CONVERSION NOTES

This is the Graduate Catalogue. Most references to Undergraduate programs and options have been removed and put in the Undergraduate Catalogue.

This catalogue was created by converting HTML content into a PDF file. The complex inter-linkage of references was only partially duplicated, but all data from the HTML structure is in this PDF file. The most complete information on any Degree or Program will be under the College or School, in the Department's Academic Offerings.

The document follows the outline of the HTML structure: Courses, Academic Offerings, College & Schools, Faculty and Administration, Policies & General Information.

Hyperlinks

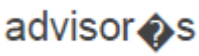
There are hundreds of hyperlinks in the text. Most of them link to pages in the PDF, but some link back to the website, and may link to web pages with current information that is not applicable to this catalogue. To find out where the link goes: hover the cursor over a hyperlink. If the cursor becomes a hand with pointing finger, it is a local link that will go to a page in the PDF. If the cursor becomes a hand with pointing finger and a box with a "W" in it, the link goes to the web.

Courses specific to a Program are listed under the College/School under the *Departments and Programs* link.

Odd Characters

The conversion program changed lower case "st" into a ligature: statistical

It sometimes changed apostrophes and hyphens into a diamond with a question mark:

advisor  s

The Find/Replace function does not recognize these characters, so they could not be replaced.

2003-04 Graduate Catalogue

This is the official publication of degree programs and requirements and course descriptions for the 2003-2004 academic year produced annually by the office of the Provost and the Graduate College.

Students at The University of Vermont are responsible for knowing and complying with all requirements for their respective degrees as sated in the catalogue.

* The University of Vermont reserves the right to make changes in the course offerings, degree requirements, charges, regulations, and procedures contained herein as educational and financial considerations require, subject to and consistent with established procedures and authorizations for making such changes.

Notes on using the online catalogue:

The official UVM Catalogue 2003-04 bar is at the top left of each **official** Catalogue page.

The green arrow identifies links that point **outside** the official catalogue site [External Link].

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UVM Academic Calendar

:: Academic Year 2003-2004

Fall 2003

Events	Dates	Days of Week
Labor Day Holiday	September 1	Monday
First Day of Classes	September 2	Tuesday
Add/Drop, Pass/No Pass, Audit Deadline	September 15	Monday
Withdrawal Period Begins	September 16	Tuesday
Fall Recess	October 10	Friday
Last Day to Withdraw	October 31	Friday
Thanksgiving Recess	November 26-28	Wednesday-Friday
Last Day of Classes	December 10	Wednesday
Reading and Exam Period	December 11-19	Thursday-Thursday,Friday
Reading Days	December 11,13-14,17	Thursday, Saturday- Sunday, Wednesday
Exam Days	December 12,15-16,18-19	Friday, Monday-Tuesday, Thursday-Friday
Reception for December Graduates	December 19	Friday

Spring 2004

Martin Luther King Holiday	January 19	Monday
First Day of Classes	January 20	Tuesday
Add/Drop, Pass/No Pass, Audit Deadline	February 2	Monday
Withdrawal Period Begins	February 3	Tuesday
Presidents' Day Holiday	February 16	Monday
Town Meeting Day Recess	March 2	Tuesday
Spring Recess	March 15-19	Monday-Friday
Last Day to Withdraw	March 26	Friday
Early Registration (for Fall 2004)	Begins Early April	
Honors Day	April 16	Friday
Last Day of Classes	May 5	Wednesday
Reading and Exam Period	May 6-14	Thursday-Thursday, Friday
Reading Days	May 6,8-9,12	Thursday, Saturday-Sunday, Wednesday
Exam Days	May 7,10-11,13-14	Friday, Monday-Tuesday, Thursday-Friday
Commencement	May 23	Sunday

The University of Vermont and Burlington Community

The University of Vermont was founded in 1791, taking its place among the handful of colleges founded in this country in the eighteenth century for the higher education of young colonials and Americans of the first postrevolutionary generation. The University was the fifth New England college chartered (after Harvard, Yale, Dartmouth, and Brown), the second established by a state to grant the bachelor's degree, and the twentieth in the nation to do so.

The University pioneered in yet another area of society, that of giving women equal status with men in higher education, by becoming the first institution in the country to admit women to full membership in the scholarly society, Phi Beta Kappa.

Though it has enjoyed a long tradition of substantial private support, University development has been identified closely with that of the State since 1791, when Vermont's founding General Assembly granted a charter to the University and set aside about 29,000 acres throughout the State with the intent that rents from this land would support the new educational institution. The same Vermont General Assembly established that the bylaws of the University should give no preference to any religious sect or denomination or discriminate against any, making The University of Vermont the first in this country to go on public record as supporting freedom of religion upon its campus.

The University of Vermont consists of the Colleges of Agriculture and Life Sciences, Arts and Sciences, Engineering and Mathematics, Education and Social Services, Medicine, and the Graduate College; the Schools of Allied Health Sciences, Business Administration, Natural Resources, and Nursing; and Continuing Education.

With a population of about 39,000, Burlington is Vermont's largest city. The greater Burlington area of approximately 132,000 inhabitants is divided between pleasant suburbs and picturesque farms and woodland. Burlington enjoys magnificent views of Lake Champlain and the Adirondack Mountains to the west and Vermont's Green Mountains to the east. Easily available outdoor activities include swimming, boating, hiking, climbing, and skiing. For more information, please visit the City of Burlington Website.

Some 200 miles northwest of Boston, 300 miles north of New York City, and about 100

miles south of Montreal, Burlington is served by major airlines, buses, and Amtrak, and is contiguous to Vermont's interstate highway system.

Resources for Research and Scholarship, and Cultural Activities

The University Libraries

Located in the Bailey/Howe Library, the main unit of the University libraries, are the services and print and electronic collections relating to the humanities, social sciences, and many of the sciences. This library holds the largest book and map collection in Vermont, and maintains a representative collection of major periodicals, scholarly journals, indexes, and abstracting services. It is a depository for United States and Canadian government publications and for U.S. patents and trademarks. The Special Collections Department includes the Wilbur Collection of Vermontiana, rare books, literary and historical manuscripts, and the papers of many individuals associated with the state and the federal government. A separate Chemistry and Physics Library is located in the Cook Physical Sciences Building. Collections in medicine and the health sciences are located in the Dana Medical Library. Materials in the Libraries' collections are accessible through the online catalog, Voyager. A wide choice of electronic resources are made available through the Libraries' information gateway, Sage. Sage provides access, in a fully integrated way, to Voyager, full text magazines and newspapers, a wide variety of indexes, a number of specialized reference works, and the World Wide Web. Sage is reached from workstations in the libraries, from residence rooms, and from locations off campus. Audiovisual materials are located in the Media Resources Department of the Bailey/Howe Library and in the Dana Medical Library. The Library Research Annex (located directly east of the corner of East Avenue and Carrigan Drive) contains many older and less used monographs, serials, periodicals, and government documents from the Libraries. It also houses the UVM archives; many large, modern manuscript collections; and other older and rare printed materials from the Special Collections Department. It has public hours and a delivery service.

