workers, family preservation programs, and other timely topics.

**HBEL 5381. Child Maltreatment: History, Theory, Prevention and Intervention**

(HBEL 381) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Primarily for students with some practice experience in family and children's services,

examines the phenomena of child abuse and neglect and societal and professional responses aimed at their prevention and treatment. As with other courses in the Substantive Area in Family and Children's Services, it is presented in the context of ecologically-oriented, family-centered child welfare policy and practice.

**HBEL 5386. Studies in the Holocaust: Implications for Social Work**

(HBEL 386) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Focuses on the Holocaust and its many implications for social work students. The course traces the rise of the Nazi totalitarian state resulting from defeat after World War I, the world wide depression of the 1930's and Hitler's targeting of Jews in Germany and eventually Europe-wide. The lessons for social workers will be drawn from these experiences. The integration of this material by students into other courses is encouraged.

**HBEL 5388. Mentoring as Social Work Practice**

(HBEL 388) 1-3 credits. Lecture. This is a two-semester course; must be taken Fall and Spring semesters (1 credit Fall semester; 2 credits Spring semester). Elective course for Substantive Area: Focused Area of Study on Puerto Rican/Latino/a Studies Social Work. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

The mentoring process offers opportunities to enhance the utilization of community-based services, promote positive self-image, and encourage educational and career exploration. Increasingly social service agencies are recognizing mentoring as effective in prevention and intervention work. This year-long seminar will match social work students (mentors) and out-of-home adolescents in the Department of Children and Families (DCF) system (mentees). Students and adolescents will meet as a class, every other week. They will explore mentoring related literature and address issues that are important to both mentors and mentees. On alternative weeks, mentors and mentees will meet for activities that enhance the mentoring process and reinforce class-related content.

**HBEL 5391. Parenting and Parent Education**

(HBEL 391) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Explores the methods that parents use to impart cultural values, control behavior, and assure healthy development of children. Students review findings of basic research about parenting and participate in a parent education workshop.

**HBEL 5393. Emerging Issues in Mental Health and Substance Abuse**

(HBEL 393) 3 credits. Lecture. Required course for Substantive Area: Focused Area of Study on Mental Health and Substance Abuse in Social Work Practice.

This course is designed to introduce students to current issues confronting providers of mental health and addiction services and consumers of these services as we enter the 21st Century. Philosophies about people with mental health, addiction and co-occurring disorders are changing in response to the



developing knowledge base and the rise of consumer movements. Specific emphasis on the growing need for broad based multi cultural service systems for consumers will be fostered. Issues of poverty and the "severely and predominantly mentally ill" will be discussed.

**HBEL 5395. Scientific Foundations of Child/Adolescent Development, Mental Disorders, and Substance Abuse**

(HBEL 395) 3 credits. Lecture. Open to students in the M.S.W. program and STEP program. Prerequisite or co-requisite: BASC 5361 in the past two years or permission of the instructor.

A Web-based course on knowledge for practice in children's services, mental health (all ages), and addictions. It can be used to meet an elective requirement in some substantive areas, by permission of the area chair. No class attendance required, one optional session. Students become familiar with current and emerging knowledge in these areas. They become proficient at accessing cutting-edge practice-relevant information to address issues and challenges that arise day-to-day. Class members discuss issues and questions with each other and the instructor via the World-Wide Web. Class members can collaborate with each other on assignments if they wish. An optional class session at the beginning of the semester is offered to help students become comfortable with Web technology, and to get to know each other and the instructor in person.



**Independent Study**

**IS 5394. Independent Study**

(IS 394) 1–9 credits. Independent Study. Open only to students enrolled in the M.S.W. program.

Special social work topics not included in the curriculum may be the subject of an Independent Study. A proposal to do an independent study must be presented no later than the second session of the semester in which the course is to be completed and be approved by the Director of Student Services. A maximum of three independent study courses or nine credits may be applied toward degree requirements.

**Research**

**RSCH 5323. Research in Black Studies**

(RSCH 323) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Black Studies for Social Work Practice.

In this graduate seminar, students will design and implement a research project that has the potential to improve the quality of Black Family Life. The focus will be on the current multi-disciplinary theoretical and research literature on Black families, individuals, and communities. Students will hone skills in conducting, interpreting, and writing-up empirical research. Elective course for Substantive Area: Focused Area of Study on Black Studies for Social Work Practice.

**RSCH 5326. Special Topics in Research** (RSCH 326) 3 credits. Lecture. Open to students in the M.S.W. Program. Prerequisite: RSCH 5332.

Introduces new and innovative material on a variety of special topics in research. These topics will rotate content to include survey methods, ethnography, single system design or focus on a specific problem or population.

**RSCH 5370. Ethnographic Research**

(RSCH 370) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Prerequisite: RSCH 5332.

Presents research methods typically applied on the inductive side of the cycle of science, particularly those intended to discover the meaning of systems that people use to structure experience. Provides instruction and supervised experience in exploratory research methods and analysis of non-numerical data.

**RSCH 5378. Research in Puerto Rican/Latino(a) Studies**

(RSCH 378) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Prerequisite: BASC 5300 or HBEL 5328. Required course for Substantive Area: Focused Area of Study on Puerto Rican/Latino/a Studies Social Work.

Examines existing research on Puerto Ricans. Analyzes past research efforts on Puerto Ricans, reviews various approaches to research methodology and techniques and their application to practical problems and concerns in social work practice. Understanding of all factors involved in the research process are part of the competency requirements for completion of the Puerto Rican Studies Substantive Area. Students apply research knowledge to implement a research study in a selected practice area or problems affecting Puerto Rican client systems.

**RSCH 5390. The Survey Method in Social Work Practice**

(RSCH 390) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Prerequisite: RSCH 5332.

Detailed methodological study of the sample survey as a tool for collecting and analyzing data which can lead to community action and subsequent change. Emphasizes instrumentation, multi-staged sampling, and data processing.

**RSCH 5391. Program Evaluation**

(RSCH 391) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Prerequisite: RSCH 5332.

Provides skills required to apply the methods of science to the assessment of social programs. After completion of the course, students will be able to conduct needs assessments, monitor program implementation, and assess impact of programs. Topics include qualitative and quantitative methods, utilization focused evaluations, evaluation of training, and cost benefit analysis.

**RSCH 5397. Quantitative Analysis**

(RSCH 397) 3 units. Lecture. Open to students in

both the M.S.W. program and the STEP program. Prerequisite: RSCH 5332.

Beginning level course in multiple regression analysis. Students learn to apply simple and multiple regression analysis to social work practice problems, including basic personality research, program evaluation, decision making, and forecasting. Students use up-to-date computer and statistical technology, analyze real data pertinent to social work questions.

**Social Welfare**

**SWEL 5306. Supervision and Consultation in Social Work**

(SWEL 306) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Concepts, principles, methods of supervision in social work; study of worker-supervisor relationship; individual and group aspects of teaching and learning. Concepts, principles, and methods of supervision and consultation.

**SWEL 5310. Services to Immigrants and Refugees and Cross-Culture Helping**

(SWEL 310) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on International Issues in Social Work.

Examines and connects concepts from migration studies with social work practice knowledge. Highlights the influence of immigration policy and procedures on the lives of immigrants and on service delivery and social work practice. Examines the interrelationship between sending and receiving countries and examines the experiences of individuals in the home country with their experiences in the new country. Emphasizes cultural and cross-cultural issues in each of the migration stages. Highlights different cultural views on health, mental health, help-seeking behavior, family and child-rearing practices and gender role behavior.

**SWEL 5317. Women, Children, and Families: Social Policies and Programs**

(SWEL 317) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Focuses on the policies and programs that affect women and children, in particular income supports, maternal and child health, housing, domestic violence, foster care and adoption, and parenting and child maltreatment. Special attention will be paid to the legal rights of women and children, especially those who are immigrants, have disabilities, or are members of minority groups. Required course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

**SWEL 5321. Social Work Perspectives on Adoption**

(SWEL 321) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.



Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Focuses on new developments in adoption and the knowledge, values and skills needed by social workers to effectively plan and deliver adoption services to a diverse group of children and families.

**SWEL 5325. Service Mapping: Geographic Information Systems for Social Workers**

(SWEL 325) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Geographic Information Systems (GIS) are a system of computer hardware and software as well as data and personnel used for the purposes of analyzing, displaying and presenting information that is tied to a spatial location. These systems provide a new tool social workers can use for the purposes of service planning, development, implementation and analysis. For example, information about current and potential client populations can be tied to specific locations to display service needs or outcomes. This course is designed to introduce social work students to the basics of using a desktop GIS and map analysis concepts for social work researchers, administrators, educators and policy planners. Students will become familiar with the sources, contents and uses of some of the freely available data sources available in Connecticut and on the Internet.

**SWEL 5333. Travel Study for Social Work**

(SWEL 333) 1-3 credits. Field Studies/Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on International Issues in Social Work. Elective course for Substantive Area: Focused Area of Study on Puerto Rican/Latino/a Studies Social Work.

Combines academic study with travel to examine social work and social welfare in other systems. Addresses the impact of social, economic and political systems on social welfare and social work; a cross-national examination of the profession; and cross-cultural understanding.

**SWEL 5340. Social and Ethical Issues**

(SWEL 340) 2 credits. Lecture. Open to students in the M.S.W. program and the STEP program.

Focuses on how the profession of social work has developed in relation to social issues. Includes a review of its mission, values, and sanctions as well as the role of professional organizations. Followed by a focus on social work's response to social issues and on its boundaries, ethics, and practice dilemma.

**SWEL 5345. International Development: Theory and Practice**

(SWEL 345) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

This course addresses international relief, reconstruction and development -- theories and practice strategies to attack poverty and improve human well-being. Among the topics covered will be: building local capacity, developing local partnerships, use of appropriate technology to create sustainability, multi-sectoral work, cultural relevance, ensuring gender sensitive programming, understanding

and working with local and national structures, funding streams, and international partnerships. Elective course for Substantive Area: Focused Area of Study on International Social Work.

**SWEL 5348. International Social Work Global Issues**

(SWEL 348) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on International Issues in Social Work. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

Cross-national, comparative approach to selected topics in international social problems and social welfare. Consideration of the problem of developing nations and modernization and urbanization as worldwide processes; the role of international organizations; the role of social work in international issues; and the implications of cross-national study for practice.

**SWEL 5350. Comp. Social Welfare Policy**

(SWEL 350) 3 credits. Discussion. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study in International Social Work.

This course will explore the evolution and current state of development of social welfare in the "Second World", a designation that applies to those countries that were part of the Soviet Union or Warsaw Pact. Course content will include a discussion of a framework for policy analysis and comparative international social welfare policy analysis using selected health, welfare and employment policies as illustrations of current social welfare policy in Armenia and other "Second World" countries. Course will be jointly taught by Dr. Nancy A. Humphreys and Dr. Ludmilla Haroutunian involving a group of UConn MSW students and Armenian graduate students using WebCT technology.

**SWEL 5351. Policy Issues in Aging**

(SWEL 351) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work Practice. with Older Adults.

History, development, and ramifications of social, economic and political policy issues relevant to the elderly; the elderly as voters and political actors. Major attention to framework for policy analysis.

**SWEL 5359. Seminar on Long-Term Care for the Elderly**

(SWEL 359) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Examines nursing homes and other long-term care facilities. Explores services offered by these institutions and the role of social work. Special attention given to the politics and government regulations of long-term care.

**SWEL 5360. Economic Justice: Labor and Social Work**

3 credits. Lecture. Open to students in both the MSW program and the STEP program.

This course examines the relationship of social work and the labor movement with particular attention to the labor movement under new leadership and with new direction. The class is organized around four themes: 1) Common roots of labor and social work, 2) Social workers as union members, 3) Social workers as union organizers and 4) The labor movement as a social movement.

**SWEL 5370. Social Work in Health Care: Introduction to Knowledge, Policy and Practice**

(SWEL 370) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Bio-psycho-social-cultural aspects of health, illness, and disability in the context of individual, family, and community life. Attention is given to health care systems, social work roles and tasks in health care, the impact of health policy, and the concerns of planning, administration, supervision, and consultation in health care and in social work services in health care.

**SWEL 5371. Permanent Families for Children**

(SWEL 371) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Focuses on permanency planning as a framework for social work practice in child welfare. Examines the philosophy, theory, and methodology of permanency planning for children and youth placed, or at risk of placement, out of their homes. Emphasizes programs, skills, and strategies for preventing placement, reuniting placed children with their biological families, or developing other permanent families, particularly through adoption.

**SWEL 5374. Social Work and Children's Rights**

(SWEL 374) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Elective course for Substantive Area: Focused Area of Study on Social Work with Women and Children in Families.

Reviews the historical development of the children's rights movement and its relationship to current services. Examines and evaluates legal decisions affecting due process, equal protection, right to permanency, etc. Also examines legal problems as they affect foster care, adoption, child custody, and child support.

**SWEL 5375. War, Militarism and Social Work**

(SWEL 375) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program

This course provides theoretical and empirical content on several linked global phenomenon -- imperialism, militarism, and war -- to understand their impact on U.S. and global society. The course will also analyze "globalization," its relationship to war and militarism, and why this process is relevant to social work practice. The course examines political forces in the United States that support and benefit from militarism to illustrate their effects on social policy

and the social work profession. Arguments for and against a dominant and aggressive U.S. role in global affairs will be examined. The course will also illustrate the adverse impact upon the welfare state and oppressed populations.

### **SWEL 5377. Urban Policy Issues**

(SWEL 377) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program. Required course for Substantive Area: Focused Area of Study on Urban Issues in Social Work. Elective course for Substantive Area: Focused Area of Study on International Issues in Social Work.

Focuses on urban problems and policy issues as well as social work practice issues in urban settings. Connecticut cities are used to explore the effectiveness of current policies and consider the need for policy change. Current social and economic needs of urban populations and the political environment are also considered.

### **SWEL 5378. AIDS and Social Work**

(SWEL 378) 3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Addresses common grounds and concerns as related to most people with HIV/AIDS regardless of gender or modes of transmission. Examples are: enhancing quality of life for people living with AIDS; initiating support groups; and caring for the care givers. HIV/AIDS has affected some groups of people more than others. For this reason, differences related to HIV/AIDS prevention, education, human services, and social work practice among women, children, drug users, gay men and lesbians, and people of color will also be explored.

### **SWEL 5380. Political Social Work**

(SWEL 380) 3 credits. Lecture. Elective course for Substantive Area: Focused Area of Study on Urban Issues in Social Work.

This course will offer students an opportunity to explore the world of elected politics as a legitimate field of social work practice. Social workers are currently playing many roles in this area including, serving as volunteer and paid staff in political campaigns at the local, state and federal level; as paid staff of elected politicians; in politically appointed positions; and as elected politicians. Course content will focus attention on practical realities of each of these positions. As part of this course, students will be required to attend the annual Campaign School sponsored by the Institute for the Advancement of Political Social Work Practice.

### **Special Topics**

#### **SPTP 5318. Special Topics**

(SPTP 318) 1–3 credits. Lecture. Open to students in both the M.S.W. program and the STEP program.

Introduces new and innovative material into the curriculum on an experimental basis. Any special topics course may be offered only twice and may not duplicate content already available in the regular curriculum. Any instructor offering a special topics course must submit the title and a brief statement of focus of the course to the Registrar for inclusion in

the course registration schedule. A student may apply up to 8 credits of Independent Study and Special Topics in Social Work (combined) toward the M.S.W. degree. This course is open to all matriculated students.



### **All Sections**

†GRAD 5930. Full-Time Directed Studies (Master's Level) (GRAD 397) 3 credits.

†GRAD 5950. Master's Thesis Research (GRAD 395) 1–9 credits.

†GRAD 5960. Full-Time Master's Research (GRAD 396) 3 credits.

GRAD 5998. Special Readings (Master's) (GRAD 398) Non-credit.

GRAD 5999. Thesis Preparation (GRAD 399) Non-credit.



### **Doctor of Philosophy Courses**

#### **SSW 6400. Independent Study**

(SSW 400) 3 credits. Independent Study. Open only to Social Work Doctoral Program students. This course may be repeated to a maximum of six credits.

Special Social Work topics not included in the Social Work Doctoral Program curriculum may be the subject of an Independent Study. A proposal must be presented and approved by the Director.

#### **SSW 6410. Research Design and Knowledge Generation**

(SSW 410) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course focuses on logic methods and methods of scientific inquiry in the social sciences. Students explore the logic of knowledge building with reference to rational, empirical and cultural processes. Rational processes examined include logic, model building, hypothesis testing, induction, and deduction, and appraisal of knowledge claims. Empirical processes examined include observation, symbolic representation of data, and data structures. Cultural processes examined include the effect of culture on conceptualization, priorities, ethical considerations and resource distribution. Students are expected to develop methodological rigor as well as critical assessment of contemporary research issues that affect social work practice.