Computing and Information Techonolgy

Computing and information technology plays a vital role in supporting the learning, research, and service needs of the University. The Division of Computing and Information Technology (CIT) provides computing, networking, and telephone service for all UVM students, faculty, and staff. CIT support includes the following:

- Full Internet access, including electronic mail (e-mail) and access to the World Wide Web (WWW). The UVM network is available throughout the campus, including residence hall rooms. Off-campus students have a choice of free basic dial-up access, or specially priced full Internet access. E-mail and the Web are increasingly being incorporated into instruction and research. Students can register for courses by telephone and via the World Wide Web. UVM is also a member of the Internet 2 Consortium.
- Computer labs equipped with Macintosh, Windows, and X-Windows (Unix) workstations. These areas are staffed by helpful consultants and include software for word processing, spreadsheets, statistics, scientific visualization, and a powerful geographic information system. All areas are networked, allowing access to UVM's host systems as well as to national and international resources available through the Internet. For advanced computing needs, the Academic Resource Facility (the ARF) is equipped with highend specialized hardware for exploring and developing computing, visualization, and multimedia applications.
- A variety of host systems. Students use a multiprocessor IBM AIX (Unix) cluster named "Zoo" for e-mail, Web publishing, statistics, geographic information systems, and advanced academic work and research. From the time they indicate their intent to enroll, students are eligible for Zoo accounts.
- Sales and service for Macintosh and Windows personal computers from major vendors. Students, from the time they indicate their intent to enroll at UVM, can purchase Macintosh and Windows computers from the UVM Microcomputer Depot (see http://cit.uvm.edu/mcsv for details). UVM recommends purchasing computers through the Microcomputer Depot; these systems are configured to work on the UVM network and come with the most comprehensive support UVM provides.
- A modern digital telephone system providing low-cost long distance and including voicemail for all on-campus students, faculty, and staff.
- Free publications, tutorials, consulting support, and a help line. CIT maintains an

active role promoting and supporting information technology on campus.

Many other parts of the University provide specialized computing resources designed to meet the needs of specific programs. These include facilities provided by the Colleges of Engineering and Mathematics, Education and Social Services, Medicine, Arts and Sciences, and Agriculture and Life Sciences, the Schools of Business Administration, Natural Resources, and Nursing, the Language Laboratory, and Libraries and Media Services. In addition, Continuing Education provides teleclassrooms and a Digital Media Development Laboratory, and Residential Life provides networking and computer labs in the residence halls.

See CIT's World Wide Web page at http://www.uvm.edu/cit/ or contact CIT by sending e-mail to cit@uvm.edu.

Sponsored and Institutional Research

The University received over $100 million in sponsored funding, nearly $80 million of this total for research, during fiscal year 2002. UVM ranks nationally as one of the 100 leading universities in terms of federal sponsored research support. In addition, there are a substantial number of faculty research projects supported, in part, by institutional research committees. Graduate students frequently serve as integral parts of faculty research projects in a wide range of disciplines.

The George Aiken Lectures

The University of Vermont's George D. Aiken Lectures are a permanent tribute to the former Dean of the United States Senate and Governor of Vermont for his many years of service to the people of the state and nation. Supported by an endowment and held annually at The University of Vermont, the programs, which began in 1975, provide a platform for distinctive views on critical American issues and is the University's major annual public-policy forum. The tradition of keeping the Aiken Lectures free and open to the public endures. For more information, contact UVM Division of Continuing Education office.

The Vermont Seminars

The Vermont Seminars program augments the focus of teaching and research at the University and enriches educational offerings by bringing to campus individuals from a variety of walks of life, including faculty, statespersons, distinguished citizens, and leaders in special fields.

Graduate Academic Offerings A to Z

Subject	Degree(s)	Contact(s)
A		
Anatomy and Neurobiology	M.S., Ph.D.	Anatomy and Neurobiology, GRAD
Animal Science	M.S., Ph.D.	Animal Science, CALS, GRAD
Art Education (K-12)	Postbaccalaureate Certificate	Education, CESS
B		
Biochemistry	M.S., Ph.D.	Biochemistry, GRAD
Biology	M.A.T., M.S., M.S.T., Ph.D.	Biology, GRAD
Biomedical Engineering	M.S.	Mechanical Engineering, GRAD
Biostatistics	M.S.	Mathematics and Statistics, GRAD
Botany	M.S., M.S.T., M.A.T., Ph.D.	Botany, GRAD
Business Administration	M.B.A.	SBA, GRAD
C		
Cell and Molecular Biology	M.S., Ph.D.	Biology, GRAD
Chemistry	M.A.T., M.S., Ph.D.	Chemistry, CAS, GRAD
Civil and Environmental Engineering	M.S., Ph.D.	Civil and Environmental Engineering, CEM, GRAD
Communication Sciences	M.S.	Communication Sciences, CAS, GRAD

Subject	Degree(s)	Contact(s)
Community Development and Applied Economics	M.S.	Community Development and Applied Economics, GRAD
Computer Science	M.S.	Computer Science, GRAD
Consulting Teacher/Special Education	M.Ed.	Education, Integrated Professional Studies, CESS
Consulting Teacher/Learning Specialist (Special Education)	Post-Master's Certificate	Education, Integrated Professional Studies, CESS
Counseling	M.S., Post-Master's Certificate	Integrated Professional Studies, GRAD, CESS
Curriculum and Instruction	M.Ed.	Education, GRAD
E		
Early Intervention (Special Education)	Post-Master's Certificate	Integrated Professional Studies, CESS
Educational Leadership	M.Ed., Post-Master's Certificate	Education, GRAD, CESS
Educational Leadership and Policy Studies	Ed.D.	Education, GRAD
Educational Studies	M.Ed.	Education, GRAD
Electrical Engineering	M.S., Ph.D.	Electrical and Computer Engineering, CEM, GRAD
Elementary Education (K-6)	Postbaccalaureate Certificate	Education, CESS
English	M.A., M.A.T.	English, GRAD
Essential Early Education/Special Education	M.Ed.	Education, Integrated Professional Studies, GRAD
F		
Field Naturalist	M.S.	Botany, GRAD
Forestry	M.S.	Forestry, ENVNR, GRAD
French	M.A., M.A.T.	Romance Languages, GRAD
G		
Geography	M.A., M.A.T.	Geography, GRAD
Geology	M.A.T., M.S., M.S.T.	Geology, CAS, GRAD