#### **SSW 6411. Research II: Survey Research Methods**

3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

The course builds upon the beginning research design course by looking at the ways that survey design and data collection support the development of

quasi-experimental research designs. Based on social exchange theory, the course provides students with the skills required to conduct reliable and valid data through self administered surveys with high response rates. Such data may be used to assess social needs, monitor program activities, measure outcomes or assess attitudes.

#### **SSW 6412. Research III: Multivariate Statistics I**

(SSW 412) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course builds on an introductory level of statistical knowledge and assumes that students have completed an introductory statistics course, including experiences with data analyses that involve computer-based interactions (SPSS, SAS, etc.). This course develops an understanding of the general linear model (GLM). Once students gain a solid understanding of GLM, they can extend their knowledge to a variety of more complex statistical tests. The course focuses on the selection and application of appropriate statistical procedures to answer research questions or test hypotheses in social work research and involves the extensive use of available statistical packages. While the course emphasizes understanding of statistical testing, interpretation, and written presentation of statistical results, knowledge of the mathematical formulae and assumptions underlying each statistical procedure will be required and discussed.

#### **SSW 6413. Research IV: Multivariate Statistics II**

(SSW 413) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course builds upon SSW 6412 and also focuses on the selection and application of appropriate statistical procedures to answer research questions or test hypotheses in social work research. It focuses on data reduction methods and analyses of discrete or categorical data and makes extensive use of commercial statistical packages. While the course emphasizes understanding of statistical testing, interpretation, and written presentation of statistical results, knowledge of the mathematical formulae and assumptions underlying each statistical procedure is required and discussed.

#### **SSW 6414. Research V: Qualitative Research Methods**

3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course explores the philosophical underpinnings, history, techniques and relevance to social work research of qualitative inquiry traditions such as biography, phenomenology, grounded theory, ethnography and case study methods. This course will emphasize techniques, standards of quality, verification, and other indicators of rigor as well as value on ethical issues. After completing this course students will be able to describe various approaches, set up research protocols, describe data analysis and quality control techniques and specify standards for report writing.

**SSW 6420. Critical Analysis of Historical and Philosophical Themes of the Profession** (SSW 420) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course helps students to develop critical and historical understanding of social work knowledge, values and interventions. It reviews the social, economic, political and intellectual forces that influence the development of social welfare and professional social work. It examines the role that conflicting ideologies and commitments play in alleviating stress and suffering. The course focuses on knowledge of the development and history of social work in the context of changing social, economic, political and intellectual environments.

**SSW 6431. Social and Behavioral Science: Smaller Target Systems**

(SSW 431) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course helps students to understand the theoretical and empirical frameworks on which contemporary best practices are built. The theories and frameworks examined include cognitive, behavioral/social learning, psychodynamic, family systems, and other related concepts. Other theories may be added that have been demonstrated to be valid underpinnings of effective or promising social work practice.

**SSW 6432. Social and Behavioral Science: Knowledge Base for Practice with Large Target Systems**

(SSW 432) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course conveys substantive knowledge from social science disciplines that inform macro practice with large systems (community organization, administration, and policy practice). Relevant disciplines include economics, political science, sociology (including organizational theory), anthropology, and epidemiology. Students use fundamental knowledge in each of these social sciences to demonstrate competence in the application of major social science theoretical models relevant to macro practice and the empirical evidence that supports these theories. Connections between macro and micro practice (social work with small systems) is covered. Ethical implications of knowledge developed by disciplines with different value bases when applied to social work is also covered.

**SSW 6440. Comparative Social Work Practice Models (Micro Practice)**

(SSW 440) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course explores the major social casework and group practice models from historical, theoretical, and empirical perspectives. Current practice approaches and models from related fields empirically shown to be most effective or promising are examined. Selected social work models are examined within the social, political, and ideological contexts of their times, as well as with respect to their contributions to the profession's knowledge base.

Each model's contribution to the knowledge base and to direct practice methods are investigated and related to the student's conceptual and practice experiences.

**SSW 6441. Comparative Social Work Practice Models (Macro Practice)**

(SSW 441) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course explores the evolution and current development of macro practice methods, including community organization, administration, and policy practice in social work. After a brief review of the conceptual history of macro practice social work, the course examines the unique roles of macro practice methods in carrying out the mission of the profession. Value issues and ethical dilemmas associated with social advocacy and policy change are examined throughout.

**†SSW 6451. Dissertation Preparation Seminar**

(SSW 451) 3 credits. Lecture. Open to doctoral students in Social Work, others with permission.

This course is designed to assist students in identifying suitable dissertation topics and developing appropriate methodological approaches. It provides opportunities to assist students in building a firm foundation, upon which to engage in independent research and scholarship and to advance existing knowledge. Students prepare papers related to their dissertation topics for presentation and discussion with the group and for external conferences, in the process strengthening their scientific communication skills

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1-9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

## SOCIOLOGY

*Department Head:* Professor Davita Glasberg

*Professors:* Broadhead, Dashefsky, Glasberg,

Goodstein, Naples, Rockwell, Sanders, Taylor,

Troyer, Tuchman, Wallace, and Weakliem

*Associate Professors:* Aseltine, Bernstein, Cazenave,

Desai, McNeal, Purkayastha, and Wright

*Assistant Professors:* Beasley, Benzecry, Brakefield-

Younts, Cheng, Deener, Fischer, Mulcahy, Price,

and Ratcliff

The Department of Sociology offers study leading to the M.A. and Ph.D. degrees in Sociology. Available areas of study include political sociology and social movements, gender and sexualities, racism and ethnic group relations, stratification and inequality, deviance, social structure and personality, and theory. Members of the Department also are associated with Women's Studies, Judaic Studies, African Studies, African-American Studies, Asian American Studies, and Human Rights programs.

The Department regards a basic understanding of research methods and statistics to be an essential part of graduate training in sociology. Accordingly, students are required to pass a basic statistics course as a prerequisite to the quantitative methods course.

**Requirements for the M.A.** The purpose of all courses, residence, exams, and dissertation requirements is training and education for scholarly work and research in either an academic or applied setting.

Students should complete the M.A. degree in two years or less. Students may (1) write a Master's thesis (required for admission to the Ph.D. program) or (2) submit a portfolio of their scholarly work in four areas: social structure and personality, social theory, social organization, and methods (for a terminal M.A. degree). Portfolios may be submitted at any time.

The Master's degree in Sociology requires a minimum of 37 credits, including Sociology 5001 (Proseminar, 1 credit), Sociology 5251 (Core Theorists, 3 credits), Sociology 5201 (The Logic of Social Research, 3 credits), Sociology 5203 (Quantitative Research I, 3 credits), and Sociology 5231 (Qualitative Research I, 3 credits).

**Students with Master's Degrees in fields other than Sociology.** Students with Master's degrees in fields other than sociology may be admitted into the regular Master's program even if their goal is the Ph.D. Applicants will remain in the Master's program until they have satisfied the equivalency requirements as determined by the advisory committee and the graduate admissions committee.

**Requirements for the Ph.D.** The Ph.D. in Sociology requires a minimum 30 credits beyond the Master's degree, including Sociology 6251 (Contemporary Social Theory, 3 credits), Sociology 6203 (Quantitative Research II, 3 credits), and Sociology 325 (Qualitative Research II, 3 credits).

Candidates for the Ph.D. are required to have a Master's degree in Sociology or its equivalent as determined by the admissions committee. Students who have been admitted to the Ph.D.

Program by the departmental admissions committee are eligible to take the General Examination for the Ph.D. degree after fulfilling residence and course requirements, including the foreign language requirement (or six to nine credits in a related area).

The General Examination consists of two area examinations in areas chosen by the student with the advice and consent of the advisory committee. Each area examination assesses substantive and theoretical knowledge of the area, critical thinking and assessment skills, an understanding of the implications of this knowledge for general sociology, and methodological skills appropriate to the area.

## COURSES OF STUDY

†**SOCI 5001. Proseminar**  
(SOCI 301) 1 credit. Lecture.

Required of all M.A. candidates in the first year of study. Covers issues of successful graduate education and professionalization, including transitioning from the role of student to scholar; mentoring; networking; choosing thesis topics; presenting papers at conferences; getting papers published; getting grants; and developing vitae.

**SOCI 5003. Teaching Sociology**  
(SOCI 303) 1-3 credits. Seminar. Open only to graduate students in Sociology.

A survey and discussion of the content, viewpoints and methods that can be employed in teaching sociology. Emphasis is on course preparation for new teachers.

**SOCI 5201. The Logic of Social Research**  
(SOCI 321) 3 credits. Seminar

Required of all M.A. candidates in the first year of study. Covers the logic of how to frame and design social research. Topics include the link between theory and method, selection of a research topic, inductive versus deductive reasoning, causality (including research designs for identifying causal relations) and causal errors, conceptualization, operationalization, levels of analysis, measurement, reliability and validity, sampling, using mixed methods, research ethics, and the politics of social research.

**SOCI 5203. Quantitative Research I**  
(SOCI 326) 3 credits. Seminar. Prerequisites: SOCI 320 or its equivalent and SOCI 321.

Required of all M.A. candidates in the first year of study. Introduction to quantitative methods of social research. Topics include linear regression, including ANOVA and ANCOVA; hypothesis testing and model selection; regression diagnostics; non-linearity and functional form; path analysis; and factor analysis.

**SOCI 5205. Topics in Quantitative Methods**

(SOCI 329) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in quantitative methods in sociological research. Topics will vary by semester.

**SOCI 5210. Applied Survey Design and Analysis**

(SOCI 323) 3 credits. Lecture. Prerequisite: SOCI 322.

The design, administration, and analysis of sample surveys.

**SOCI 5231. Qualitative Research I**

(SOCI 324) 3 credits. Seminar. Open to master's and doctoral students in Sociology, others with permission.

Introduction to qualitative methods of social research. Topics include epistemologies of qualitative methodologies; ethical issues in qualitative research; the Chicago School; symbolic interactionism and grounded theory; introduction to fieldwork; basic fieldwork techniques; interviewing; narrative analysis; textual analysis; data analysis; content analysis using computers; and writing analyses of data.

**SOCI 5235. Topics in Qualitative Methods**

(SOCI 328) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in qualitative methods in sociological research. Topics will vary by semester.

**SOCI 5251. Core Theorists**

(SOCI 308) 3 credits. Seminar.

An examination of the original writings of the major figures in sociological theory: Durkheim, Marx, Weber, and Simmel. The course focuses upon the theories of these major figures, their relations with contemporaries, their interconnections, and their influence upon subsequent theory and theory groupings.

**SOCI 5255. Topics in Sociological Theory.**

(SOCI 302) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory. Topics will vary by semester.

**SOCI 5275. Topics in Culture**

(SOCI 311) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research in culture. Topics will vary by semester.

**SOCI 5301. Seminar on Crime and Justice**  
(SOCI 340) 3 credits. Seminar.

Broad survey of topics and issues relating to crime and the criminal justice system in the United States. Emphasis on policy issues.

**SOCI 5311. Deviant Behavior**

(SOCI 345) 3 credits. Lecture.

Review of theory and research, with emphasis on their implications for a general theory of deviant behavior.

**SOCI 5315. Topics in Deviance and Crime**

(SOCI 341) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research in deviance and crime. Topics will vary by semester.

**SOCI 5351. Seminar on Society and the Individual**

(SOCI 337) 3 credits. Seminar.

A comparative analysis of the major theoretical approaches to individual-society relations, with an emphasis upon interdisciplinary contributions and trends of development. Contemporary issues and the prospects for theoretical integration are examined in the perspective of the long-term development of the field.

**SOCI 5355. Topics in Individuals and Society**

(SOCI 310) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research concerning the relationship between individuals and society. Topics will vary by semester.

**SOCI 5401. Analysis of Social Organization**  
(SOCI 360) 3 credits. Seminar.

An examination of patterns of social organization found in bureaucracies and voluntary associations.

**SOCI 5406. Health Organizations and Their Environments**

(SOCI 382) 3 credits. Lecture.

An in-depth analysis of the interaction between organizations and their sociological environments. An emphasis is placed on health service organizational obstacles to health planning.

**SOCI 5411. Sociology of Work**

(SOCI 375) 3 credits. Seminar.

Analysis of work behavior with particular attention to formal and informal organization of labor, white collar, executive and professional roles.

**SOCI 5421. Seminar in Social Stratification**  
(SOCI 366) 3 credits. Seminar.

Social class theories, and problems of distribution of power and privileges. Some attention will be given to a comparative analysis of class systems.

**SOCI 5425. Topics in Stratification and Inequality**

(SOCI 371) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research in social stratification and inequality. Topics will vary by semester.

**SOCI 5453. Medical Sociology**

(SOCI 349) 3 credits. Lecture.

An examination of the institutional pattern of health care, including the social aspects of health and sickness, types of practitioners, and the social organization of therapeutic settings.

**SOCI 5461. Social Gerontology**

(SOCI 347) 3 credits. Lecture.

A basic consideration of the societal aspects of aging including the social psychological concomitants of adjustments, changing roles, and systems of social relationships.

**SOCI 5471. Energy, Environment, and Society** (SOCI 359) 3 credits. Seminar.

Sociological perspectives on energy production, distribution and consumption; environmental impacts and constraints; alternative energy and environment futures; and cross-national studies of policy formation and implementation.

**SOCI 5501. Racism**

(SOCI 334) 3 credits. Seminar.

Variable topics in the study of racism, such as racism and U.S. social policy, white racism, and the social construction of whiteness. Topic may vary by semester.

**SOCI 5505. Topics in Racism and Ethnic Group Relations**

(SOCI 304) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological analyses of racism and ethnic group relations. Topics will vary by semester.

**SOCI 5511. Seminar on American Jewry** (SOCI 343) 3 credits. Seminar.

Applications of sociological theory and methods to the analysis of American Jewry.

**SOCI 5601. Gender and Society**

(SOCI 356) 3 credits. Seminar.

Critical appraisal of social scientific perspectives on women and men. Feminist theory and current social science research on gender. Emphasis on interdisciplinary approaches.

**SOCI 5605. Topics in Gender and Sexualities**

(SOCI 358) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research in gender and sexualities. Topics will vary by semester.

**SOCI 5612. Feminist Theory and Social Science**

(SOCI 312) 3 credits. Seminar.

Examines intellectual background and contemporary context for feminist theoretical debates in the social sciences. Explores these debates with reference to feminist perspectives on political theory, science, economics, postmodernism, postcolonialism, globalization, socialization, and sexuality.

**SOCI 5651. Seminar in the Family**

(SOCI 354) 3 credits. Seminar.

An analytical study of the family as a social group in terms of structure, member roles, and function with an examination of ethnic, religious, and class differences. The interrelationship between the family and its cultural context is analyzed with particular reference to the impact of modern culture.

**SOCI 5703. The Metropolitan Community**

(SOCI 368) 3 credits. Lecture.

Topics in urban sociology.

**SOCI 5705. The Community**

(SOCI 315) 3 credits. Lecture.

A critical analysis of current theories of the nature of the community, its types, functions, processes, agencies, and values. Emphasis is given to community surveys and community organization.

**SOCI 5706. Seminar in Comparative Urbanization**

(SOCI 369) 3 credits. Seminar.

Urbanization as a factor in social and cultural change, particularly in developed areas: Asia, Africa and Latin America.

**SOCI 5751. Demography**

(SOCI 351) 3 credits. Seminar.

Survey and analysis of theories and present problem areas in demography. This includes such topics as: population growth and distribution, population composition, mortality, fertility, migration, and population policy.

**SOCI 5753. Methods of Population Analysis**

(SOCI 353) 3 credits. Seminar.

The sources and characteristics of demographic data and vital statistics and the methods and problems of population data analysis.

**SOCI 5757. Seminar in Human Fertility, Mortality, and Migration**

(SOCI 357) 3 credits. Seminar.

A review and critique of the literature on fertility, mortality and migration, and the dynamic interaction of these variables in population change.

**SOCI 5801. Political Sociology**

(SOCI 364) 3 credits. Seminar.

Sociological aspects of political institutions and behavior; social and economic bases of political power, ideology, and mobilization of support; community and national power systems, political parties, and elites.

**SOCI 5805. Topics in Political Sociology**

(SOCI 361) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Special topics in sociological theory and research in political sociology. Topics will vary by semester.

**SOCI 5806. Seminar in Theories of the State**

(SOCI 367) 3 credits. Lecture.

A sociological examination of theoretical analysis of the role of the state in modern society, and the relationship between the state and the applications of these theories to empirical analyses of specific research questions.

**SOCI 5809. Inequality and the Welfare State**

(SOCI 370) 3 credits. Seminar.

Analysis of the relationship between systems of racial, class, and gender inequality, and the formation and implementation of social policy by the contemporary U.S. welfare state.

**SOCI 5821. Social Movements**

(SOCI 390) 3 credits. Seminar.