Subject	Degree(s)	Contact(s)
German	M.A., M.A.T.	German and Russian, GRAD
Greek and Latin	M.A., M.A.T.	Classics, GRAD
H		
Higher Education and Student Affairs Administration	M.Ed.	Integrated Professional Studies, GRAD
Historic Preservation	M.S.	Historic Preservation, GRAD
History	M.A., M.A.T., B.A./M.A.	History, CAS, GRAD
I		
Individually Designed Major	M.Ed., Post-Master's Certificate	CALS, CAS, CESS, GRAD
Integration Specialist (Special Education)	Post-Master's Certificate	Education, CESS
Intensive Special Education (Special Education)	M.Ed., Post-Master's Certificate	Education, CESS
L		
Latin	M.A.T.	Classics, CAS, GRAD
Literacy and Special Education/Special Education	M.Ed.	Education, GRAD
M		
Materials Science	M.S., Ph.D., B.S./M.S.	Materials Science, GRAD
Mathematical Sciences	Ph.D.	Mathematics and Statistics, GRAD
Mathematics	M.S., M.A.T., M.S.T., B.S./M.S.	Mathematics and Statistics, GRAD
Mechanical Engineering	M.S., Ph.D., B.S./M.S.	Mechanical Engineering, CEM, GRAD
Medicine	M.D./M.S. and M.D./Ph.D.	GRAD
Microbiology and Molecular Genetics	M.S., Ph.D., B.S./M.S.	Microbiology and Molecular Genetics, CALS, GRAD
Middle-Level Education (5-8)	Postbaccalaureate Certificate	Education, CESS

Subject	Degree(s)	Contact(s)
Molecular Physiology and Biophysics	M.S., Ph.D.	Molecular Biology and Biophysics, GRAD
Movement Sciences and Rehabilitation	M.S.	Physical Therapy, GRAD
Music Education (K-12)	Postbaccalaureate Certificate	Music, CAS
N		
Natural Resources	Ph.D.	Natural Resources, ENVNR, GRAD
Natural Resources, Resource Planning	M.S.	Natural Resources, ENVNR, GRAD
Nursing	M.S., B.S./M.S.	Nursing, GRAD
Nutrition and Food Sciences	M.S.	Nutrition and Food Sciences, GRAD
P		
Pathology	M.S.	Pathology, GRAD
Pharmacology	M.S., Ph.D.	Pharmacology, GRAD
Physical Education (K-12)	Postbaccalaureate Certificate	Education, CESS
Physical Sciences (Chemistry and Physics)	M.S.T.-Chemistry, M.S.T.-Physics	Chemistry, Physics, GRAD
Physical Therapy	M.P.T.	Physical Therapy, CNHS, GRAD
Physics	M.S., M.A.T., M.S.T., B.S./M.S.	Physics, CAS, GRAD
Plant and Soil Science	M.S., Ph.D.	Plant and Soil Science, GRAD
Preveterinary/Preprofessional Science	B.S./D.V.M	Animal Science, CALS
Psychology	M.A., Ph.D.	Psychology, CAS, GRAD
Public Administration	M.P.A.	Public Administration, CDAE, CALS, GRAD
R		
Reading and Language Arts	M.Ed.	Education, GRAD

Subject	Degree(s)	Contact(s)
S		
Secondary Education (7-12)	Postbaccalaureate Certificate, M.Ed.	Education, CESS
Self-Designed	M.Ed., Post-Master's Certificate	GRAD
Social Work	M.S.W.	Social Work, CESS, GRAD
Special Education	M.Ed., Post-Master's Certificate	Integrated Professional Studies, CESS, GRAD
Statistics	M.S.	Mathematics and Statistics, CEM., GRAD
W		
Wildlife and Fisheries Biology	M.S.	Wildlife and Fisheries Biology, ENVNR

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Anatomy and Neurobiology (M. S.)

College: Graduate College
Department(s): Anatomy and Neurobiology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Students are admitted to the Ph. D. program only, not to a M. S. program. Ph. D. students may subsequently complete a M. S. degree with the permission of the Department.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of required courses and research rotations. Acceptance of a written report and oral presentation on the proposed thesis as approved by the Research and Dissertation Committee.

Minimum Degree Requirements

Thirty credits of courses and research, including Anatomy and Neurobiology 301, 302, 311; comprehensive examination. Additional credits as arranged for laboratory research leading to a dissertation. A grade of B or better must be obtained in any course taken in Anatomy and Neurobiology.

Anatomy and Neurobiology (Ph. D.)

College: Graduate College
Department(s): Anatomy and Neurobiology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Bachelor's degree; one year of organic chemistry/biochemistry; a year of advanced biology; one course in college physics. Additional courses in calculus, differential equations, statistics, computer science, and physical chemistry are recommended. A deficiency in one prerequisite course can be made up in the summer session before entry into the program. A master's degree is not a prerequisite for the Ph. D. degree. Satisfactory scores on the general (aptitude) Graduate Record Examination.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of required courses and research rotations. Approval of the written and oral portions of the qualifying comprehensive examination.

Minimum Degree Requirements

Anatomy 301, 302, 306, 311, 395 or 396, and 491; Cell and Molecular Biology 301; Physiology and Biophysics 301; Biochemistry 301, 302. Additional elective courses and teaching assignments as arranged with the department; three reading courses; departmental research rotations; dissertation research; credits as required by the Graduate College. Candidacy examination; successful completion of dissertation. A grade of B or better must be obtained in any course taken in Anatomy and Neurobiology.

Animal Science (M. S.)

College: Graduate College
Department(s): Animal Science

Overview

The research program focuses on Lactation Physiology and Mammary Gland Biology involving both a combination of courses and graduate research. Areas of research interests include lactation physiology, breast cancer, mastitis, developmental biology, nutrition, cell signaling and metabolism, biotechnology, and transgenics.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An acceptable undergraduate major in animal science, chemistry, biology, or a related field. Satisfactory scores on the general (aptitude) Graduate Record Examination must be presented. In some of the animal health areas, a degree of Doctor of Veterinary Medicine may be helpful.

Requirements for Advancement to Candidacy for the Degree of Master of Science

The applicant must satisfy the requirements of the Graduate College and pass the general qualifying examination administered by the Department of Animal Science. Both an oral and written exam are required.

Minimum Degree Requirements

Option A: 30 credit hours of study with a minimum of 15 credit hours in courses in Animal Science or related fields and a minimum of 9 credit hours of thesis research.

Students are required to attend and participate in Journal Club and Graduate Seminar every semester that they are enrolled for credits. Students must also participate in one semester of Research Proposal Writing.

Students are expected to meet with their committee during their second and third semester and during the final semester for their dissertation defense. Students are also expected to have one publication ready to submit or already submitted to an appropriate journal.

Option B: 30 credit hours of study with 24 credit hours in courses in Animal Science or related fields and a minimum of 6 credit hours of literature research. Students are required to attend and participate in Journal Club and Graduate Seminar every semester that they are enrolled for credits.

Animal Science (Ph. D.)

College: Graduate College
Department(s): Animal Science

Overview

The research program focuses on Lactation Physiology and Mammary Gland Biology involving both a combination of courses and graduate research. Areas of research interests include lactation physiology, breast cancer, mastitis, developmental biology, nutrition, cell signaling and metabolism, biotechnology, and transgenics.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory scores on the general (aptitude) Graduate Record Examination must be presented.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

The applicant must satisfy the prerequisites of the Graduate College and pass the general qualifying examination administered by the Department of Animal Sciences. Both an oral and written exam are required.