Analysis of the conditions and processes underlying movement formation and participation and influencing their careers and outcomes.

**SOCI 5829. Social Change**

(SOCI 365) 3 credits. Lecture.

A study of the forces prompting and impeding societal change with particular attention to those operative in contemporary society. Major theories of social change are examined.

**SOCI 5831. Law and Society**

(SOCI 372) 3 credits. Lecture.

An overview of theoretical perspectives in the sociology of law, with emphasis on classical social theory.

**SOCI 5833. Gender, Politics and the State**

(SOCI 362) 3 credits. Seminar.

Explores gendered construction of state and politics with attention to changes over time, across cultures and political institutions. Examines key debates within feminist political and legal theories and third world feminist and post colonialist theories of the state. Discusses links between local resistance, immigration, cultural citizenship, international politics, neoliberal discourse, and global economic restructuring.

**SOCI 5895. Investigation of Special Topics**

(SOCI 305) 1-3 credits. Seminar.

A seminar course. Topics vary by semester.

**SOCI 5899. Independent Study for Graduate Students**

(SOCI 300) 1-6 credits. Independent Study.

Special topic readings or investigations.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**SOCI 6005. Advanced Topics in Sociology**

(SOCI 405) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological analysis. Topics will vary by semester.

**SOCI 6203. Quantitative Research II**

(SOCI 327) 3 credits. Seminar

Advanced quantitative methods of social research. Topics include generalized linear models, including binary logit and probit, multinomial logit, ordered logit and probit, and count data; censoring, truncation, and sample selection; panel data; and correlated errors

**SOCI 6205. Advanced Topics in Quantitative Methods**

(SOCI 402) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in quantitative methods in sociological research. Topics will vary by semester.

**SOCI 6231. Qualitative Research II**

(SOCI 325) 3 credits. Seminar.

Advanced topics in qualitative methods of social research. Topics include contemporary debates in qualitative methodology; critical perspectives on qualitative methodology; feminist research; institutional ethnography; the case method; extended case method; Third World and postcolonial approaches to social research; analyzing and reanalyzing field data; applied and evaluation research; participatory and activist research.

**SOCI 6251. Current Theory and Research**

(SOCI 309) 3 credits. Seminar. Prerequisite: SOCI 308.

An examination of current theories. Topics include: consideration of their continuities with classical theories, conceptual and measurement problems in testing and constructing current theories, and the interplay between theory and research.

**SOCI 6255. Advanced Topics in Qualitative Methods**

(SOCI 403) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in qualitative methods in sociological research. Topics will vary by semester.

**SOCI 6265. Advanced Topics in Sociological Theory**

(SOCI 401) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory. Topics will vary by semester.

**SOCI 6275. Advanced Topics in Culture**

(SOCI 411) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in culture. Topics will vary by semester.

**SOCI 6315. Advanced Topics in Deviance and Crime**

(SOCI 406) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in deviance and crime. Topics will vary by semester.

**SOCI 6355. Advanced Topics in Individuals and Society**

(SOCI 410) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in the relationship between individuals and society. Topics will vary by semester.

**SOCI 6425. Advanced Topics in Stratification and Inequality**

(SOCI 409) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in social stratification and inequality. Topics will vary by semester.

**SOCI 6505. Advanced Topics in Racism and Ethnic Group Relations**

(SOCI 404) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in racism and ethnic group relations. Topics will vary by semester.

**SOCI 6605. Advanced Topics in Gender and Sexualities**

(SOCI 407) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in gender and sexualities. Topics will vary by semester.

**SOCI 6805. Advanced Topics in Political Sociology**

(SOCI 408) 3 credits. Seminar. With a change in content, this course may be repeated to a maximum of 9 credits.

Advanced topics in sociological theory and research in political sociology. Topics will vary by semester.

**†GRAD 6930. Full-Time Directed Studies (Doctoral Level)**

(GRAD 497) 3 credits.

**†GRAD 6950. Doctoral Dissertation Research**

(GRAD 495) 1 - 9 credits.

**†GRAD 6960. Full-Time Doctoral Research**

(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**

(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**

(GRAD 499) Non-credit.

# STATISTICS

*Department Head:* Distinguished Professor Dipak Dey

*Professors:* Bass, Chen, Gine, Glaz, Holsinger, Kenny, Kuo, Mukhopadhyay, Ravishanker, Vitale, and Wang

*Associate Professors:* Chi, Majumdar, Pozdnyakov, and Trpathi

*Assistant Professors:* Harel, M'lan, and Yan

*Adjunct Associate Professor:* Cappelleri

The Department of Statistics offers work leading to the M.S. and Ph.D. degrees, as well as courses in applied statistics in support of graduate programs in other fields. The M.S. program combines training in both statistical application and theory. To broaden their view of the use of statistics, candidates for the master's degree are required to enroll in at least one course involving the application of statistics offered by any other department on campus except Computer Science and Mathematics. In addition, students are encouraged to become involved in the statistical consultation work done by members of the Department. The doctoral program also provides a balance between statistical methods and theory. It emphasizes the development of the ability to create new results in statistical methods, statistical theory, or probability. After completing the necessary course work and a sequence of comprehensive written and oral examinations, the Ph.D. student must write a dissertation representing an original contribution to the field of statistics or probability. It is possible for the dissertation to be predominantly a development of statistical methodology in new areas of application. Both the M.S. and Ph.D. programs allow students sufficient flexibility to pursue their interests and to provide the time to take courses offered by other departments.

There are no official course requirements for admission to graduate study in the Department, but a degree of mathematical facility is necessary for acceptable progress through the program.

The Department of Statistics is housed in the College of Liberal Arts and Sciences Building. Extensive computational facilities are available through three operating systems: Linux, Unix, and PC-Based NT. The Homer Babbidge Library provides excellent coverage of current and past issues of statistics journals as well as books in this field. There is also a separate departmental library.

## COURSES OF STUDY

**STAT 5005. Introduction to Applied Statistics** (STAT 301) 3 credits. Lecture. Not open to students who have passed STAT 2215Q.

One-, two- and k-sample problems, regression, elementary factorial and repeated measures designs, covariance. Use of computer packages, e.g., SAS and MINITAB.

**STAT 5015. Distribution Theory for Statistics** (STAT 310) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 5099. Investigation of Special Topics** (STAT 300) 1-6 credits. Independent Study. May be repeated for credit.

**STAT 5105. Quantitative Methods in the Behavioral Sciences**

(STAT 379) 3 credits. Lecture.

A course designed to acquaint the student with the application of statistical methods in the behavioral sciences. Correlational methods include multiple regression and related multivariate techniques.

**STAT 5192. Supervised Research in Statistics** (STAT 311) 1-6 credits. Practicum.

**STAT 5315. Analysis of Experiments**

(STAT 342) 3 credits. Lecture. Prerequisite: STAT 5001. Not open to students who have passed STAT 2215Q.

Straight-line regression, multiple regression, regression diagnostics, transformations, dummy variables, one-way and two-way analysis of variance, analysis of covariance, stepwise regression.

**STAT 5361. Statistical Computing**

(STAT 361) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Use of computing for statistical problems; obtaining features of distributions, fitting models and implementing inference. Basic numerical methods, nonlinear statistical methods, numerical integration, modern simulation methods.

**STAT 5415. Advanced Statistical Methods**

(STAT 314) 3 credits. Lecture.

Discrete and continuous random variables, exponential family, joint and conditional distributions, order statistics, statistical inference: point estimation, confidence interval estimation, and hypothesis testing.

**STAT 5505. Applied Statistics I**

(STAT 320) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Exploratory data analysis: stem-and leaf plots, Box-plots, symmetry plots, quantile plots, transformations, discrete and continuous distributions, goodness of fit tests, parametric and non-parametric inference for one sample and two sample problems, robust estimation, Monte Carlo inference, bootstrapping.

**STAT 5515. Design of Experiments**

(STAT 343) 3 credits. Lecture. Prerequisite: STAT 5005. Not open to students who have passed STAT 3515Q.

One way analysis of variance, multiple comparison of means, randomized block designs, Latin and Graeco-Latin square designs, factorial designs, two-level factorial and fractional factorial designs, nested and hierarchical designs, split-plot designs.

**STAT 5525. Sampling Theory**

(STAT 352) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Sampling and nonsampling error, bias, sampling design, simple random sampling, sampling with unequal probabilities, stratified sampling, optimum

allocation, proportional allocation, ratio estimators, regression estimators, super population approaches, inference in finite populations.

**STAT 5535. Introduction to Operations Research**

(STAT 356) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 5585. Mathematical Statistics I**

(STAT 315) 3 credits. Lecture.

Introduction to probability theory, transformations and expectations, moment generating function, discrete and continuous distributions, joint and marginal distributions of random vectors, conditional distributions and independence, sums of random variables, order statistics, convergence of a sequence of random variables, the central limit theorem.

**STAT 5605. Applied Statistics II**

(STAT 321) 3 credits. Lecture. Prerequisite: STAT 320.

Analysis of variance, regression and correlation, analysis of covariance, general liner models, robust regression procedures, and regression diagnostics.

**STAT 5625. Introduction to Biostatistics**

(STAT 372) 3 credits. Lecture.

Rates and proportions, sensitivity, specificity, two-way tables, odds ratios, relative risk, ordered and non-ordered classifications, trends, case-control studies, elements of regression including logistic and Poisson, additivity and interaction, combination of studies and meta-analysis.

**STAT 5635. Clinical Trials**

(STAT 373) 3 credits. Lecture.

Basic concepts of clinical trial analysis; controls, randomization, blinding, surrogate endpoints, sample size calculations, sequential monitoring, side-effect evaluation and intention-to-treat analyses. Also, experimental designs including dose response study, multicenter trials, clinical trials for drug development, stratification, and cross-over trials.

**STAT 5645. Concepts and Analysis of Survival Data**

(STAT 374) 3 credits. Lecture.

Survival models, censoring and truncation, nonparametric estimation of survival functions, comparison of treatment groups, mathematical and graphical methods for assessing goodness of fit, parametric and nonparametric regression models.

**STAT 5665. Applied Multivariate Analysis**

(STAT 382) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Multivariate normal distributions, inference about a mean vector, comparison of several multivariate means, principal components, factor analysis, canonical correlation analysis, discrimination and classification, cluster analysis.

**STAT 5685. Mathematical Statistics II**

(STAT 316) 3 credits. Lecture. Prerequisite: STAT 5585.

The sufficiency principle, the likelihood principle, the invariance principle, point estimation, methods of evaluating point estimators, hypotheses testing, methods of evaluating tests, interval estimation, methods of evaluating interval estimators.

**STAT 5725. Linear Statistical Models**

(STAT 332) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Linear and matrix algebra concepts, generalized inverses of matrices, multivariate normal distribution, distributions of quadratic forms in normal random vectors, least squares estimation for full rank and less than full rank linear models, estimation under linear restrictions, testing linear hypotheses.

**STAT 5825. Applied Time Series**

(STAT 380) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Introduction to prediction using time-series regression methods with non-seasonal and seasonal data. Smoothing methods for forecasting. Modeling and forecasting using univariate autoregressive moving average models.

**†GRAD 5930. Full-Time Directed Studies (Master's Level)**

(GRAD 397) 3 credits.

**†GRAD 5950. Master's Thesis Research**

(GRAD 395) 1-9 credits.

**†GRAD 5960. Full-Time Master's Research**

(GRAD 396) 3 credits.

**GRAD 5998. Special Readings (Master's)**

(GRAD 398) Non-credit.

**GRAD 5999. Thesis Preparation**

(GRAD 399) Non-credit.

**STAT 6315. Statistical Inference I**

(STAT 330) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Exponential families, sufficient statistics, loss function, decision rules, convexity, prior information, unbiasedness, Bayesian analysis, minimaxity, admissibility, simultaneous and shrinkage estimation, invariance, equivariant estimation.

**STAT 6325. Advanced Probability**

(STAT 333) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.

Fundamentals of measure and integration theory: fields,  $\sigma$ -fields, and measures; extension of measures; Lebesgue-Stieltjes measures and distribution functions; measurable functions and integration theorems; the Radon-Nikodym Theorem, product measures, and Fubini's Theorem. Introduction to measure-theoretic probability: probability spaces and random variables; expectation and moments; independence, conditioning, the Borel-Cantelli Lemmas, and other topics as time allows.

**STAT 6425. Seminar in Applied Probability**

(STAT 470) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.



**STAT 6494. Seminar in Applied Statistics**  
(STAT 410) 1-6 credits. Seminar. Open to graduate students in Statistics, others with permission.

**STAT 6515. Statistical Inference II**  
(STAT 331) 3 credits. Lecture. Open to graduate students in Statistics, others with permission.  
Prerequisite: STAT6315.

Statistics and subfields, conditional expectations and probability distributions, uniformly most powerful tests, uniformly most powerful unbiased tests, confidence sets, conditional inference, robustness, change point problems, order restricted inference, asymptotics of likelihood ratio tests.

**STAT 6594. Seminar in Nonparametric Statistics**  
(STAT 420) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 6625. Seminar in Biostatistics**  
(STAT 460) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 6694. Seminar in Multivariate Statistics**  
(STAT 430) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 6794. Seminar in the Theory of Statistical Inference**  
(STAT 440) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.

**STAT 6894. Seminar in the Theory of Probability and Stochastic Processes**  
(STAT 450) 1-6 credits. Lecture. Open to graduate students in Statistics, others with permission.

†**GRAD 6930. Full-Time Directed Studies (Doctoral Level)**  
(GRAD 497) 3 credits.

†**GRAD 6950. Doctoral Dissertation Research**  
(GRAD 495) 1-9 credits.

†**GRAD 6960. Full-Time Doctoral Research**  
(GRAD 496) 3 credits.

**GRAD 6998. Special Readings (Doctoral)**  
(GRAD 498) Non-credit.

**GRAD 6999. Dissertation Preparation**  
(GRAD 499) Non-credit.

## WOMEN'S STUDIES

*Program Director:* Associate Professor Manisha Desai  
*Associate Program Director:* Assistant Professor Marita McComiskey

*Core Faculty:* Breen, Crawford, D'Allema, Desai, Dussart, Makowsky, Meyers, Naples, and Turcotte

In virtually every field of university study, scholarship on women and gender has become increasingly influential because of its path-breaking theoretical perspectives and its empirical findings. The programs of virtually every professional association testify to the vitality and presence of feminist research.

The Women's Studies Graduate Certificate at the University of Connecticut can be earned by students enrolled in a graduate degree program, or as a stand-alone certificate for those who have completed their undergraduate degree.

Although feminist scholarship may be available in other disciplines, Women's Studies offers a concentrated perspective and in-depth analysis. The graduate certificate enables students to pursue interdisciplinary study in this flourishing field while enhancing their educational background by encouraging the integration of personal, academic and political experiences and ideals.

Because the program is interdisciplinary and students will approach the certificate from a range of home fields and with widely varying preparation, all certificate plans of study will be individualized. Each certificate candidate combines the study of Women's Studies theory and methodology, either through current study or prior preparation. The core faculty of the Women's Studies Program will act as advisors to certificate students; careful advising will ensure that each student's program has the appropriate interdisciplinary breadth and fits appropriately with her/his other course work and professional needs.

All Women's Studies certificate plans of study must include work in more than one department and must be approved by the Program Director or her designee, who will coordinate the certificate program.

The requirements for the Graduate Certificate in Women's Studies follow:

- For non-degree students:  
Open to students with a bachelor's degree upon approval of the Women's Studies Graduate Study Committee.  
Requires 12 hours of course work, of which at least nine hours must be at the 300 level or above, including:  
Philosophy 5352 – Feminist Theory  
Women's Studies 5365 – Women's Studies Research Methodology  
Not more than one Women's Studies 5390 may be applied to the certificate.
- For students enrolled in existing graduate programs:  
Open to students enrolled in any UConn graduate program.  
Requires 12 hours of course work, of which at least nine hours must be at the 5000 level or above.  
Not more than one Women's Studies 5390 may be applied to the certificate.

Application forms for both options may be obtained from the Women's Studies Program office.

Courses applicable to the Graduate Certificate in Women's Studies include many advanced 4000-level Women's Studies courses and the following graduate-level Women's Studies courses as well as a variety of courses in Anthropology, English, French, History, Human Development and Family Studies, Philosophy, Political Science, Psychology, and Sociology. Each semester the Women's Studies Program publishes a list of the applicable courses to be offered in the following semester.

### COURSES OF STUDY

**WS 5315. Gender and Culture**  
(WS 315) 3 credits. Lecture.

Anthropological perspectives on the analysis of gender with special focus on dynamics of gender, culture, and power.

**WS 5333. Topics in the History of American Women**  
(WS 333) 3 credits. Lecture.

**WS 5341. Analysis of Rituals**  
(WS 341) 3 credits. Lecture. Prerequisite: Anthropology 311.

Examines various theoretical contributions to the anthropological study of ritual. Controversies and ambiguities surrounding the social and symbolic significance of the ritual act for both men's and women's experiences and participation are addressed.