Minimum Degree Requirements

The Department of Animal Science believes each graduate program has its individual needs and must be arranged accordingly. The candidate must meet all the requirements as prescribed by the Graduate College for the degree of Doctor of Philosophy. The

candidate is required to attend and participate in Journal Club and Graduate Seminar every semester that he/she is enrolled for credit. The candidate must also participate in one semester of Research Proposal Writing. In addition, all courses and seminars as established by the Studies Committee must be satisfactorily met. The student is expected to meet with their committee within the first two semesters and then annually until the doctoral research is completed and an acceptable dissertation written and defended. It is also expected that a Ph.D. student will have at least two publications ready to submit, or already submitted, to an appropriate scientific journal. In accordance with the policy of the Animal Science Department, all doctoral students will be provided the opportunity to participate in the Department's undergraduate teaching program. Proficiency in a modern foreign language or computer language and programming is optional at the discretion of the Studies Committee.

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Biochemistry (M. S.)

College: Graduate College
Department(s): Biochemistry

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Satisfactory score on the Graduate Record Examination. Subject (advanced) portion not required but helpful. In addition: Year courses in organic chemistry, physical chemistry, and physics (equivalent to Chemistry 141, 142 or 143; 144, Chemistry 162 and Physics 15, 16); quantitative chemistry; mathematics through differential and integral calculus, a year course in a biological science.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to either degree program.

Minimum Degree Requirements

Thirty credit hours, 16 of which must be taken from graduate courses offered by the Department of Biochemistry, including Biochemistry 301, 302, 303, 381, and 391 or 392.

Thesis Option: Up to 14 credit hours of Master's Thesis Research (391).

Nonthesis Option: Up to eight credit hours of Independent Literature Research (392).

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Biochemistry (Ph. D.)

College: Graduate College
Department(s): Biochemistry

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory score on the Graduate Record Examination. Subject (advanced) portion not required but helpful. In addition: Year courses in organic chemistry, physical chemistry, and physics (equivalent to Chemistry 141, 142 or 143; 144, Chemistry 162 and Physics 15, 16); quantitative chemistry; mathematics through differential and integral calculus, a year course in a biological science.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to either degree program.

Minimum Degree Requirements

A total of 75 hours, including 20 hours from graduate courses offered by the Department of Biochemistry including Biochemistry 301, 302 or 305-306, 303 and participation throughout residence in Biochemistry Seminars; three hours from graduate courses offered by the Department of Chemistry; ten additional hours from courses in physical or biological sciences; 30 hours of Doctoral Dissertation Research.

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Biology (M. A. T.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

The department offers a program leading to the degree of Master of Arts in Teaching. Satisfactory scores on the Graduate Record Examination, general (aptitude) section, are

requirements for acceptance for this degree.

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Biology (M. S.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in Biology or its equivalent. Satisfactory scores on the Graduate Record Examination, general (aptitude) section. Acceptability to the faculty member with

whom the candidate wishes to do thesis research.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of a qualifying examination.

Minimum Degree Requirements

Biology Graduate Colloquia, fours hours; 11 to 18 additional hours in biology and related fields; thesis research (eight to 15 hours). Each candidate must participate in the teaching of at least one undergraduate course.

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Biology (M. S. T.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science in Teaching

A bachelor's degree from an accredited institution and certification as a teacher of biology or an associated field. At least three years of secondary school teaching.

Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Minimum Degree Requirements

Thirty hours of course work to include a selection of courses in the Departments of Botany and Biology which will broaden and balance the undergraduate work in biology. At least two 200-level courses in each department. Courses in four of the five following areas: anatomy; morphology and systematics; genetics; developmental biology; and environmental biology. Up to 12 hours of 100-level courses may be used for the above requirements where approved by the advisor and the Dean. Appropriate courses in related science departments may be used to complete the required 30 hours. No thesis is required; however, each degree recipient must complete a written and oral examination.

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Biology (Ph. D.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory completion of: college level courses appropriate for science majors including a year of mathematics, a year of physics, organic chemistry, at least one year of biology;

the Graduate Record Examination, general (aptitude) section; and acceptability to the faculty member with whom the candidate wishes to do dissertation research. Deficiencies in prerequisites may be made up after entering the program.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

The diagnostic examination prior to registration for the first semester; the comprehensive exam; minimum requirement course work of 30 hours and additional courses as required by the advisor and Studies Committee; at least one academic year of graduate study at The University of Vermont.

Minimum Degree Requirements

Of the 75 credit hours required for the degree, at least 30 hours must be earned in courses suitable for graduate credit and must include six hours of Graduate Colloquia. The selection of courses will be designated for each student by his/her advisor and Studies Committee. At least 20, but not more than 45, credits must be earned in dissertation research. Each candidate must participate in the teaching of at least one undergraduate course.

Biomedical Engineering (M. S.)

College: Graduate College
Department(s): Mechanical Engineering, Electrical and Computer Engineering

Overview

The program in Biomedical Engineering is interdisciplinary and offers the Master of Science degree. Graduate students obtain the M. S. degree through a program administered cooperatively by the Mechanical Engineering and Electrical and Computer Engineering departments. The program is directed jointly by Tony S. Keller (Mechanical Engineering), Dryver R. Huston (Mechanical Engineering), and Bruce D. Beynnon (Orthopaedics and Rehabilitation).

Participating faculty with strong commitments to biomedical engineering research and education are from the departments of Civil and Environmental Engineering, Electrical and Computer Engineering, Mathematics and Statistics, Mechanical Engineering, Molecular Physiology and Biophysics, Orthopaedics and Rehabilitation, Physical Therapy, and Physics. The extensive research facilities of the participating faculty and departments are available to all graduate students enrolled in the program, and the program provides the flexibility necessary for students to gain competence in the area of their choice. Research includes: Bioinstrumentation, Biomechanics, Biomedical Imaging, Biomedical Systems and Signal Analysis, Clinical Engineering, Implant Design, Rehabilitation Engineering, Simulation, and Biomathematics.

Students in the program are generally supported by sponsored research projects, participating departments and training grants. Inquiries about current research and funding opportunities should be directed to Laurel Zeno, Vermont Space Grant Consortium, 332B Votey Bldg., Burlington, VT 05405; Phone: (802) 656-1429; Fax: (802) 656-8802.