**WS 5344. Psychology of Women and Gender**  
(WS 344) 3 credits. Lecture.

A survey of research and theory on the interpretation of sex differences; gender, status, and power, and women's life span development.

**WS 5365. Women's Studies Research Methodology for Graduate Students**  
(WS 365) 3 credits. Lecture.

Discussion of feminist and gender-oriented research methods and their relation to traditional disciplines. Analysis of gender bias in research design and practice. Major independent research project required.

**WS 5371. Genders, Sexualities, and Theories**  
(WS 371) 3 credits. Lecture.

Genders and sexualities with special attention given to lesbian, gay, bisexual, and transgender issues.

**WS 5390. Independent Study**  
(WS 390) 1-6 credits. Independent Study.

**WS 5395. Special Topics Seminar in Women's Studies**  
(WS 395) 3 credits. Seminar. Topics of current interest from a feminist perspective.



# GRADUATE FACULTY

The Graduate Faculty includes only those individuals appointed by the dean of the Graduate School by authorization of the President. Members of the University Faculties who hold the rank of assistant professor or above at the University of Connecticut may become members of the Graduate Faculty upon recommendation of the department head (or dean of a school or college which is not departmentalized) and approval by the dean of the Graduate School if the professor's department, alone or in conjunction with another department, offers a program leading to a degree awarded through The Graduate School. A professor whose department does not offer a graduate degree program may be appointed to the Graduate Faculty by the dean of the Graduate School on the recommendation of the head of a department, (or dean of a school or college which is not departmentalized) whose graduate degree program(s) the professor would serve.

The following list is current as of March 1, 2009.

- Jorgelina Abbate, *Assistant Professor of Education*, Ph.D., Boston College
- Nelly M. Abboud, *Associate Professor of Civil Engineering*, Ph.D., University of Delaware
- Kinetsu Abe, *Professor of Mathematics*, Ph.D., Brown University, D.Sc., Tohoku University, Japan
- William Abikoff, *Professor of Mathematics*, Ph.D., Polytechnic Institute of Brooklyn
- Michael L. Accorsi, *Professor of Civil Engineering*, Ph.D., Northwestern University
- Douglas J. Adams, *Assistant Professor of Orthopaedic Surgery*, Ph.D., University of Iowa
- Eldridge S. Adams, *Professor of Ecology and Evolutionary Biology*, Ph.D., University of California, Berkeley
- Roger G. Adams, *Professor of Plant Science in Residence*, Ph.D., University of Massachusetts
- Douglas H. Adamson, *Associate Professor of Chemistry*, Ph.D., University of Southern California
- Kari L. Adamsons, *Assistant Professor of Human Development and Family Studies*, Ph.D., University of North Carolina, Greensboro
- Adam J. Adler, *Associate Professor of Medicine*, Ph.D., Columbia University
- Daniel S. Adler, *Assistant Professor of Anthropology*, Ph.D., Harvard University
- Nathan N. Adler, *Assistant Professor of Molecular and Cell Biology*, Ph.D. University of California, Davis
- John R. Agar, *Professor of Prosthodontics*, D.D.S., Medical College of Virginia; M.A., George Washington University
- Lee A. Aggison, Jr., *Associate Professor of Molecular and Cell Biology in Residence*, Ph.D., Wayne State University
- V. Bede Agocha, *Assistant Professor of Psychology*, Ph.D., University of Missouri
- H. Leonardo Aguila, *Assistant Professor of Immunology*, Ph.D., Albert Einstein College of Medicine
- Francis W. Ahking, *Associate Professor of Economics*, Ph.D., Virginia Polytechnic Institute and State University
- Mark Aindow, *Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of Liverpool, England
- Arlene D. Albert, *Professor of Molecular and Cell Biology*, Ph.D., University of Virginia
- Andrei T. Alexandrescu, *Associate Professor of Molecular and Cell Biology*, Ph.D., University of Wisconsin
- John Alexopoulos, *Associate Professor of Plant Science*, M.L.A., University of Massachusetts
- Michael P. Alfano, *Associate Professor of Education in Residence*, Ph.D., University of Connecticut
- Lynn M. Allchin, *Assistant Professor of Nursing*, Ph.D., Loyola University
- Rodney G. Allen, *Assistant Extension Professor*, Ph.D., Southern Illinois University
- Pamir Alpay, *Associate Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of Maryland
- William T. Alpert, *Associate Professor of Economics*, Ph.D., Columbia University
- Marilyn A. Altobello, *Associate Professor of Agricultural and Resource Economics*, Ph.D., University of Massachusetts
- Reda A. Ammar, *Professor of Computer Science and Engineering*, Ph.D., University of Connecticut
- Emmanouil N. Anagnostou, *Associate Professor of Civil Engineering*, Ph.D., University of Iowa
- Amy C. Anderson, *Associate Professor of Medicinal Chemistry*, Ph.D., Harvard University
- Elizabeth H. Anderson, *Associate Professor of Nursing*, Ph.D., University of Rochester
- Gregory J. Anderson, *Professor of Ecology and Evolutionary Biology*, Ph.D., Indiana University
- Shane R. Anderson, *Assistant Professor of Human Development and Family Studies*, Ph.D., University of Georgia
- Stephen A. Anderson, *Professor of Family Studies*, Ph.D., Kansas State University
- Susan Anderson, *Professor of Philosophy*, Ph.D., University of California, Los Angeles
- Sheila M. Andrew, *Associate Professor of Animal Science*, Ph.D., University of Maryland
- Robert F. Andrie, *Associate Professor of Geography*, Ph.D., State University of New York, Buffalo
- Brian J. Aneskievich, *Associate Professor of Pharmacology*, Ph.D., State University of New York, Stony Brook
- Raymond Albin Anselment, *Professor of English*, Ph.D., University of Rochester
- Srdjan D. Antic, *Assistant Professor of Neuroscience*, M.D., M.S., Belgrade University, Yugoslavia
- A. F. Mehdi Anwar, *Professor of Electrical Engineering*, Ph.D., Clarkson University
- Richard O. Anyah, *Assistant Professor of Natural Resources and the Environment*, Ph.D., North Carolina State University
- Theodore E. Arm, *Professor of Music*, D.M.A., Juilliard School of Music
- Frank P. Armstrong, *Assistant Professor of Art*, M.F.A., Yale University
- Lawrence E. Armstrong, *Professor of Education*, Ph.D., Ball State University
- Andrew Arnold, *Professor of Medicine*, M.D., Harvard University
- Alexandru D. Asandei, *Associate Professor of Materials Science*, Ph.D., Case Western Reserve University
- Nehama Aschkenasy, *Professor of Judaic and Middle Eastern Studies in Residence*, Ph.D., New York University
- Robert H. Aseltine, *Associate Professor of Behavioral Sciences and Community Health*, Ph.D., University of Michigan
- Marysol W. Asencio, *Associate Professor of Family Studies*, Dr.P.H., Columbia University
- David J. Atkin, *Professor of Communication Sciences*, Ph.D., Michigan State University
- Carol M. Atkinson-Palombo, *Assistant Professor of Geography*, Ph.D., Arizona State University
- Carol A. Auer, *Associate Professor of Plant Science*, Ph.D., University of Maryland
- Peter J. Auster, *Associate Research Professor of Marine Sciences*, Ph.D., National University of Ireland
- John E. Ayers, *Associate Professor of Electrical Engineering*, Ph.D., Rensselaer Polytechnic Institute
- Uluc Aysun, *Assistant Professor of Economics*, Ph.D., University of California, Davis
- Fakhreddin Azimi, *Professor of History*, Ph.D., Oxford University, England
- Sulin Ba, *Associate Professor of Operations and Information Management*, Ph.D., University of Texas
- Thomas F. Babor, *Professor of Community Medicine and Health Care*, Ph.D., University of Arizona
- Amvrossios C. Bagtzoglou, *Professor of Civil and Environmental Engineering*, Ph.D., University of California, Irvine
- Ben A. Bahr, *Associate Professor of Pharmacology*, Ph.D., University of California, Santa Barbara
- Amanda Bailey, *Assistant Professor of English*, Ph.D., University of Michigan
- William F. Bailey, *Professor of Chemistry*, Ph.D., University of Notre Dame
- Peter C. Baldwin, *Associate Professor of History*, Ph.D., Brown University
- Philip W. Balma, *Assistant Professor of Modern and Classical Languages*, Ph.D. Indiana University
- Rajeev Bansal, *Professor of Electrical Engineering*, Ph.D., Harvard University
- Rashmi Bansal, *Associate Professor of Neuroscience*, Ph.D., Central Drug Research Institute (India)
- Elisa M. B. Barbarese, *Professor of Neuroscience*, Ph.D., McGill University, Canada
- Thomas J. Barber, *Professor of Mechanical Engineering in Residence*, Ph.D., New York University
- John S. Barclay, *Associate Professor of Natural Resources and the Environment*, Ph.D., Ohio State University
- Keith Barker, *Professor of Computer Science and Engineering*, Ph.D., Sheffield University, England
- Janet Barnes-Farrell, *Professor of Psychology*, Ph.D., Pennsylvania State University
- Regina Barreca, *Professor of English*, Ph.D., City University of New York
- Yaakov Bar-Shalom, *Professor of Electrical Engineering*, Ph.D., Princeton University
- Marianne L. Barton, *Associate Clinical Professor of Psychology*, Ph.D., University of Connecticut
- Richard F. Bass, *Professor of Mathematics*, Ph.D., University of California, Berkeley
- Richard W. Bass, Jr., *Professor of Music*, Ph.D., University of Texas
- Sherry Bassi, *Assistant Professor of Nursing*, Ed.D., University of Sarasota

- Ashis Basu, *Professor of Chemistry*, Ph.D., Wayne State University
- Dipanjan Basu, *Assistant Professor of Civil and Environmental Engineering*, Ph.D., Purdue University
- Anne R. Bavier, *Professor of Nursing*, Ph.D., Duquesne University
- Donald Baxter, *Professor of Philosophy*, Ph.D., University of Pittsburgh
- Oksan Bayulgen, *Assistant Professor of Political Science*, Ph.D., University of Texas
- J.C. Beall, *Professor of Philosophy*, Ph.D., University of Massachusetts
- Maya A. Beasley, *Assistant Professor of Sociology*, Ph.D., Stanford University
- Tryfon J. Beazoglou, *Professor of Behavioral Sciences and Community Health, and Economics*, Ph.D., Northwestern University
- Cheryl L. Beck, *Professor of Nursing*, D.N.Sc., Boston University
- Pamela E. Bedore, *Assistant Professor of English*, Ph.D., University of Rochester
- Alexandra A. Bell, *Assistant Professor of Education*, Ph.D., University of Connecticut
- Sandra L. Bellini, *Assistant Professor of Nursing in Residence*, D.N.P., Case Western Reserve University
- Keith M. Bellizzi, *Assistant Professor of Human Development and Family Studies*, Ph.D., University of Connecticut; M.P.H., George Washington University
- Iddo Ben Ari, *Assistant Professor of Mathematics*, Ph.D., Technion-Israel Institute of Technology
- Peter A. Benn, *Assistant Professor of Pediatrics*, Ph.D., University of Birmingham, England
- John C. Bennett, *Associate Professor of Mechanical Engineering*, Ph.D., Johns Hopkins University
- C. David Benson, *Professor of English*, Ph.D., University of California, Berkeley
- David R. Benson, *Professor of Molecular and Cell Biology*, Ph.D., Rutgers University
- Edward Benson, *Professor of French in Residence*, Ph.D., Brown University
- Claudio E. Benzecry, *Assistant Professor of Sociology*, Ph.D., New York University
- William H. Berentsen, *Professor of Geography*, Ph.D., Ohio State University
- Theodore Bergman, *Professor of Mechanical Engineering*, Ph.D., Purdue University
- Mary K. Bercaw Edwards, *Associate Professor of English in Residence*, Ph.D., Northwestern University
- Gerald A. Berkowitz, *Professor of Plant Science*, Ph.D., Brandeis University
- Leslie R. Bernstein, *Professor of Neuroscience*, Ph.D., University of Illinois
- Mary Bernstein, *Associate Professor of Sociology*, Ph.D., New York University
- Anne Berthelot, *Professor of French*, Doctorat es Lettres, University of Paris-Sorbonne, France
- Samuel J. Best, *Associate Professor of Public Policy*, Ph.D., State University of New York, Stony Brook
- Anjana Bhat, *Assistant Professor of Physical Therapy*, Ph.D., University of Delaware
- Sudip Bhattacharjee, *Associate Professor of Operations and Information Management*, Ph.D., State University of New York, Buffalo
- Pierluigi Bigazzi, *Professor of Pathology*, M.D., University of Florence, Italy
- Robert Bifulco, Jr., *Associate Professor of Political Science*, Ph.D., Syracuse University
- Frederick M. Biggs, *Professor of English*, Ph.D., Cornell University
- Stanley F. Biggs, *Professor of Accounting*, Ph.D., University of Minnesota
- Robert C. Bird, *Assistant Professor of Marketing*, J.D., Boston University
- Robert R. Birge, *Professor of Chemistry*, Ph.D., Wesleyan University
- Thomas O. Blank, *Professor of Family Studies*, Ph.D., Columbia University
- Joel Blatt, *Associate Professor of History*, Ph.D., University of Rochester
- Ron C. Blei, *Professor of Mathematics*, Ph.D., University of California, Berkeley
- Mikhail Blinov, *Assistant Professor of Genetics and Developmental Biology*, Weizmann Institute of Science, Israel
- Lynn Bloom, *Professor of English*, Ph.D., University of Michigan
- Martin Bloom, *Professor of Social Work*, Ph.D., University of Michigan
- Paul B. Bloomfield, *Associate Professor of Philosophy*, Ph.D., Syracuse University
- Thomas C. Blum, *Associate Professor of Physics*, Ph.D., University of Arizona
- Jonathan D. Bobaljik, *Professor of Linguistics*, Ph.D., Massachusetts Institute of Technology
- Monica M. Bock, *Associate Professor of Art*, M.F.A., M.A., School of the Art Institute of Chicago
- Urs Alex Boelsterli, *Professor of Pharmaceutical Science*, Ph.D., University of Zurich, Switzerland
- Steven A. Boggs, *Research Professor of Materials Science*, Ph.D., University of Toronto, Canada
- Robin H. Bogner, *Associate Professor of Pharmaceutics*, Ph.D., Rutgers University
- Richard W. Bohannon, *Professor of Physical Therapy*, D.Ed., North Carolina State University
- Walter F. Bohlen, *Professor of Marine Sciences*, Ph.D., Massachusetts Institute of Technology
- Robert Karl Bohn, *Professor of Chemistry*, Ph.D., Cornell University
- Herbert L. Bonkovsky, *Professor of Medicine and Molecular, Microbial, and Structural Biology*, M.D., Western Reserve University
- Thomas D. Bontly, *Associate Professor of Philosophy*, Ph.D., University of Wisconsin
- Michael I. Borrero, *Professor of Social Work*, Ph.D., Brandeis University
- Zeljko Boskovic, *Professor of Linguistics*, Ph.D., University of Connecticut
- James S. Boster, *Professor of Anthropology*, Ph.D., University of California, Berkeley
- Norma Bouchard, *Associate Professor of Modern and Classical Languages*, Ph.D., Indiana University
- Mark A. Boyer, *Professor of Political Science*, Ph.D., University of Maryland
- Wesley C. Brakefield-Younts, *Assistant Professor of Sociology*, Ph.D., University of Iowa
- Mark H. Brand, *Professor of Horticulture*, Ph.D., Ohio State University
- Boris Bravo-Ureta, *Professor of Agricultural and Resource Economics*, Ph.D., University of Nebraska
- Melissa A. Bray, *Professor of Education*, Ph.D., University of Connecticut
- Margaret S. Breen, *Associate Professor of English*, Ph.D., Rutgers University
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- Thomas F. Shea, *Associate Professor of English*, Ph.D., Rutgers University
- Barry G. Sheckley, *Professor of Education*, Ph.D., University of Connecticut
- Nancy W. Sheehan, *Associate Professor of Family Studies*, Ph.D., University of Wisconsin
- Deborah A. Shelton, *Associate Professor of Nursing*, Ph.D., University of Virginia
- Zhijie Shi, *Assistant Professor of Computer Science and Engineering*, Ph.D., Princeton University
- Dong-Guk Shin, *Professor of Computer Science and Engineering*, Ph.D., University of Michigan
- Nancy Shoemaker, *Professor of History*, Ph.D., University of Minnesota
- William J. Shoemaker, *Associate Professor of Psychiatry*, Ph.D., Massachusetts Institute of Technology