Research includes: (Absher) speech signal processing, adaptive control systems; (Bates) biomedical signal processing and mathematical modeling applied to the respiratory system; (Berger) structural dynamics in motor proteins during muscle contraction; (Beynnon) sports medicine, ankle, knee shoulder and spine biomechanics, low back pain; (Chesler) effects of mechanical stimuli on vascular physiology and pathology;

(Clark) health care technology planning and management, instrumentation for life sciences research and medical device validation; (Fleming) sports medicine, lower and upper extremity ligament and tendon injuries, biomechanics; (Hamrell) mechanisms of sarcomere function, normal and diseased heart muscle, viral myocarditis; (Haugh) statistical process control and quality improvement, medical biostatistics and clinical trials, orthopaedics and rehabilitation, low back pain, reliability estimation, time series analysis; (Hazard) spine disability risk factors, seating design, continuous passive spinal motion, low back pain; (Henry) motor control of human posture and movement, related to musculoskeletal injuries; (Hitt) mechanics of branching blood flows, microcirculatory hemodynamics, artificial blood; (Huston) whole body vibration, low back pain, electromyography; (Iatridis) soft-tissue and spinal bioengineering; (Irvin) respiratory biomechanics; (Johnson) sports, knee and ski injuries and knee biomechanics; (Keller) spine mechanics, material and structural properties of biologic tissues, orthopaedic implant biomechanics and design, skeletal growth and remodeling; (Krag) normal and degenerative disc biomechanics, spinal instrumentation, spinal disorders; (Lakin) applied mathematics, modeling intracranial pressure dynamics, microgravity effects on human physiology; (Laible) computational biomechanics, analysis of flow and transport modeling in biologic materials; (Low) regulation of smooth muscle contractile proteins; (Maughan) molecular biophysics of muscle contraction; (Stokes) biomechanics of spine and spinal deformity; (Warshaw) smooth muscle physiology, including structure/function relationship of molecular motors; (G. Wu) biomechanics of human postural control and aging, modeling, and instrumentation. (J. Wu) muscle mechanics, molecular mechanics, ultrasonic biosensors, ultrasonic heating and enhanced anti-cancer action.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Students applying for admission to the graduate program must meet the general requirements of admission of The University of Vermont Graduate College. Admission is competitive and students are selected on the basis of their scholastic preparation and intellectual capacity.

The following minimum preparation is recommended:

- Biology, Chemistry: Two semesters each, or four introductory courses in the following subjects - anatomy, biology, biophysics, chemistry, physiology.
- Engineering: Two introductory courses in one or more of the following subjects - biomechanics, mechanics, thermodynamics, electrical engineering, control theory, or fluid mechanics.
- Mathematics: One course past differential equations.
- Physics: Two semesters of physics.

Special arrangements may be made, on an individual basis, for students who are highly prepared in one area, but less well prepared in another.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Completion of any deficient admission requirements.

Minimum Degree Requirements

Candidates for the degree of Master of Science must complete 30 graduate credit hours of an approved program of study, including 18-24 semester credits of graduate-level courses approved by the program faculty and distributed as follows: Physiology and Biophysics (eight credits); engineering subspecialty (electrical, civil, or mechanical engineering), seven-11 credits; physics, mathematics or engineering elective, three credits. In addition, the candidate must present a research thesis (six-12 credits) and pass a final oral examination. Most candidates complete a six-seven credit thesis.

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Biostatistics (M. S.)

College: Graduate College
Department(s): Mathand Statistics

Overview

The program offers a concentration in biostatistics leading to the M.S. degree.

Emphasis is placed on learning how to design studies and perform computerized data analysis as the statistician in a research team. The curriculum takes full advantage of courses taught in the Statistics Program and includes potential experience in a variety of health, biomedical, natural resource and other research projects in the College of Medicine or other departments of UVM. This experience is designed to provide candidates with opportunities to use their academic training and work experience in defining research problems, formulating rational methods of inquiry, and gathering, analyzing, and interpreting data.

Four of our faculty are in the College of Medicine's Department of Medical Biostatistics and Bioinformatics, whose research activities cover the full range of studies that take place within an academic medicine environment. These include population-based health surveys of various types and evaluations of health promotion programs and professional education activities, such as community intervention studies to prevent smoking and to promote breast cancer screening. They also include clinical studies of many different interventions, bioengineering experiment design and measurement studies, statistical genetics, as well as data from other preclinical, clinical, and epidemiological studies.

Opportunities are also available for biostatistical research related to problems in agriculture and the life sciences, as well as natural resources and the environment. Opportunities could include multivariate or spatial data analyses for ongoing wildlife and water quality studies for example. All students gain research and consulting experience through our researchrequirement: a research project (STAT 381) or a thesis (STAT 391). Other opportunities for experience will arise through involvement in our Statistical Consulting Clinic. (See also Statistics Program and Statistical Consulting Clinic descriptions.)

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and Advancement to Candidacyfor the Degree of Master of Science

An undergraduate major which provides a foundation for the application of statistical methodology and concepts to
health and biomedical or agriculture/natural resource problems. For example, premedicine majors who have delayed their application to medical school will be well suited for the program. It is expected that candidates will have completed three semesters of calculus and a course including matrix algebra methods. Also they will have a solid introductory course in statistics (like our STAT 211) and a course including undergraduate probability (like our STAT 151). However, provisional admission to the program can be given prior to the completion of these mathematics and statistics requirements. Computer experience is desirable. The Graduate Record Examination is strongly advised and is required of any applicant who wishes to be considered for assistantship support. Current undergraduate students at the University of Vermont should contact the program director for details on the Accelerated Master's Program.

Minimum Degree Requirements for the Degree of Master of Science

Plan A: (Thesis) A 30-hour degree program which includes 24 semester hours of approved course work, with at least 21 hours in Biostatistics/Statistics courses. This must include Biostatistics 200, 221, 223, 231, 241 or 261, 321, 323, and another approved one credit seminar course.

Plan B: (Non-thesis) A 33-hour degree program which includes 30 semester hours of approved course work with at least 21 hours in Biostatistics/Statistics courses. This must include Biostatistics 200, 221, 223, 231, 241 or 261, 321, 323, and another approved one credit seminar course.

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Botany (M. S.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

The equivalent of a UVM major or minor in a natural or physical science. Satisfactory scores on the Verbal and Math sections of the Graduate Record Examination.

Minimum Degree Requirements

A total of 30 credits of course work and thesis research. A minimum of 15 credits of course work should be in botany, other natural sciences, and supporting fields, and at least nine credits should be in thesis research.

Requirements for Admission to Graduate Studies for the Degree of Master of Science, Field Naturalist Option

An undergraduate or graduate degree in earth or life sciences is expected; additionally, a demonstrated commitment to field sciences (e.g., participation in environmental and conservation organizations, workshops, field trips, research); strong scores on the Graduate Record Examination. A subject (advanced) test in biology or geology is advised for students who lack an undergraduate degree in natural sciences. Recent college graduates are encouraged to pursue interests outside academe before application to the Field Naturalist program.

Minimum Degree Requirements, Field Naturalist Option

Thirty credit hours of courses to include at least two courses in each of three core areas: (1) life science; (2) earth science; and (3) ecology, the course selection to be determined by the student's studies committee. Enrollment in the Field Naturalist Practicum (Botany 311) each semester; oral comprehensive examination the fourth semester; written field research project (Botany 392) at the end of the fourth semester.

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Botany (M. S. T.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers (Biology)

A bachelor's degree from an accredited institution and certification as a teacher of biology or an associated field. At least three years of secondary school teaching. Satisfactory scores on the Graduate Record Examinations general (aptitude) section.