- Sandra E. Shumway, *Research Professor of Marine Sciences*, Ph.D., D.Sc., University College of North Wales, United Kingdom
- Alexander A. Shvartsman, *Professor of Computer Science and Engineering*, Ph.D., Brown University
- Stuart Jay Sidney, *Professor of Mathematics*, Ph.D., Harvard University
- Del L. Siegle, *Associate Professor of Education in Residence*, Ph.D., University of Connecticut
- John A. Silander, *Professor of Ecology and Evolutionary Biology*, Ph.D., Duke University
- Lawrence K. Silbart, *Professor of Allied Health*, Ph.D., University of Michigan
- Helena Silva, *Assistant Professor of Electrical and Computer Engineering*, Ph.D., Cornell University
- Blanca G. Silvestrini, *Professor of History*, Ph.D., State University of New York, Albany
- Evelyn M. Simien, *Associate Professor of Political Science*, Ph.D., Purdue University
- Louise B. Simmons, *Associate Professor of Social Work*, Ph.D., Massachusetts Institute of Technology
- Christine M. Simon, *Professor of Ecology and Evolutionary Biology*, Ph.D., State University of New York, Stony Brook
- Richard H. Simon, *Professor of Surgery*, M.D., St. Louis University
- Brandi M. Simonsen, *Assistant Professor of Education*, Ph.D., University of Oregon
- William Simonsen, *Professor of Political Science*, Ph.D., New York University
- Zeki Simsek, *Associate Professor of Management*, Ph.D., University of Connecticut
- Matthew M. Singer, *Assistant Professor of Political Science*, Ph.D., Duke University
- Merrill C. Singer, *Professor of Anthropology*, Ph.D., University of Utah
- Suman Singha, *Professor of Horticulture*, Ph.D., Cornell University
- Boris Sinkovic, *Associate Professor of Physics*, Ph.D., University of Hawaii
- C. F. Sirmans, *Professor of Finance*, Ph.D., University of Georgia
- Annelie C. Skoog, *Associate Professor of Marine Sciences*, Ph.D., University of Göteborg, Sweden
- Laurie E. Sloan, *Associate Professor of Art*, M.F.A., Temple University
- Joseph W. Smey, *Professor of Physical Therapy*, Ed.D., Clark University
- Henry M. Smilowitz, *Associate Professor of Pharmacology*, Ph.D., Massachusetts Institute of Technology
- Alevtina L. Smirnova, *Assistant Research Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., St. Petersburg State University, Russia
- Alexia Smith, *Assistant Professor of Anthropology in Residence*, Ph.D., Boston University
- Ellen R. Smith, *Assistant Extension Professor - Social Work*, Ph.D., Smith College
- Katharine C. Smith, *Associate Professor of English*, Ph.D., University of Connecticut
- Michael Smith, *Professor of Chemistry*, Ph.D., Purdue University
- Winthrop Ware Smith, *Professor of Physics*, Ph.D., Massachusetts Institute of Technology
- Joan A. Smyth, *Associate Professor of Pathobiology*, Ph.D., Queens University, Ireland
- Leslie B. Snyder, *Professor of Communication Sciences*, Ph.D., Stanford University
- William B. Snyder, *Associate Professor of Linguistics*, Ph.D., Massachusetts Institute of Technology
- David R. Solomon, *Assistant Professor of Mathematics*, Ph.D., Cornell University
- David Arthur Sonstroem, *Professor of English*, Ph.D., Harvard University
- Richard H. Sosis, *Associate Professor of Anthropology*, Ph.D., University of New Mexico
- Gregory A. Sotzing, *Associate Professor of Materials Science*, Ph.D., University of Florida
- David Souder, *Assistant Professor of Management*, Ph.D., University of Minnesota
- Larz S.W. Spangberg, *Professor of Endodontics*, Doct. Odont., University of Umea, Sweden
- Karen Spalding, *Professor of History*, Ph.D., University of California, Berkeley
- Robin Spath, *Assistant Professor of Social Work*, Ph.D., Brandeis University
- Cheryl Spaulding, *Associate Professor of Education*, Ph.D., Stanford University
- Tammie Spaulding, *Assistant Professor of Communication Sciences*, University of Arizona
- Susan Spiggle, *Associate Professor of Marketing*, Ph.D., University of Connecticut
- Nikolaus A. Spoerel, *Assistant Professor of Biochemistry*, Ph.D., Free University, West Germany
- Ronald Squibbs, *Associate Professor of Music*, Ph.D., Yale University
- Narasimhan Srinivasan, *Associate Professor of Marketing*, Ph.D., State University of New York, Buffalo
- Srinivasaraghavan Sriram, *Assistant Professor of Marketing*, Ph.D., Purdue University
- Pramod K. Srivastava, *Professor of Medicine*, Ph.D., Osmania University, India
- Ranjan Srivastava, *Assistant Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of Maryland
- Jan Stallært, *Associate Professor of Operations and Information Management*, Ph.D., University of California, Los Angeles
- Glenn Stanley, *Professor of Music*, Ph.D., Columbia University
- Megan E. Staples, *Assistant Professor of Education*, Ph.D., Stanford University
- Jason M. Stephens, *Assistant Professor of Education*, Ph.D., Stanford University
- Robert W. Stephens, *Professor of Music*, Ph.D., Indiana University
- Jennifer Sterling-Folker, *Associate Professor of Political Science*, Ph.D., University of Chicago
- David A. Stern, *Professor of Dramatic Arts*, Ph.D., Temple University
- Richard G. Stevens, *Professor of Community Medicine and Health Care*, Ph.D., University of Washington
- Eileen Storey, *Associate Professor of Medicine*, M.D., M.P.H., Harvard University
- Gary P. Storhoff, *Associate Professor of English*, Ph.D., University of Connecticut
- Linda D. Strausbaugh, *Professor of Molecular and Cell Biology*, Ph.D., Wesleyan University
- Zoe L. Strickler, *Assistant Professor of Art*, M.Des., University of Alberta, Canada
- William C. Stwalley, *Professor of Physics*, Ph.D., Harvard University
- George M. Sugai, *Professor of Education*, Ph.D., University of Washington
- Steven Suib, *Professor of Chemistry*, Ph.D., University of Illinois
- Mark E. Sullivan, *Associate Extension Professor*, Ph.D., University of Connecticut
- Wei Sun, *Assistant Professor of Mechanical Engineering*, Ph.D., University of Pittsburgh
- Chong Sook Paik Sung, *Professor of Chemistry*, Ph.D., Polytechnic Institute of New York
- Charles M. Super, *Professor of Family Studies*, Ph.D., Harvard University
- Harvey Alan Swadlow, *Professor of Psychology*, Ph.D., University of Miami
- Hariharan Swaminathan, *Professor of Education*, Ph.D., University of Toronto, Canada
- Mark S. Swanson, *Professor of Physics*, Ph.D., University of Missouri
- Whitney Tabor, *Associate Professor of Psychology*, Ph.D., Stanford University
- Melissa A. Tafoya, *Assistant Professor of Communication Sciences*, Ph.D., Arizona State University
- Theodore L. Taigen, *Associate Professor of Ecology and Evolutionary Biology*, Ph.D., Cornell University
- Bette Talvacchia, *Professor of Art*, Ph.D., Stanford University
- Rachel B. Tambling, *Assistant Professor of Human Development and Family Studies*, Ph.D., University of Georgia
- Jiong Tang, *Associate Professor of Mechanical Engineering*, Ph.D., Pennsylvania State University
- Susan Tannenbaum, *Assistant Professor of Medicine*, M.D., State university of New York, Brooklyn
- Jason M. Tanzer, *Professor of Oral Diagnosis*, D.M.D., Tufts University; Ph.D., Georgetown University
- Geoffrey W. Taylor, *Professor of Electrical Engineering*, Ph.D., University of Toronto, Canada
- Ronald L. Taylor, *Professor of Sociology*, Ph.D., Boston University
- Thomas D. Taylor, *Professor of Prosthodontics*, D.D.S., University of Iowa; M.S.D., University of Minnesota
- Mohammad Tehranipoor, *Assistant Professor of Electrical and Computer Engineering*, Ph.D., University of Texas
- Jennifer C. Telford, *Assistant Professor of Nursing*, Ph.D., University of Virginia
- Howard Tennen, *Professor of Community Medicine and Health Care*, Ph.D., University of Massachusetts
- Alexander Teplayev, *Associate Professor of Mathematics*, Ph.D., Cornell University
- Mark Terasaki, *Associate Professor of Physiology*, Ph.D., University of California, Berkeley
- Erin Terwilleger, *Assistant Professor of Mathematics*, Ph.D., University of Missouri
- Carolyn M. Teschke, *Professor of Molecular and Cell Biology*, Ph.D., Washington State University
- Lakshman S. Thakur, *Associate Professor of Information Management*, Eng.Sc.D., Columbia University
- Edward A. Thibodeau, *Assistant Professor of Behavioral Sciences and Community Health*, D.M.D., Tufts University; Ph.D., University of Rochester
- Rebecca L. Thomas, *Assistant Professor of Social Work*, Ph.D., Temple University
- Robert Mark Thorson, *Professor of Geology and Geophysics*, Ph.D., University of Washington

- Roger S. Thrall, *Professor of Medicine*, Ph.D., Marquette University
- X. Cindy Tian, *Associate Professor of Animal Science*, Ph.D., Cornell University
- Robert S. Tilton, *Associate Professor of English*, Ph.D., Stanford University
- Jennifer S. Tirnauer, *Assistant Professor of Molecular Medicine*, M.D., University of Maryland
- Jeffrey Lynn Tollefson, *Professor of Mathematics*, Ph.D., Michigan State University
- Lang Tong, *Associate Professor of Electrical Engineering*, Ph.D., University of Notre Dame
- Kathleen A. Tonry, *Assistant Professor of English*, Ph.D., University of Notre Dame
- Thomas Torgersen, *Professor of Marine Sciences*, Ph.D., Columbia University
- Constantine Trahiotis, *Professor of Neuroscience*, Ph.D., Wayne State University
- Marcia C. Trapé-Cardoso, *Associate Professor of Clinical Medicine in Residence*, M.D., University of São Paulo, Brazil
- Roger M. Travis, Jr., *Associate Professor of Classics*, Ph.D., University of California, Berkeley
- Kimberli R. H. Treadwell, *Associate Professor of Psychology*, Ph.D., Temple University
- Gautam Tripathi, *Associate Professor of Economics*, Ph.D., Northwestern University
- John Gordon Troyer, *Associate Professor of Philosophy*, Ph.D., Harvard University
- Lisa Troyer, *Professor of Sociology*, Ph.D., Stanford University
- Stephen L. Trumbo, *Professor of Ecology and Evolutionary Biology*, Ph.D., University of North Carolina
- Nathaniel S. Trumbull, *Assistant Professor of Geography*, Ph.D., University of Washington
- Mary P. Truxaw, *Assistant Professor of Education*, Ph.D., University of Connecticut
- Eileen Trzcinski, *Assistant Professor of Economics*, Ph.D., University of Michigan
- Pei-Tsan Tsai, *Assistant Professor of Physiology and Neurobiology*, Ph.D., University of California, Berkeley
- Petros Tspouras, *Professor of Pediatrics*, M.D., National University of Athens, Greece
- Gaye Tuchman, *Professor of Sociology*, Ph.D., Brandeis University
- Shuana K. Tucker, *Assistant Professor of Education*, Ph.D., University of Illinois
- Jennifer Tufts, *Assistant Professor of Communication Sciences*, Ph.D., Pennsylvania State University
- Y. Alex Tung, *Associate Professor of Operations and Information Management*, Ph.D., University of Kentucky
- Peter Turchin, *Professor of Ecology and Evolutionary Biology*, Ph.D., Duke University
- Heather M. Turcotte, *Assistant Professor of Political Science*, Ph.D., University of California, Santa Cruz
- Jane A. Ungemack, *Assistant Professor of Community Medicine and Health Care*, Dr.P.H., Columbia University
- Flavio Andres Uribe, *Assistant Professor of Orthodontics*, D.D.S., Instituto de Ciencias de la Salud, Colombia; M.Dent.Sc, University of Connecticut
- Eduardo Urios-Aparisi, *Assistant Professor of Modern and Classical Languages*, Ph.D., University of Illinois
- Emiliano Valdez, *Professor of Mathematics*, Ph.D., University of Wisconsin
- Theodore C. Van Alst, Jr., *Assistant Professor of Modern and Classical Languages*, Ph.D., University of Connecticut
- Donna Lee Van Cott, *Associate Professor of Political Science*, Ph.D., Georgetown University
- Harry van der Hulst, *Professor of Linguistics*, Ph.D., Leiden University, The Netherlands
- Jaci L. VanHeest, *Assistant Professor of Education in Residence*, Ph.D., Michigan State University
- Thomas J. Van Hoof, *Associate Professor of Nursing*, M.D., M.A., University of Connecticut; Ed.D., Columbia University
- Herbert J. Van Kruijning, *Professor of Pathobiology*, D.V.M., Ph.D., Cornell University; M.D., Brown University
- C. Arthur VanLear, *Associate Professor of Communication Sciences*, Ph.D., University of Utah
- John F. Veiga, *Professor of Management and Organization*, D.B.A., Kent State University
- Anthony T. Vella, *Associate Professor of Medicine*, Ph.D., Cornell University
- Sandra G. Velleman, *Assistant Professor of Animal Science in Residence*, Ph.D., University of Connecticut
- Charles R. Venator Santiago, *Assistant Professor of Political Science*, Ph.D., University of Massachusetts
- Kumar S. Venkitanarayanan, *Associate Professor of Animal Science*, Ph.D., University of Connecticut
- Fiona H. Vernal; *Assistant Professor of History*, Ph.D., Yale University
- John A. Vernon, *Assistant Professor of Finance*, Ph.D., City University, England; Ph.D., University of Pennsylvania
- Roelf J. Versteeg, *Assistant Professor of Geology and Geophysics*, Ph.D., University of Paris, France
- Alexander C. Vias, *Associate Professor of Geography*, Ph.D., University of Arizona
- Olga Vinogradova, *Assistant Professor of Pharmaceutical Science*, Ph.D., Case Western Reserve University
- Pieter Visscher, *Professor of Marine Sciences*, Ph.D., University of Groningen, The Netherlands
- Richard A. Vitale, *Professor of Statistics*, Ph.D., Brown University
- Epapante (Penny) Vlahos, *Assistant Research Professor of Marine Sciences*, Ph.D., University of Massachusetts
- Jason C. Vokoun, *Assistant Professor of Natural Resources and the Environment*, Ph.D., University of Missouri
- Jeff S. Volek, *Associate Professor of Education*, Ph.D., Pennsylvania State University
- Maxim Volgushev, *Associate Professor of Psychology*, Ph.D., Russian Academy of Sciences
- John C. Volin, *Professor of Natural Resources and the Environment*, Ph.D., University of Wisconsin
- Susanne Beck von Bodman, *Associate Professor of Plant Science*, Ph.D., University of Illinois
- Katharina von Hammerstein, *Professor of German*, Ph.D., University of California, Los Angeles
- Brian E. Waddell, *Associate Professor of Political Science*, Ph.D., City University of New York
- Sunil Wadhwa, *Assistant Professor of Orthodontics*, D.D.S., Columbia University; Ph.D., University of Connecticut
- David L. Wagner, *Professor of Ecology and Evolutionary Biology*, Ph.D., University of California, Berkeley
- Julie A. Wagner, *Associate Professor of Behavioral Sciences and Community Health*, Ph.D., University of Rhode Island
- Manuela M. Wagner, *Assistant Professor of Modern and Classical Languages*, Ph.D., Graz University, Austria
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- Randall S. Walikonis, *Associate Professor of Physiology and Neurobiology*, Ph.D., Mayo Graduate School of the Mayo Clinic
- Michael Wallace, *Professor of Sociology*, Ph.D., Indiana University
- Altina L. Waller, *Professor of History*, Ph.D., University of Massachusetts
- Stephen Walsh, *Associate Professor of Nursing*, Sc.D., Harvard University
- Guanhua Wang, *Associate Professor of History*, Ph.D., Michigan State University
- Guiling Wang, *Associate Professor of Civil and Environmental Engineering*, Ph.D., Massachusetts Institute of Technology
- Lei Wang, *Assistant Professor of Electrical and Computer Engineering*, Ph.D., University of Illinois
- Shih-Lun (Alex) Wang, *Associate Professor of Communication Sciences in Residence*, Ph.D., University of Texas
- Tixiang Wang, *Associate Professor of Mathematics*, Ph.D., University of Connecticut
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- Yong Wang, *Assistant Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., Duke University
- Zhao-Wen Wang, *Assistant Professor of Neuroscience*, Ph.D., Michigan State University
- J. Evan Ward, *Associate Professor of Marine Sciences*, Ph.D., University of Delaware
- Julie Wargo Aikins, *Assistant Professor of Psychology*, Ph.D., Pennsylvania State University
- Glenn S. Warner, *Professor of Natural Resources and the Environment*, Ph.D., University of Minnesota
- Nicholas Warren, *Assistant Professor of Medicine*, Sc.D., University of Massachusetts, Lowell
- Ruth A. Washington, *Associate Professor of Molecular and Cell Biology in Residence*, Ph.D., Wayne State University
- Dudley T. Watkins, *Professor of Physiology*, M.D., Ph.D., Western Reserve University
- James Watras, *Associate Professor of Physiology*, Ph.D., Washington State University
- Janet S. K. Watson, *Associate Professor of History*, Ph.D., Stanford University
- Julianne Wayne, *Associate Professor of Social Work*, Ed.D., Clark University
- David Weakliem, *Professor of Sociology*, Ph.D., University of Wisconsin
- Shannon E. Weaver, *Associate Professor of Family Studies*, Ph.D., University of Maryland
- Catherine M. Weber, *Associate Professor of Family Medicine*, Ph.D., Rutgers University
- Mei Wei, *Associate Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of New South Wales, Australia
- Friedmann J. Weidauer, *Associate Professor of Modern and Classical Languages*, Ph.D., University of Wisconsin
- Robert A. Weiss, *Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of Massachusetts



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Scott L. Weststone, *Assistant Professor of Community Medicine and Health Care*, M.D., University of Connecticut

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Bruce A. White, *Professor of Physiology*, Ph.D., University of California, Berkeley

Robert Bruce Whitlatch, *Professor of Marine Sciences*, Ph.D., University of Chicago

Michael M. Whitney, *Assistant Professor of Marine Sciences*, Ph.D., University of Delaware

Stephen K. Wikel, *Professor of Physiology*, Ph.D., University of Saskatchewan, Canada

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Roger B. Wilkenfeld, *Professor of English*, Ph.D., University of Rochester

Michael Willenborg, *Professor of Accounting*, Ph.D., Pennsylvania State University

Peter K. Willett, *Professor of Electrical Engineering*, Ph.D., Princeton University

Michelle Williams, *Associate Professor of Psychology*, Ph.D., University of Georgia

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Steven K. Wisensale, *Professor of Family Studies*, Ph.D., Brandeis University

Sebastian Wogenstein, *Assistant Professor of German*, Ph.D., University of Tübingen, Germany

Leslie Wolfson, *Professor of Neurology*, M.D., Albert Einstein College of Medicine

Charles W. Wolgemuth, *Assistant Professor of Physiology*, Ph.D., University of Arizona

Walter W. Woodward, *Assistant Professor of History*, Ph.D., University of Connecticut

Bradley Wright, *Associate Professor of Sociology*, Ph.D., University of Wisconsin

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Carol A. Wu, *Assistant Professor of Medicine*, Ph.D., Vanderbilt University

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Ren-He Xu, *Associate Professor of Genetics and Developmental Biology*, M.D., Hengyang Medical College, China; Ph.D., University of Tokyo Japan

Mary E. Yakimowski, *Associate Professor of Education in Residence*, Ph.D., University of Connecticut

David A. Yalof, *Associate Professor of Management*, Ph.D., Johns Hopkins University

Xiaodong Yan, *Assistant Professor of Mathematics*, Ph.D., University of Minnesota

Xiusheng Yang, *Professor of Natural Resource Management and Engineering*, Ph.D., Ohio State University

Xudong Yao, *Assistant Professor of Chemistry*, Ph.D., University of Maryland

Charles Yarish, *Professor of Ecology and Evolutionary Biology*, Ph.D., Rutgers University

Philip L. Yeagle, *Professor of Molecular and Cell Biology*, Ph.D., Duke University

Edvin Yegir, *Associate Professor of Art*, M.F.A., Yale University

Susanne F. Yelin, *Associate Professor of Physics*, Ph.D., Ludwig-Maximilians Universität, Germany

Fang Yin, *Assistant Professor of Operations and Information Management*, Ph.D., University of Texas

Mark A. Youndt, *Assistant Professor of Management*, Ph.D., Pennsylvania State University

Michael Young, *Associate Professor of Education*, Ph.D., Vanderbilt University

Ji Yu, *Assistant Professor of Genetics and Developmental Biology*, Ph.D., University of Texas

Lixia Yue, *Assistant Professor of Physiology*, Ph.D., McGill University, Canada

Nada Zecevic, *Associate Professor of Neuroscience*, M.D., Ph.D., University of Belgrade, Yugoslavia

Richard A. Zeff, *Associate Professor of Pathology*, Ph.D., Rush University

Bi Zhang, *Professor of Mechanical Engineering*, Ph.D., Tokyo Institute, Japan

Chuanrong Zhang, *Assistant Professor of Geography*, Ph.D., University of Wisconsin

Peng Zhang, *Assistant Professor of Mechanical Engineering*, Ph.D., University of Illinois

Ping Zhang, *Associate Professor of Molecular and Cell Biology*, Ph.D., Albert Einstein College of Medicine

Yu Zheng, *Assistant Professor of Political Science*, Ph.D., University of California, San Diego

Shengli Zhou, *Assistant Professor of Electrical and Computer Engineering*, Ph.D., University of Minnesota

Lei Zhu, *Associate Professor of Chemical, Materials and Biomolecular Engineering*, Ph.D., University of Akron

Qiang Zhu, *Assistant Professor of Endodontology*, Ph.D., University of Connecticut

Qing Zhu, *Associate Professor of Electrical and Systems Engineering*, Ph.D., University of Pennsylvania

Christian M. Zimmermann, *Associate Professor of Economics*, Ph.D., Carnegie Mellon University

Steven A. Zinn, *Professor of Animal Science*, Ph.D., Michigan State University

Cyrus Zirakzadeh, *Professor of Political Science*, Ph.D., University of California, Berkeley

Michael A. Zito, *Associate Professor of Physical Therapy*, M.S., Ohio State University

Adam Zofka, *Assistant Professor of Civil and Environmental Engineering*, Ph.D., University of Minnesota

Mark G. Zurolo, *Associate Professor of Art*, M.F.A., Yale University

Adam Zweifach, *Associate Professor of Molecular and Cell Biology*, Ph.D., Yale University

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## RESEARCH PROFESSORS AND RESEARCH SCIENTISTS

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Research professors and research scientists are affiliated with the University's many supported research programs. While some are not members of the Graduate Faculty, they contribute significantly to ongoing research in many graduate Fields of Study.

This list is current as of March 1, 2009.

Steven A. Boggs, *Research Professor*, Ph.D., University of Toronto, Canada

Patricia A. Bresnahan, *Assistant Research Professor*, Ph.D., University of Connecticut

Mark G. Carter, *Assistant Research Professor*, Ph.D., Johns Hopkins University

Linda K. Frisman, *Research Professor*, Ph.D., Brandeis University

Claire F. Michaels, *Research Professor*, Ph.D., University of Connecticut

Chandra S. Roychoudhuri, *Research Scholar*, Ph.D., University of Rochester

Danielle F. Wozniak, *Research Scientist*, Ph.D., University of Connecticut

# ADJUNCT FACULTY IN THE GRADUATE SCHOOL

An appointment to adjunct faculty status in The Graduate School is honorary and recognizes an individual, who is not otherwise eligible for membership on the Graduate Faculty, possessing experience in a scholarly, scientific, or clinical field of research or practice. The following individuals have been appointed to such status by the dean of the Graduate School. Adjunct faculty members in The Graduate School may serve as Associate Advisors on graduate students' advisory committees. The field with which the individual is associated is indicated. An appointment ends on August 31 of the year noted.

The list is current as of March 1, 2009.

- David E. Amacher, *Adjunct Professor in the Graduate School* (Pharmaceutical Science), Ph.D., Kent State University (2009)
- Todd E. Arnold, *Adjunct Assistant Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., University of Georgia (2010)
- Jay R. Berkovitz, *Adjunct Associate Professor in the Graduate School* (Judaic Studies), Ph.D., Brandeis University (2009)
- Kerry T. Blanchard, *Adjunct Associate Professor in the Graduate School* (Pharmaceutical Science), Ph.D., University of Connecticut (2009)
- Matthew S. Bogdanffy, *Adjunct Associate Professor in the Graduate School* (Pharmaceutical Science), Ph.D., Northeastern University (2009)
- Manuel Victor Borca, *Adjunct Assistant Professor in the Graduate School* (Pathobiology), D.V.M., Universidad de Buenos Aires, Argentina (2008)
- Jeffrey Bronke, *Adjunct Assistant Professor in the Graduate School* (Biomedical Engineering), M.S., Rensselaer Polytechnic Institute (2011)
- Thomas S. Bush, *Adjunct Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., Brown University (2010)
- Joseph C. Cappelleri, *Adjunct Associate Professor in the Graduate School* (Statistics), Ph.D., Cornell University; M.P.H., Harvard University (2009)
- Steven D. Cohen, *Adjunct Professor in the Graduate School* (Pharmaceutical Science), D.Sc., Harvard University (2009)
- Sydney P. Craig III, *Adjunct Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., California Institute of Technology (2009)
- Theresa K. Crofts, *Adjunct Assistant Professor in the Graduate School* (Biomedical Engineering), M.Eng., Worcester Polytechnic Institute (2011)
- Claudio D. Denoya, *Adjunct Professor in the Graduate School* (Molecular and Cell Biology), University of Buenos Aires, Argentina (2010)
- Leonard I. Eisenfeld, *Adjunct Professor in the Graduate School* (Biomedical Engineering), M.D., Yale University (2011)
- Jonathan Elukin, *Adjunct Associate Professor in the Graduate School* (Judaic Studies), Ph.D., Princeton University (2009)
- Richard A. Freund, *Adjunct Professor in the Graduate School* (Judaic Studies), Ph.D., Jewish Theological Seminary of America (2009)
- J. Nathan Hagstrom, *Adjunct Associate Professor in the Graduate School* (Clinical and Translational Research), M.D., University of Vermont (2012)
- Supriya Jayadev, *Adjunct Assistant Professor in the Graduate School* (Pharmaceutical Science), Ph.D., Duke University (2011)
- Kevin T. Jensen, *Adjunct Associate Professor in the Graduate School* (Biomedical Engineering), M.S., Rensselaer Polytechnic Institute (2011)
- Jim Jiao, *Adjunct Assistant Professor in the Graduate School* (Pharmaceutical Sciences), Ph.D., University of Connecticut (2011)
- Samuel D. Kassow, *Adjunct Professor in the Graduate School* (Judaic Studies), Ph.D., Princeton University (2009)
- Ronald C. Kiener, *Adjunct Associate Professor in the Graduate School* (Judaic Studies), Ph.D., University of Pennsylvania (2009)
- Steven L. Krill, *Adjunct Associate Professor in the Graduate School* (Pharmaceutical Science), Ph.D., University of Utah (2009)
- Carll Ladd, *Adjunct Assistant Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., University of Connecticut (2009)
- Berel Lang, *Adjunct Professor in the Graduate School* (Judaic Studies), Ph.D., Columbia University (2009)
- Thomas M. Laue, *Adjunct Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., University of Connecticut (2011)
- Michael P. Lawton, *Adjunct Associate Professor in the Graduate School* (Pharmaceutical Sciences), Ph.D., North Carolina State University (2011)
- Harris R. Lieberman, *Adjunct Professor in the Graduate School* (Kinesiology), Ph.D. University of Florida (2010)
- Alexandros Makriyannis, *Adjunct Professor in the Graduate School* (Pharmaceutical Science), Ph.D., University of Kansas (2011)
- Susan A. Masino, *Adjunct Assistant Professor in the Graduate School* (Pharmaceutical Science), Ph.D., University of California, Irvine (2009)
- Joseph H. McIsaac III, *Adjunct Associate Professor in the Graduate School* (Biomedical Engineering), M.D., University of Connecticut, M.S., Rensselaer Polytechnic Institute (2010)
- Daniel P. McNamara, *Adjunct Associate Professor in the Graduate School* (Pharmaceutical Science), Ph.D., University of Michigan (2011)
- Bradley Charles Nindl, *Adjunct Associate Professor in the Graduate School* (Kinesiology), Ph.D., Pennsylvania State University (2010)
- Nicholas T. Noyes, *Adjunct Professor in the Graduate School* (Biomedical Engineering), M.S., California State University, Sacramento (2011)
- Peter J. Oates, *Adjunct Professor in the Graduate School* (Molecular and Cell Biology), Ph.D., Vanderbilt University (2010)
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 Emiliana P. Noether, *Professor, History*  
 Corine T. Norgaard, *Professor, Accounting*  
 Richard L. Norgaard, *Professor, Finance*  
 Robert B. Northrop, *Professor, Electrical Engineering*  
 Kenneth P. Nunn, *Associate Professor, Finance*  
 John F. Nye, Jr., *Extension Agent, Cooperative Extension Service*  
 Edward J.P. O'Connor, *Professor, Music*  
 James D. O'Hara, *Professor, English*  
 Roberta M. Orne, *Assistant Professor, Nursing*  
 Nelson R. Orringer, *Professor, Spanish*  
 Arnold T. Orza, *Associate Professor, Hartford Campus*  
 Steven V. Owen, *Professor, Educational Psychology*  
 Andrew Paesani, Jr., *Associate Professor, Communication Sciences*  
 Emilio Pagoulatos, *Professor, Agricultural and Resource Economics*  
 David D. Palmer, *Associate Professor, Management*  
 Henry Palmer, *Professor, Pharmacy*  
 Agisilaos Pappanikou, *Professor, Educational Psychology*  
 William J. Parizek, *Associate Professor, Pathobiology*  
 William E. Parker, *Professor, Art*  
 Thomas G. Paterson, *Professor, History*  
 Daniel J. Patrylak, *Professor, Music*  
 Gretel Pelto, *Professor, Nutritional Sciences*  
 Perti J. Pelto, *Professor, Anthropology*  
 Theodore A. Perry, *Professor, Modern and Classical Languages*  
 Alvah H. Phillips, Jr., *Professor, Molecular and Cell Biology*  
 Kim T. Phillips, *Associate Professor, History (Avery Point)*  
 Robert L. Phillips, *Professor, Hartford Campus*  
 Anthony R. Philpotts, *Professor, Geology and Geophysics*  
 Raymond J. Pichey, *Professor, Social Work*