Minimum Degree Requirements for the M. S. T. (Biology)

Thirty hours of course work to include a selection of courses in the Departments of Botany and Biology which will broaden and balance the undergraduate work in biology. At least two 200-level courses in each department. Courses in four of the five following areas: anatomy; morphology and systematics; genetics; developmental biology; and environmental biology. Up to 12 hours of 100-level courses may be used for the above requirement where approved by the advisor and the Dean. Appropriate courses in related science departments may be used to complete the required 30 hours. No thesis is required; however, each degree recipient must complete a written and oral examination.

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Botany (M. A. T.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

The Department offers a program leading to the degree of Master of Arts in Teaching. Satisfactory scores on the Graduate Record Examination general (aptitude) section are requirements for acceptance for this degree.

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Botany (Ph. D.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

The equivalent of a UVM major or minor in a natural or physical science. Satisfactory scores on the Verbal and Math sections of the Graduate Record Examination.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of one academic year in graduate study at The University of Vermont; completion of any language required by the student's studies committee. The candidate must demonstrate ability to comprehend the contents of articles in the biological sciences in a modern foreign language appropriate to the student specialty and approved by the Studies Committee.

Minimum Degree Requirements

A total of 75 credits of course work and dissertation research. A minimum of 40 credits of course work should be in botany, other natural sciences and supporting fields, and at least 20 credits should be in dissertation research. In addition, each candidate must participate in six semester hours of supervised teaching.

Business Administration (M. B. A.)

College: Graduate College
Department(s): School of Business Administration

Overview

Management is the art of applying principles of the mathematical and social sciences to decision making in an organizational environment characterized by uncertainty and limited resources. The program is designed (1) to develop the individual's ability to practice the art and (2) to build a foundation that will facilitate and encourage the continuation of this development beyond a formal university setting. Courses in the program emphasize the understanding and critical evaluation of conceptual and theoretical principles relevant to the decision process in the functional areas of business.

Upon completion of the program, students will have been exposed to each functional area, will have been required to demonstrate an ability to engage in individual and group research projects, and will have demonstrated capacity to present coherently and defend their views orally and in writing.

The MBA program is accredited by AACSB - International Association for Management Education.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and for Advancement to Candidacy for the Degree of Master of Business Administration

The MBA program consists of Prerequisite (basic skills), Core, and Advanced (beyond the core) courses. A student can be admitted to the Graduate College before completion of Prerequisite courses, but all prerequisites must be completed before the student is admitted to candidacy for the MBA degree.

All applicants must meet the general requirements for admission to the Graduate College. In addition to transcripts of prior undergraduate and graduate work, the applicant is required to submit scores on the Graduate Management Admissions Test. Students are selected for admission based on high promise of academic achievement in the MBA program. That promise will be judged by previous academic work, GMAT scores, relevant work experience, writing ability, and recommendations.

Minimum Degree Requirements

Students must complete all of the courses listed. Each Prerequisite course normally will be satisfied by completion of an appropriate three hour undergraduate level course. Computer usage skill may be demonstrated by appropriate experience. Prerequisite courses must be completed before enrollment in Core courses. Enrollment in Advanced courses is restricted to students who have completed the appropriate Core course in that functional area.

Prerequisite Courses

1. Macroeconomic Principles*
2. Microeconomic Principles*
3. Differential Calculus
4. Computer Usage
5. Statistics

*BSAD 302 may be taken to fulfill both the Macroeconomics and Microeconomics prerequisites.

- **Core Courses** (18 hours)
  1. BSAD 305 Fundamentals of Marketing Management
  2. BSAD 306 Fundamentals of Accounting
  3. BSAD 307 Organization and Management Studies
  4. BSAD 308 Corporate Finance
  5. BSAD 309 Fundamentals of Legal Environment of Business
  6. BSAD 340 Production and Operations Management

- **Advanced Courses** (30 hours)
  (Of the 30 hours in this category, at least 24 must be in 300-level courses)
  I. Functional Area Courses (one selected from each area):
     1. Accounting and Finance (BSAD 260, 263, 266, 267, 282, 285, 360, 365, 380, Special Topics)
     2. Economic and Political Environment (BSAD 234, 337, Special Topics)
     3. Human Resources Management (BSAD 222, 226, 331, 375, 376, 379, Special Topics)
     4. Marketing (BSAD 251, 252, 258, 352, Special Topics)
     5. Management Information Systems (BSAD 345, 347, Special Topics)
     6. Production and Operations Management and Quantitative Methods (BSAD 270, 293, 341, 346, Special Topics)

  II. Electives: Nine hours of graduate business courses

III. BSAD 396 Business Policy

A normal course load for full-time students is 12 hours per semester. Part-time students typically take six hours per semester. Substantially all Core courses must be completed before enrollment in Advanced courses. Business Policy will be taken during the student's last semester in the MBA program. Successful completion of the BSAD 396 course will be considered as fulfilling the Graduate College requirement that all master's degree students pass a comprehensive examination in their field of specialization.

Students who have received undergraduate degrees in business within the past five years from schools accredited by the AACSB are allowed to waive the Core courses and may complete the program in one year by taking 15 hours of coursework per semester. Other students with academic experience covering material in particular Core courses may waive such courses upon successful completion of qualifying examinations.

Course Sequencing

For full-time students needing to complete all Core (18 hour) and Advanced (30 hours) courses, the usual sequencing of courses is as follows:

First Year - Fall Semester
- BSAD 305
- BSAD 306
- BSAD 307
- BSAD 340

First Year - Spring Semester
- BSAD 308
- BSAD 309
- 2 Functional Area Courses

Second Year -Fall Semester
- 2 Functional Area Courses
- 2 Elective Courses

Second Year - Spring Semester
- 2 Functional Area Courses
- Elective Course
- BSAD 396

For full-time students needing to complete only the Advanced (30 hours) courses, a typical course sequencing is as follows:

Fall Semester
- 3 Functional Area Courses
- 2 Elective Courses

Spring Semester
- 3 Functional Area Courses
- Elective Course
- BSAD 396

As an alternative, some students may choose to complete two Advanced courses during the summer session (if available, since summer offerings are limited) in order to reduce their regular semester program to 12 hours.

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Cell and Molecular Biology (M. S.)

College: Graduate College
Department(s): Cell and Molecular Biology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Biology (three semesters, including genetics), chemistry through organic, mathematics through calculus, physics (two semesters), physical chemistry. Satisfactory scores (60 percentile) on general (aptitude) Graduate Record Examination. Students who do not have all of the courses listed but who have a good academic record will be considered for admission to the program. Deficiencies may be made up after matriculation.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Completion of any deficient admission requirements.

Minimum Degree Requirements

Thirty hours of graduate level credit including Cell Biology 301-302 and one course in each of the following areas: genetics, biochemistry (one year); a techniques course approved by the Studies Committee; cell biology seminar once per year; thesis research.

The expected sequence for all first year students in the fall is CLBI 301, biochemistry, CLBI 381, and CLBI 391 or 491; in the spring is CLBI 302, biochemistry, CLBI 381 and CLBI 391 or 491. Additional courses or substitutions are offered with flexibility, but must have permission of the Program Director.