- Louis J. Pierro, *Professor, Animal Genetics*  
 Guillermo Pilar, *Professor, Physiology and Neurobiology*  
 Barbara A. Pine, *Professor, Social Work*  
 Elizabeth L. Pinner, *Professor, Social Work*  
 Edward T. Pitkin, *Professor, Mechanical Engineering*  
 John E. Post, *Professor, Pathobiology*  
 Donald I. Potter, *Professor, Metallurgy and Materials Engineering*  
 Anthony Pratt, *Associate Professor, Art*  
 Ralph P. Prince, *Professor, Agricultural Engineering*  
 Matthew W. Proser, *Professor, English*  
 Donald W. Protheroe, *Professor, Curriculum and Instruction*  
 Virginia T. Pyle, *Professor, Music*  
 Judith M. Quinn, *Assistant Professor, Nursing*  
 John E. Rabenstein, *Associate Professor, Educational Psychology*  
 Kenneth J. Randolph, *Associate Professor, Communication Sciences*  
 George N. Raney, *Professor, Mathematics*  
 Victoria S. Read, *Associate Professor, English*  
 Howard A. Reed, *Professor, History*  
 Compton Rees, Jr., *Associate Professor, English*  
 Charles D. Reese, *Extension Professor, Labor Education*  
 Melvyn L. Reich, *Professor, Educational Psychology*  
 Joseph S. Renzulli, *Distinguished Professor, Educational Psychology*  
 David E. RePass, *Professor, Political Science*  
 Richard R. Reynolds, *Associate Professor, English*  
 Peter H. Rich, *Associate Professor, Ecology and Evolutionary Biology*  
 Anne H. Rideout, *Professor, Cooperative Extension Service*  
 Hallas H. Ridgeway, *Lecturer, Civil Engineering*  
 John W. Riesen, *Professor, Animal Science*  
 Thomas P. Riggio, *Professor, English*  
 Kenneth Ring, *Professor, Psychology*  
 Jack L. Roach, *Professor, Sociology*  
 Arthur D. Roberts, *Professor, Curriculum and Instruction*  
 Howard M. Roberts, *Associate Professor, Mathematics*  
 Pamela L. Roberts, *Associate Professor, Allied Health*  
 Thomas J. Roberts, *Professor, English*  
 James S. Rock, *Extension Agent, Cooperative Extension Service*  
 William H. Roe, *Professor, Education*  
 Dorothy T. Rogers, *Professor, Allied Health Professions*  
 Vincent R. Rogers, *Professor, Curriculum and Instruction*  
 Ronald P. Rohner, *Professor, Family Studies*  
 Jerry N. Rojo, *Professor, Dramatic Arts*  
 Antonio H. Romano, *Dean, Liberal Arts and Sciences*  
 Gabriel Rosado, *Associate Professor, Modern and Classical Languages*  
 Barbara Rosen, *Associate Professor, English*  
 Philip Rosenberg, *Professor, Pharmacology*  
 MaryLou Rosencranz, *Professor, Family Studies*  
 Mark Ross, *Professor, Communication Sciences*  
 Marvin Rothstein, *Professor, Information Management*  
 Doffie Rotter, *Associate Professor, Psychology*  
 Julian B. Rotter, *Professor, Psychology*  
 John A. Roulier, *Professor, Computer Science and Engineering*  
 John T. Rourke, *Professor, Political Science*  
 Paul F. Rovetti, *Director, William Benton Museum of Art*  
 Donald E. Rowe, *Specialist IV A, Athletics*
- Chauncy N. Rucker, *Professor, Education*  
 George R. Rumney, *Professor, Geography*  
 Arnold Russek, *Professor, Physics*  
 Robert G. Ryder, *Professor, Family Studies*  
 Benjamin D. Sachs, *Professor, Psychology*  
 Jacqueline Sachs, *Professor, Communication Sciences*  
 Howard R. Sacks, *Professor, Law*  
 Stephen R. Sacks, *Professor, Economics*  
 Barbara Sanders, *Professor, Psychology*  
 Gerald W. Sazama, *Associate Professor, Economics*  
 Beldon H. Schaffer, *Professor and Director, Institute of Public Service*  
 James H. Schmerl, *Professor, Mathematics*  
 Paul A. Scholl, *Associate Professor, Educational Psychology*  
 Robert Schor, *Professor, Physics*  
 David B. Schroeder, *Professor, Natural Resources Management and Engineering*  
 R. Jack Schultz, *Professor, Ecology and Evolutionary Biology*  
 Tobias L. Schwartz, *Associate Professor, Molecular and Cell Biology*  
 Ilse Schwinck, *Associate Professor, Molecular and Cell Biology*  
 Charles F. Scott, *Assistant Professor, Family Studies*  
 George M. Scott, *Professor, Operations and Information Management*  
 H. Constance Scott, *Assistant Professor, Nursing*  
 James J. Scully, *Professor, English*  
 Edgar E. (Gene) Sellers, *Assistant Dean, Graduate School*  
 William M. Servedio, *Associate Professor, Kinesiology*  
 Anita M. Shaffer, *Senior Extension Educator*  
 Jerome A. Shaffer, *Professor, Philosophy*  
 Donald P. Shankweiler, *Professor, Psychology*  
 W. Wayne Shannon, *Professor, Political Science*  
 Robert A. Shaw, *Professor, Curriculum and Instruction*  
 Robert E. Shaw, *Professor, Psychology*  
 Stan Shaw, *Professor, Educational Psychology*  
 Herbert H. Sheathelm, *Professor, Educational Leadership*  
 Mark R. Shibles, *Professor, Educational Leadership*  
 Jay S. Shivers, *Professor, Kinesiology*  
 Tomm B. Shockey, *Assistant Professor, Modern and Classical Languages*  
 Howard A. Sholl, *Professor, Computer Science*  
 Harvey H. Shore, *Associate Professor, Management and Organization*  
 Esther W. Shoup, *Extension Agent, Cooperative Extension Service*  
 Eileen Silverstein, *Professor, Law*  
 Anthony P. Simonelli, *Professor, Pharmacy*  
 Giovanni Sinicropi, *Professor, Modern and Classical Languages*  
 Philip J. Sleeman, *Professor and Director, Instructional Media and Technology*  
 Erling A. Smith, *Professor, Civil and Environmental Engineering*  
 Hale Smith, *Professor, Music*  
 Jerome Smith, *Professor, Psychology*  
 Robbins B. Smith, *Extension Professor*  
 Robert J. Smith, *Associate Professor, Mathematics*  
 William P. Snavely, *Professor, Economics*  
 Lester B. Snyder, *Professor, Law*  
 Roman Solecki, *Professor, Mechanical Engineering*  
 Avo Somer, *Professor, Music*  
 Ralph G. Somes, *Adjunct Lecturer, Nutritional Sciences*  
 Harold E. Spencer, *Professor, Art*  
 Kenneth A. Speranza, *Associate Professor, Pharmacy*  
 Eugene Spiegel, *Professor, Mathematics*
- Herbert F. Spire, *Professor, Information Management*  
 Donald F. Squires, *Professor, Marine Sciences*  
 Emily B. Stanley, *Associate Professor, English*  
 Bruce M. Stave, *Distinguished Professor, History*  
 Edward Staveski, *University Systems*  
 Richard J. Stec, *Director of Administrative Services, Computer Center*  
 Frederick E. Steigert, *Associate Professor, Physics*  
 Randolph P. Steinen, *Associate Professor, Geological Sciences*  
 Milton R. Stern, *Distinguished Alumni Professor, English*  
 Norman D. Stevens, *Director, University Libraries*  
 James H. Stewart, *Extension Professor, Labor Education Center*  
 Donald G. Stitts, *Professor, Agricultural and Resource Economics*  
 Frank A. Stone, *Professor, Educational Leadership*  
 Frederick A. Streams, *Professor, Ecology and Evolutionary Biology*  
 Ardelle Striker, *Professor, Dramatic Arts*  
 Peter R. Strutt, *Professor, Metallurgy*  
 Archibald Stuart, *Professor, Social Work*  
 James D. Stuart, *Professor, Chemistry*  
 Michael Studdert-Kennedy, *Professor, Psychology*  
 Linda R. Suess, *Professor, Nursing*  
 Thomas A. Suits, *Professor, Modern and Classical Languages*  
 Donald W. Sundstrom, *Professor, Chemical Engineering*  
 Vincent Suprynowicz, *Professor, Electrical and Systems Engineering*  
 Richard Swibold, *Professor, Art*  
 Colin C. Tait, *Professor, Law*  
 Daniel W. Talmadge, *Associate Professor, Poultry Science*  
 John Tanaka, *Professor, Chemistry*  
 Barbara E. Teasdale, *Associate Professor, Allied Health Professions*  
 Nechama Tec, *Professor, Sociology*  
 Morton J. Tenzer, *Associate Professor, Political Science*  
 Donald Tepas, *Professor, Psychology*  
 Thomas M. Terry, *Associate Professor, Molecular and Cell Biology*  
 Roger K. Thalacker, *Director, Alumni Affairs*  
 Janice A. Thibodeau, *Professor, Nursing*  
 Evelyn B. Thoman, *Professor, Psychology*  
 John C. Thompson, *Associate Professor, Business Administration*  
 Richard Thornton, *Professor, Art and Art History*  
 David Tiberio, *Associate Professor, Physical Therapy*  
 Solomon Tilles, *Associate Professor, Modern and Classical Languages*  
 Tuz Chin Ting, *Professor, Computer Science and Engineering*  
 Gerald Tirozzi, *Professor, Education*  
 Theodore A. Toedt, *Associate Professor, Industrial Administration*  
 Rudolf L. Tokes, *Professor, Political Science*  
 Edmond C. Tomastik, *Associate Professor, Mathematics*  
 Terry J. Tondro, *Professor, Law School*  
 John L. Toner, *Director, Athletics*  
 Mark E. Tourtellotte, *Professor, Pathobiology*  
 Francis R. Trainor, *Professor, Ecology and Evolutionary Biology*  
 Edwin W. Tucker, *Professor, Marketing*  
 Frederick C. Turner, *Professor, Political Science*  
 Michael Turvey, *Distinguished Professor, Psychology*  
 Ernest B. Uthegennant, *Associate Professor*  
 Carmen L. Vance, *Associate Vice President, Student Affairs*

Sjef van den Berg, *Assistant Professor, Communication Sciences*  
 Louis L. van der Heide, *Professor, Pathobiology*  
 Thomas Vasil, *Associate Professor, Music*  
 Frank D. Vasington, *Professor and Dean, Liberal Arts and Sciences*  
 Richard Vengroff, *Professor, Political Science*  
 Wayne J. Villemez, *Professor, Sociology*  
 Robert T. Vinopal, *Professor, Molecular and Cell Biology*  
 Charles I. Vinsonhaler, *Professor, Mathematics*  
 John W. Vlandis, *Director, Admissions*  
 George S. Vlasto, *Assistant Professor, Physiology and Neurobiology*  
 Murray Wachman, *Professor, Mathematics*  
 Anita M. Walker, *Professor, History*  
 Crayton C. Walker, *Professor, Information Management*  
 David B. Walker, *Professor, Public and Urban Affairs*  
 Altina L. Waller, *Professor, History*  
 Allen M. Ward, *Professor, History*  
 Seymour Warkov, *Professor, Sociology*  
 Philmore B. Wass, *Professor, Foundations and Curriculum*  
 Frederick W. Wassmundt, *Associate Professor, Chemistry*  
 James H. Watt, *Professor, Communication Sciences*  
 Steighton A. Watts, Jr., *Assistant Professor, Political Science*

Cora H. Webb, *Extension Agent, Cooperative Extension Service*  
 Terry R. Webster, *Professor, Ecology and Evolutionary Biology*  
 Edmund S. Wehrle, *Professor, History*  
 Patricia A. Weibust, *Associate Professor, Curriculum and Instruction*  
 Myron E. Weiner, *Professor, Social Work*  
 Thomas P. Weinland, *Professor, Curriculum and Instruction*  
 Barbara L. Welsh, *Professor, Marine Sciences*  
 Richard F. Wendel, *Professor, Marketing*  
 Donald F. Wetherell, *Professor, Molecular and Cell Biology*  
 Imanuel Wexler, *Professor, Economics*  
 Gene C. Whaples, *Professor, Cooperative Extension System*  
 Richard W. Whinfield, *Professor, Educational Leadership*  
 James H. Whitaker, *Professor, Agricultural Engineering*  
 Marguerite B. White, *Professor and Associate Dean, Nursing*  
 Elizabeth N. Whittlesey, *Assistant Professor, Mathematics*  
 Edward A. Wicas, *Professor, Educational Psychology*  
 William J. Wickless, *Professor, Mathematics*  
 Carol A. Wiggins, *Vice President, Student Affairs and Services*

Lloyd B. Wilhelm, *Senior Extension Agent, Cooperative Extension Service*  
 Jane R. Wilkie, *Associate Professor, Sociology*  
 Clara A. Williams, *Assistant Professor, Nursing*  
 Rollin C. Williams, *Professor, Social Work*  
 Martha Wilson, *Professor, Psychology*  
 William A. Wilson, *Professor, Psychology*  
 Sam L. Witryol, *Professor, Psychology*  
 Nicholas Wolfson, *Professor, Law*  
 Elliot Wolk, *Professor, Mathematics*  
 Arthur Lewis Wood, *Professor, Sociology*  
 Charles O. Woody, *Professor, Animal Science*  
 Arthur W. Wright, *Professor, Economics*  
 Barbara D. Wright, *Associate Professor, Modern and Classical Languages*  
 Yuen-Chi Wu, *Professor, Social Work*  
 D. Stuart Wyand, *Professor, Pathobiology*  
 Tsu-Ju J. Yang, *Professor, Pathobiology*  
 John N. Yanouzas, *Professor, Management*  
 Philip L. Yeagle, *Professor, Molecular and Cell Biology*  
 Andrew Yiannakis, *Professor, Kinesiology*  
 David A. Yphantis, *Professor, Molecular and Cell Biology*  
 David A. Yutzey, *Associate Professor, Psychology*  
 Suleiman D. Zalatimo, *Professor, Educational Psychology*  
 Paul J. Zelanski, *Professor, Art*  
 M. Walter Zielyk, *Associate Professor, Ecology and Evolutionary Biology*  
 Florence Ziner, *Professor, English*

# APPENDIX

## ACADEMIC INTEGRITY IN GRADUATE EDUCATION AND RESEARCH

The assurance of integrity in graduate education and research is of paramount concern. Academic and scholarly activity at the graduate level takes many forms at the University of Connecticut, including, but not limited to, classroom activity, laboratory or field experience, and artistic expression. The Graduate School of the University of Connecticut upholds the highest ethical standards in its teaching, research, and service missions.

The Code of Conduct and the statement of Hearing and Appeal Procedures that follow pertain to matters involving graduate academic and scholarly misconduct. Responsibility for such misconduct requires intent but is not excused by ignorance. Thus, it is important for students to be conversant with the tenets of this Code. Matters of a disciplinary nature in which graduate students may become involved are to be addressed by Section III of the University's "Student Conduct Code," enforcement of which is within the purview of the Dean of Students.

The Dean of the Graduate School is charged with responsibility for coordinating the process by which an allegation of academic misconduct on the part of a graduate student is reported, investigated, and adjudicated. The Graduate Faculty Council, in accordance with the provisions of its By-Laws, is responsible for the formulation of policies and procedures pertaining to any and all matters of academic integrity in graduate education and research and to proper handling of allegations of violations. Members of the Graduate Faculty have primary responsibility to promote and to sustain throughout the University an environment in which the highest ethical standards of teaching, scholarship, research, and publication prevail. All members of the University community have a responsibility to uphold the highest standards of teaching, scholarship, research, and publication and to report any violation of academic integrity of which they have knowledge.

### A. FORMS OF ACADEMIC AND SCHOLARLY MISCONDUCT

There are many forms of academic and scholarly misconduct. Categories of academic and scholarly misconduct are identified below, and where appropriate, illustrations are given. These categories and illustrations are not intended to be exhaustive.

**CHEATING** could occur during a course (e.g., on a final examination), on an examination required for a particular degree (e.g., the doctoral General Examination, the Final Examination for the master's or the doctoral degree, or a foreign language translation

test), or at other times during graduate study.

**PLAGIARISM** involves taking the thoughts, words, or ideas of others and passing them off as one's own.

**MISREPRESENTATION** could involve, for example, taking an examination for another student; submitting for evaluation work done by another individual; submitting the same work for evaluation in two or more courses without prior approval; unauthorized use of previously completed scholarly work or research for a thesis, dissertation, or publication; or making false, inaccurate, or misleading claims or statements when applying for admission to the Graduate School or in any scholarly or research activity, including publication.

**UNAUTHORIZED POSSESSION, USE, OR DESTRUCTION OF ACADEMIC OR RESEARCH MATERIALS**, which include, for example, examinations, library materials, laboratory or research supplies or equipment, research data, notebooks, or computer files.

**COMPUTER VIOLATIONS** include but may not be limited to unauthorized use, tampering, sabotage, or piracy of computer files or data and the like.

**FABRICATION OR FALSIFICATION IN RESEARCH** could involve, for example, deliberate falsification of experimental results or tampering in any way with actual experimental results or research data.

**RESEARCH VIOLATIONS** involving, for example, human subject violations (including ethical and social violations), animal care violations, inappropriate breaches of confidentiality, deliberate obstruction of the research progress of another individual, or deliberate disregard for applicable University, local, State, or federal regulations.

**CONFLICTS OF INTEREST** such as, for example, unauthorized use of University or faculty academic or research facilities, materials, or resources for unapproved purposes; or allowing or attempting to use personal relationships (academic or otherwise) between a graduate student and any member of the University community to influence improperly academic judgments, scholarly evaluations, or decision making.

**TAMPERING** with any document or computer file pertaining to academics or research, including, for example, student academic records, official transcripts, laboratory journals, examination papers, and the like.

**ANY ATTEMPT TO INFLUENCE IMPROPERLY**, for example, by means of bribery or threat, any member of the faculty, the staff, or the administration of the University in any matter pertaining to academics or research.

**AIDING OR ABETTING** another individual in the planning or the commission of any act of academic misconduct.

**ANY IMPROPRIETY OR ACT OF MISCONDUCT COMMITTED BY A GRADUATE STUDENT IN A TEACHING ROLE** in the University, such as requesting or accepting a favor in exchange for a grade or engaging in any form of sexual harassment.

**DELIBERATE OBSTRUCTION** of an investigation of any act of academic or research misconduct.

### B. ACADEMIC MISCONDUCT WITHIN A PARTICULAR COURSE

When an instructor believes there is sufficient evidence to demonstrate a clear case of academic misconduct within a particular course taught by that instructor, the instructor shall notify the student in writing, and also orally if possible, that unless the student requests a hearing to contest the instructor's belief, the instructor shall impose the appropriate academic consequences warranted by the circumstances. This should occur within 30 days of discovery of the alleged academic misconduct. The appropriate academic consequence for serious offenses is generally considered to be failure in the course. For less serious offenses regarding small portions of the course work, failure for that portion is suggested, with the requirement that the student repeat the work satisfactorily for no credit.

The faculty member is responsible for saving the evidence of academic misconduct in its original form and need not return any of the papers or other materials to the student. Copies of the student's work and information about other evidence will be provided to the student upon request.

The student is given seven days from this first written notice to respond. If the student confesses or does not respond to the written notice of the instructor's belief of academic misconduct and appropriate consequences within the course, the academic consequences shall be imposed and a report submitted to the Dean of the instructor's school or college and to the Dean of the Graduate School.

If a student chooses to contest the instructor's belief of academic misconduct, the student must make a written request to the Office of the Dean of the Graduate School for a hearing to determine the facts of the alleged misconduct.

### C. ALLEGATIONS OF ACADEMIC MISCONDUCT

The following procedures apply in most instances

where academic misconduct is alleged. In some cases, misconduct may be alleged for students who are supported through a federally funded fellowship or training grant program or through other federal grants (e.g., as a Research Assistant). In such instances, the procedures stipulated by agreements between the University and the federal government will prevail, including use of the University's policy and procedures for review of alleged unethical research practices. The procedures described in this document will apply to those allegations not subsumed by such agreements. In addition, standards governing the professional conduct of students in particular fields may be relevant in certain settings (e.g., clinical, counseling, therapeutic, etc.). Allegations of professional misconduct based on such standards may be brought forward under this code.

Whenever an alleged violation of this code has been filed with the Office of the Dean of the Graduate School, the accused is to be notified in writing within ten working days. The written statement filed with the Office of the Dean should describe fully the alleged misconduct and the circumstances involved (i.e., the name of the individual alleged to be responsible for the misconduct; date, time, place of the alleged misconduct; name(s) of person(s) who might have been involved in or have knowledge of the alleged misconduct; and any other pertinent information). The statement must bear the signature(s) of the individual(s) submitting it, and it must be dated. A copy of the statement will be sent to the accused within ten working days of its filing. The Dean of the Graduate School will discuss the allegation of academic misconduct with the dean of the relevant school or college. The Dean of the Graduate School will then make a determination regarding whether the alleged violation should be resolved at the Graduate School level in accordance with the hearing and appeal procedures contained herein or whether the alleged violation should be referred to the field of study, academic department, school or college in which the infraction is thought to have occurred. (Such a determination will also be made when an accused student, pursuant to section B, requests a hearing.)

If the alleged violation is referred to the field of study, academic department, school or college, then it will be addressed and resolved in accordance with the applicable hearing and appeal procedures followed by that particular unit. The Office of the Dean of the Graduate School will notify the accused in writing of this determination. In the event that the alleged violation is referred to the field of study, academic department, school or college, the Office of the Dean of the Graduate School should be notified of any outcome of the case. In either event, the Dean of the school or college in which the alleged misconduct occurred is notified that a report of alleged misconduct has been received.

If the alleged violation is to be resolved at the Graduate School level, the report of alleged misconduct is referred to the Office of the Dean of the Graduate School, which confirms the allegation(s) and the existence of supporting

evidence. The Office reviews the allegation(s) and the evidence to determine specifically which provision(s) of this Code is/are alleged to have been violated. If the allegation(s) cannot be supported, or if there is insufficient evidence to proceed with an inquiry, the matter is dropped. If the allegation(s) can be supported, and if sufficient evidence exists to warrant an inquiry, the Office of the Dean of the Graduate School notifies the appropriate Associate Dean (either the Associate Dean of the Graduate School at Storrs or the Associate Dean of the Graduate School at the Health Center). The Office also notifies the accused by Certified Mail of the charge(s). A copy of this Code is sent with the letter of notification to inform the accused of his or her rights and of the hearing and appeals procedures to be followed. The Office also notifies the Dean of the school or college in which the alleged misconduct occurred of the charges.

#### D. GRADUATE HEARING COMMITTEE

The Graduate Hearing Committee is composed of three voting members (two members of the graduate faculty and one graduate student). The Executive Committee of the Graduate Faculty Council selects them with advice from appropriate Deans. The appropriate Associate Dean of the Graduate School (Storrs or Health Center) conducts the hearing as a non-voting member. A member of the Hearing Committee cannot have a direct involvement in the case under consideration. The accused will be notified in writing of the composition of the hearing committee and will have the right to object to the appointment of any committee member on the grounds that the member's participation would jeopardize the party's right to a fair hearing. The Associate Dean conducting the hearing will determine whether any objections have merit and will judge whether a panel member will be seated.

The proceeding, although formal, is not a court proceeding and the Hearing Committee will not be bound by the procedures and rules of evidence of a court of law. The Committee's decision is to be made by majority vote and is to be based on clear and convincing evidence submitted at the hearing, including evidence regarding intent.

The Associate Dean will conduct the hearing, ordinarily in private unless the accused student and accuser agree to an open hearing, using the following steps:

1. Identification of the accused student, the person bringing the allegation, any representative of the accused, and the hearing panel.
2. The accused student may make an opening statement.
3. The presentation of evidence by the person alleging the misconduct. Evidence includes written statements, testimony of the person alleging the misconduct, oral testimony of wit-

nesses, physical exhibits, and evidence of intent.

4. Questioning of witnesses and accuser, and rebuttal of evidence.
5. Presentation of evidence by the accused student. Evidence includes written statements, testimony of the accused student, oral testimony of witnesses, physical exhibits, and evidence of intent.
6. Questioning of the accused student and witnesses, and rebuttal of evidence.
7. Recall of any hearing participants.
8. Summation statements by the person alleging the misconduct and by the accused student.

During the hearing the accused student:

1. May decline to make statements. Refusal to answer questions shall not be interpreted as evidence of guilt.
2. May decline to appear at the hearing. Refusal to appear shall not be interpreted as evidence of guilt. The hearing panel will consider the evidence in the absence of the accused student.
3. May be advised for consultation purposes during the hearing. The student's consultant may not address the hearing panel or others at the hearing unless permitted by the Associate Dean conducting the hearing.

The hearing panel's decision is to be forwarded to the student, the person alleging the misconduct, the Dean of the school or college in which the alleged misconduct occurred, and to the Dean of the Graduate School within two weeks from the date of the hearing.

If the student is found not to be responsible for graduate academic misconduct, then no academic consequence may be imposed and the case is considered officially closed, and all records associated with the hearing are removed from the student's permanent academic file.

In the event that the student is found responsible for graduate academic misconduct, the panel may recommend to the Dean of the Graduate School academic and/or university sanctions. The Dean will examine the record of the hearing and will weigh the severity of the recommended sanction(s) against the seriousness of the student's misconduct. The Dean then will meet with the student before making a final judgment about sanctions. The Dean may impose any academic sanctions and may recommend to the Dean of Students any university sanctions to be imposed.



Decisions of the Dean of the Graduate School can be appealed to the Provost for University Affairs by the student. An appeal is not a new hearing. It is a review of the record of the original hearing. The accused student and a consultant of his or her choice have the right to review the accused student's file and other records of the hearing. An appeal may be sought on two grounds:

1. On a claim of error in the hearing procedure. Appeals on such grounds must be presented, specifically described, in writing within five days (excluding weekends and holidays) of the announcement of the decision.
2. On a claim of new evidence or information material to the case that was not available at the time of the hearing. Appeals on such grounds must be presented, specifically described, in writing within five days (excluding weekends and holidays) of the new evidence having been discovered.

The Provost for University Affairs shall have the authority to dismiss an appeal not sought on proper grounds.

If an appeal is upheld, the Dean of the Graduate School shall refer the case with procedural specifications back to the hearing panel.



**NOTE:** A graduate student is defined as any individual who holds admission to the Graduate School to pursue either a graduate certificate or a graduate degree, as well as any other individual enrolled in a graduate-level course who is not strictly an undergraduate degree or an undergraduate certificate student.

Approved by the Board of Trustees  
on November 10, 1998.



## GRADUATE SCHOOL COMPLAINT RESOLUTION PROCEDURE

The University of Connecticut is a community of scholars and researchers committed to integrity, freedom of inquiry and intellectual pursuit, respect for individuals and the rights of others, and tolerance for both individual differences and differing points of view. Accordingly, a fundamental responsibility of the Graduate School is to foster durable, harmonious, and productive working relationships among graduate students, postdoctoral fellows, faculty members, and administrators. For the purposes of this document, a **graduate student** is defined as any individual who holds admission to the Graduate School to pursue either a graduate certificate or a graduate degree, as well as any other individual enrolled in a graduate-level course. A **postdoctoral fellow** is defined as a person who (1) holds a research or other doctoral degree and is not pursuing a graduate degree, and (2) is working in a temporary position with a focus on further training in research and scholarship. A **faculty member** is defined as a person holding an academic appointment in one or more academic units at the assistant professor level or higher. An **administrator** is defined as a person functioning in an administrative role and having contact and interaction with graduate students, postdoctoral fellows, and faculty, whether holding a faculty position concurrently or not.

Occasionally, difficult situations may arise. This document establishes a process by which graduate students, postdoctoral fellows, and faculty can pursue fair and timely resolution of complaints resulting from their interactions with faculty, administrators, academic programs or departments, or other graduate students or postdoctoral fellows. Many of these situations involve matters of personal sensitivity and need to be resolved amicably and with a minimum of legalistic maneuvering. The procedures outlined here are intended as means to resolution and not as means to cast blame or deliver recriminations. Thus, it is expected that parties involved in these processes shall suffer no reprisals or harassment and shall not be penalized in any way for doing so. Further, if several individuals.

For an issue to be considered under this policy, the party (or parties) bringing the complaint may not be anonymous. If one wishes to alert the Graduate School about an issue while remaining anonymous, the University of Connecticut Reportline (<https://www.compliance-helpline.com/uconncares.jsp>) may be used for this purpose, although progress toward resolution ultimately may require the complainant to disclose his or her identity at some point.

This document does not apply in matters of academic misconduct, disciplinary issues, harassment, conflict of interest, or any other area in which the University has in force other policies or procedures governing the handling of specific kinds of complaints and allegations. After reviewing a complaint submitted under this policy, the

Associate Dean of the Graduate School with jurisdiction (Storrs or Health Center) may determine that the issue falls under the jurisdiction of the *Responsibilities of Student Life: The Student Code*, the *Academic Integrity in Graduate Education and Research* policy, the *Policy Statement on Harassment*, the *Policy on Conflict of Interest in Research*, or other such policy. In such instances, the Associate Dean will notify the parties involved and refer the complaint to the appropriate authorities.

In the areas of research and publication, the Graduate School further subscribes to the tenets of responsible conduct in research as set forth in *On Being a Scientist: Responsible Conduct in Research* (1995) by the National Academy of Sciences, as periodically amended.

Grounds for complaints brought forward by graduate students, postdoctoral fellows, and faculty under this policy may fall within one or more categories, including but not limited to:

- alleged inappropriate or unfair application of policies or regulations of a particular degree program, department, school or college, or of the University;
- any alleged personal conflict or interaction that adversely impacts either the rights of a member of the academic community or the academic/research environment;
- alleged inappropriate or unfair decisions related to work assignments, research reports, or publications;
- inappropriate or unfair decisions related to the award of graduate student financial support within the purview of the Graduate School;
- alleged disregard of official University requirements, policies, or regulations;
- alleged tampering with or misuse of research data or University resources or property; and
- alleged inappropriate interference or intimidation by another individual in the performance of one's academic or research duties.

### Step One: Informal Resolution

A person who believes that he or she has a complaint must attempt first to resolve the issue by discussing the matter directly with the individual(s) involved.

### Step Two: Mediation

If the attempt to resolve the complaint informally is not successful, the individual(s) may submit a concise yet complete written summary of the issue to the Coordinator of Graduate Studies or Department Head of the complainant's unit ("the local mediator") to seek a mediated resolution. In the event that the issue involves the designated mediator or if the mediator is not available, the Associate Dean of the Graduate School may designate another individual to serve in that role. In the event that the complaint involves the



Associate Dean, then the Associate Dean from the other campus (Storrs or Health Center) will administer the process.

The written summary must (1) bear the signature of the complainant(s), (2) be specific in terms of the circumstances and individuals involved in the situation resulting in the complaint, (3) include detailed information about the complainant's attempt to resolve the issue informally, and (4) be submitted within thirty (30) calendar days of the last unsuccessful attempt to resolve the matter informally.

As soon as feasible, ordinarily within 10 calendar days of receipt of a complaint, the mediator will confer with the cognizant Associate Dean of the Graduate School (either Storrs or Health Center) to determine whether the mediation process would more appropriately be pursued within the local unit (program or department) or by the Graduate School.

If the complaint remains in the local unit ("local mediation"), the mediator will confer with all parties involved in the issue to seek a resolution. If this effort is successful, the mediator will write a memorandum stating the specifics of the issue, the steps taken in the mediation process, and the agreed-upon resolution. Copies of the memorandum will be signed by and distributed to the principal parties and to the Associate Dean of the Graduate School. This should occur within thirty (30) calendar days of the decision to pursue local mediation. If the mediator is not successful in resolving the issue, he or she will notify the principal parties and the Associate Dean of the Graduate School of that fact in writing within thirty (30) calendar days of the decision to pursue local mediation.

If the mediation of the complaint is to be handled by the Graduate School, the Associate Dean or his or her designee will carry out the mediation process described in the preceding paragraph, following the same time-lines.

If the attempt to resolve the issue through mediation is unsuccessful, the complainant may seek a formal hearing determination.

### **Step Three: Formal Hearing**

The Graduate Hearing Committee is composed of three voting members (two members of the Graduate Faculty and one non-faculty person—either a graduate student or a postdoctoral fellow, respectively). The Associate Dean of the Graduate School will select the members of the Committee. Any person who served as a mediator for the complaint shall not serve as a member of the Committee. The Associate Dean of the Graduate School (Storrs or Health Center) shall preside over the hearing as a non-voting member. A member of the Hearing Committee cannot have a direct involvement in the matter being contested. The complainant will be notified in writing of the composition of the Hearing Committee and may object to the appointment of any voting member

on the grounds that the member's participation would jeopardize his/her right to a fair hearing. The Associate Dean presiding over the hearing will determine whether such objections have merit and may, when necessary, appoint substitute voting member(s).

The Hearing Committee shall not be bound by the procedures and rules of evidence of a court of law. Both the complainant(s) and the party (or parties) who are the object of the complaint may be accompanied by no more than one (1) support person for consultation purposes during the hearing. This support person shall not address the Hearing Committee or others at the hearing unless permitted by the presiding Associate Dean. The hearing shall consist of the following steps:

- 1) Identification of the principal parties involved in the case, the support persons (if any), and the members of the Hearing Committee.
- 2) The complainant may make a succinct opening statement and then present the substance of his/her complaint via statements, witnesses, documents and/or other evidence. This presentation is at the discretion of the presiding Associate Dean, who may exclude irrelevant, repetitive or inherently unreliable evidence.
- 3) The person(s) who is (are) the object(s) of the complaint may then make an opening statement and present the evidence supporting his/her efforts and responses to the complainant(s) via statements, witnesses, documents and/or other evidence. This presentation is at the discretion of the presiding Associate Dean, who may exclude irrelevant, repetitive or inherently unreliable evidence.
- 4) Members of the Hearing Committee may question the parties involved in the hearing.
- 5) At the discretion of the presiding Associate Dean, the parties may make succinct summations.

All hearings will be recorded and the University will maintain the audio recordings as required by Connecticut state law and are the property of the University. Participants are prohibited from making their own recordings. Upon written request, an accused person or complainant may review the audio recording and make appropriate arrangements for it to be transcribed at the University. Arrangements and all associated costs involved in the transcription will be the responsibility of the requesting individual.

Following the hearing, the Hearing Committee shall deliberate in private and determine by majority vote of its voting members whether the complaint has merit, and if so, any recommended remedy or sanction. Within ten (10) business days of the hearing, the Associate Dean who presided over the hearing will communicate the Committee's findings and any recommended remedy or sanction to: (i) the complainant(s); (ii) the participating individuals involved in the issue; (iii) the local official; and (iv) the school or college dean(s) of the parties involved.

### **Step Four: Appeals**

The complainant(s) may file an appeal of the Hearing Committee's decision with the Dean of the Graduate School. The appeal itself shall be a review of the record of the hearing, not a new hearing. The appeal may be based on one or more of the following grounds:

- 1) a claim of error in the hearing procedure that substantially affected the decision.
- 2) a claim of new evidence or information material to the issue that was not available at the time of the hearing and that may be sufficient to alter the decision of the Hearing Committee.
- 3) a claim of unfair conduct by a Hearing Committee member or presiding officer.

A request for an appeal must be received by the Dean of the Graduate School within five (5) business days of notification of the decision by the Associate Dean, except under extraordinary circumstances.

The Dean shall have the authority to dismiss an appeal not based on proper grounds. If the appeal is upheld, the Dean shall refer the issue back to the hearing panel with further instructions. The Dean's decision on such appeals shall be final.

### **Amendments and Revisions to the Document**

This document may be reviewed and amended on an ongoing basis as needed. Suggested modifications shall be submitted to the Associate Dean, who shall submit them to the Executive Committee of the Graduate Faculty Council for consideration and action, with advice from the Graduate Student Senate.



**Adopted by the Graduate Faculty Council  
on October 17, 2007 .**

**Modified on May 23, 2008 .**



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