Cell and Molecular Biology (Ph. D.)

College: Graduate College
Department(s): Cell and Molecular Biology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Biology (three semesters, including genetics), chemistry through organic, mathematics through calculus, physics (two semesters), physical chemistry. Satisfactory scores (60 percentile) on general (aptitude) Graduate Record Examination. Students who do not have all of the courses listed but who have a good academic record will be considered for admission to the program. Deficiencies may be made up after matriculation.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of any deficient admission requirements including one semester of physical chemistry equivalent to chemistry 160.

Minimum Degree Requirements

Cell Biology 301-302, one course in each of the three -following areas: genetics, biochemistry (one year), and techniques course approved by the Studies Committee; a minimum of 11 additional hours of course work. Studies Committee will advise course selection. Dissertation research, minimum 20 credits. All students must demonstrate satisfactory progress: finish minimum course work within three years; finish cumulative exam within prescribed time limits; participate in seminar program.

The expected sequence for all first year students in the fall is CLBI 301, biochemistry,

CLBI 381, and CLBI 391 or 491; in the spring is CLBI 302, biochemistry, CLBI 381 and CLBI 391 or 491. Additional courses or substitutions are offered with flexibility, but must have permission of the Program Director.

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Chemistry (M. A. T.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

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Chemistry (M. S.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate field. Satisfactory scores on the Graduate Record Examination general (aptitude) section for those requesting financial assistance.

Requirements for Advancement to Candidacy for the Degree of Master of Science

The requirements for admission to candidacy for the Master of Science degree are: (1) proficiency in three areas of chemistry evidenced by the biannual qualifying examinations or completion of designated courses at this university; (2) one semester of residence; (3) at least 15 hours of formal course work including (a) six hours of graduate-level courses in the chemical field of specialization, (b) three hours of graduate-level chemistry courses not in the area of concentration, and (c) Chemistry 381 (Seminar), and (4) maintenance of an overall point-hour ratio of 3.00. Students studying in the Master of Science degree program are advised to take the cumulative examinations in their specialty.

Minimum Degree Requirements

The above prerequisites for admission to candidacy must be supplemented in either of the following two ways:

Plan A: Completion of 12 hours of Masters Thesis Research (Chemistry 391) and submission of a satisfactory thesis; (2) completion of at least 30 hours of graduate credit (courses and Masters Thesis Research); and (3) one additional hour of Chemistry 381 (Seminar).

Plan B: Completion of six hours of Independent Literature Research Project (Chemistry 395); (2) completion of at least 30 hours of graduate credit (courses and Literature Research Project); and (3) one additional hour of Chemistry 381 (Seminar).

M. S. students should decide at the beginning of their -program whether they will pursue Option A or Option B and inform the Department and Graduate College of their decisions.

Chemistry (M. S. T.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

An undergraduate major in an appropriate field. Satisfactory scores on the general (aptitude) Graduate Record Examination. Completion of at least one full year of teaching.

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Successful completion of Physics 128, Chemistry 141 and 162, and Mathematics 121, or their equivalents. (These courses may have been taken at the undergraduate level, as part of this graduate program, or credit may be obtained by transfer or examination.)

Minimum Degree Requirements for the Degree of Master of Science for Teachers

The above prerequisites for admission to candidacy must be supplemented by: (1) completion of 30 hours of credit, of which at least 18 must be in Physical Sciences Option (A) or (B) as described below. The remaining 12 credits may be chosen, with the consent of the Joint Advisory Committee, from appropriate courses above 100 in science, engineering, mathematics, and education (credit in education courses is limited to six semester hours); (2) successful completion of a comprehensive examination administered by the Joint Advisory Committee.

Physical Sciences Option (A): Nine semester hours of Physics numbered 128 and above, Chemistry 131 and six semester hours of Chemistry chosen from Chemistry 161, 231, 201, 264, and 241. This option is primarily for teachers of chemistry.

Physical Sciences Option (B): nine semester hours of Chemistry numbered 141 and above and nine hours of Physics in courses numbered above 200. This option is primarily for teachers of physics.

Chemistry (Ph. D.)

College: Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic spectrometry, the development and use of analyticalmethods using stable isotopically

labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

An undergraduate major in an appropriate field. Satisfactory scores on the Graduate Record Examination general (aptitude) section for those requesting financial assistance.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is expected that a student will ordinarily complete the following requirements for admission to candidacy by the end of the second year of residence: (1) at least 15 hours of research (Chemistry 491); (2) satisfactory performance in the cumulative examinations in the specialty field; (3) demonstration of basic competence in four fields of chemistry (analytical, inorganic, organic, and physical) through the biannual qualifying examinations or completion of prescribed courses at The University of Vermont; (4) three hours of teaching; (5) one year of residence; (6) the following courses are required: Chemistry 381 (two credits), three semester hours of credit of advanced level work in three of the following five areas: analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, and related science. The remainder of each student's program will be determined by a departmental studies committee on the basis of qualifying examination performance, background, and research interests. In the normal course of events a student should expect to devote much of the first year to formal course work; (7) maintenance of an overall point-hour ratio of 3.25.

Minimum Degree Requirements

In addition to the above requirements a student must: (1) complete a doctoral research project, write an acceptable dissertation, and defend it; (2) present a total of 75 hours of credit in course work and dissertation research, and (3) make an oral and written presentation of an original research proposal, Chemistry 388 (at least six months prior to the submission of the dissertation).

Civil and Environmental Engineering (M. S.)

College: Graduate College
Department(s): Civil and Environmental Engineering

Overview

Graduate programs in Civil and Environmental Engineering that lead to the Master of Science and Doctor of Philosophy degrees are offered. The curricular and research programs emphasize engineering related to environmental issues and intelligent transportation systems; in addition, geotechnical, and structural studies are also possible at the master's level.

Research includes: groundwater contamination, modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; indoor air pollution and related health effects; mathematical modeling of contaminant transport in the environment, chemical and mechanical processes in human tissues, and dynamic behavior of structures; intelligent transportation systems; and information technology applications in civil and environmental engineering.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree and the approval of this Department. Satisfactory scores on the Graduate Record Examination general (aptitude) section. International students whose native language is not English or who have not received their education in English are required to submit satisfactory results from the TOEFL examination. Completed applications are due February 1.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack a sufficiently strong engineering background.

Minimum Degree Requirements

The above requirements for advancement to candidacy must be supplemented in either of the two following ways:

Plan A: Completion of advanced courses in civil and environmental engineering, mathematics, and other approved disciplines and the completion of an acceptable master's thesis. At least 30 hours must be accumulated, six to nine of them in thesis research.

Plan B: Completion of 36 hours of advanced courses in civil and environmental engineering, mathematics, and other approved disciplines.

Students must declare which option they intend to pursue at the beginning of their program.

Civil and Environmental Engineering (Ph. D.)

College: Graduate College
Department(s): Civil and Environmental Engineering

Overview

Graduate programs in Civil and Environmental Engineering that lead to the Master of Science and Doctor of Philosophy degrees are offered. The curricular and research programs emphasize engineering related to environmental issues and intelligent transportation systems; in addition, geotechnical, and structural studies are also possible at the master's level.

Research includes: groundwater contamination, modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; indoor air pollution and related health effects; mathematical modeling of contaminant transport in the environment, chemical and mechanical processes in human tissues, and dynamic behavior of structures; intelligent transportation systems; and information technology applications in civil and environmental engineering.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

An undergraduate degree in an appropriate field of study and demonstrated academic performance as measured by grades and satisfactory scores on the Graduate Record Examination general (aptitude) section. Applicants whose native language is not English or who have not received their education in English must present satisfactory results from the TOEFL examination. Completed applications are due February 1.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is ordinarily expected that a student will complete the following requirements for advancement to candidacy prior to the end of the second year in the program: (1) one year of residency at UVM; (2) teaching experience in one course; (3) at least 12 credit hours of research; (4) at least 15 credit hours of course work at the graduate level acceptable to the student's Studies Committee; (5) satisfactory performance on a comprehensive examination that includes a written part and an oral part; and (6) satisfactory record of performance in courses and in teaching and research assignments.

Minimum Requirements for the Degree of Doctor of Philosophy

In addition to advancement to candidacy, the student must (1) present at least 75 credit hours in approved course work and research (including those required for advancement to candidacy), of which at least 35 credit hours are in research and six credit hours are in course work in disciplines ancillary to Civil and Environmental Engineering; and (2) write and successfully defend an acceptable dissertation

Communication Sciences (M. S.)

College: Graduate College
Department(s): Communication Sciences

Overview

The faculty does research in speech and language development and disorders, and sociolinguistics.

The Master of Science degree program in Communication Sciences and Disorders is accredited for speech-language pathology by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA). The Eleanor M. Luse Center for Communication: Speech, Language, and Hearing, which shares quarters with the Department and is a primary practicum site, holds accreditation from the Professional Services Board of ASHA in both Speech Pathology and Audiology. Students are required to fulfill academic requirements for the Certificate of Clinical Competence-Speech Language Pathology of the American Speech-Language-Hearing Association. All students are supervised by clinically certified members of the faculty of the Eleanor M. Luse Center and affiliated practicum sites.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Baccalaureate degree from an accredited institution; satisfactory performance on the general (aptitude) Graduate Record Examination. Completion of courses equivalent to CMSI 80 (Introduction to Linguistics), CMSI 90 (Phonetics), CMSI 94 (Development of Spoken Language), CMSI 101 (Speech Science) or a course in speech anatomy or physiology, CMSI 164 (Structure of the English Language) or a course in syntax or

morphology, CMSI 281 (Cognitive Neuroscience) or an equivalent neuroscience course and a course in statistics. In order to be accepted into the program, applicants must have completed or be currently enrolled in a sufficient number of prerequisite courses so that they will have no more than one outstanding course at the time of their admission. Students are also required to complete 25 observation hours obtained according to guidelines provided by the American Speech-Language-Hearing Association before they arrive on campus in order to facilitate their clinical training.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of the written comprehensive examinations. Students will not be admitted to candidacy if practicum grades are incomplete. Students may write the comprehensive examination only in or following that semester in which they will have completed 30 semester credits of graduate study and 300 hours of supervised clinical practicum and four credits in clinical study.

Minimum Degree Requirements

All students are required to complete 48 credit hours. These hours will include eleven required CMSI courses: 283 Swallowing Disorders, 284 Augmentative Communication, 310 Preparation and Management of Speech and Language Evaluation and Therapy, 380 Research Methods, 383 Seminar in Language/Learning Disabilities, 384 Articulation/phonologic Disorders, 385 Voice Disorders, 386 Adult Neuropathologies, 387 Language Disorders, 388 Stuttering, and 389 Aphasia. In addition, students are required to take a total of 6 credits of CMSI 291/292 Clinical Study.

Thesis Option: The student will complete 42 credit hours of graduate level courses and six additional credits for conducting the research leading to an M. S. thesis.

Nonthesis Option: All students choosing this option will complete the 48 credit hours required for the degree. Those students who choose a Research Presentation as their nonthesis option will complete at least 42 credit hours of graduate level courses and 6 additional credits (CMSI 392) for conducting research.

Community Development and Applied Economics (M. S.)

College: Graduate College
Department(s): Community Development and Applied Economics

Overview

Vision: CDAE is an international leader in sustainable resource use for dynamic community development.

Mission: The Department of Community Development and Applied Economics (CDAE) expands and promotes the use of economic, social, and environmental principles to develop sustainable communities locally and globally.

The Department offers a Master of Science Degree in CDAE. Research includes sustainable development, both domestic and abroad; applied demand analysis; and consumer and public policy issues.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

- GPA = 3.0 or equivalent from Bachelor's Degree
- GRE Total > 1350, with a minimum of 400 in each of the three areas: Verbal, Quantitative, and Analytical.
- TOEFL score > 550 written test or 213 computer test for international students whose native language is not English or who have not received their education in English.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack calculus, statistics and/or economics background.

Minimum Degree Requirements

The degree requires a total of 30 credit hours, of which 24 are from advanced courses in CDAE and other related fields plus six hours of thesis research. A written comprehensive examination and an oral defense of the thesis are also required. A student's thesis research is often an integral part of the faculty-led, ongoing research projects in the Department.

Students in the graduate program must have a 3.00 grade point average to remain a degree candidate. A student may be dismissed from the Graduate College if two or more grades below a "B" are received.

Core Course Requirements

Four core courses and graduate research seminars are required for each graduate student:

- CDAE 354 - Advanced Microeconomics: Theory of the consumer, theory of the firm, perfect and imperfect competition, welfare economics, uncertainty and selected topics in economic policy.
- CDAE 351 - Research Methods: Procedures of developing a research project, applications of economic theory and analytical tool in empirical economic research.
- One additional course in quantitative or qualitatitive analysis to be approved by the Studies Committee (e.g., Statistics 225: Applied Regression Analysis; Statistics 223: Applied Multivariate Analysis; EDFS 347: Qualitative Research Methods).
- One course in community development to be approved by the Studies Committee (e.g., CDAE 205: Rural Communities in Modern Society; CDAE 218: Community Organization and Development)
- CDAE 392 - Graduate Seminars. Each student is required to complete three hours of this course. Students should enroll for one hour in each of three semesters.

Computer Science (M. S.)

College: Graduate College
Department(s): Computer Science

Overview

Research areas include algorithm design and analysis, combinatorial design, computational biology, database design and management, data mining and knowledge discovery, discrete modeling, knowledge-based systems, neural networks, numerical methods, parallel and scientific computing, pattern recognition, programming languages, and software engineering.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree in computer science or a related discipline, and satisfactory scores on the Graduate Record Examination general (aptitude) section are required for admission. Students should also demonstrate that they have taken the following courses: two courses that treat systematic program development in a high level language (CS 21 and 26, or equivalent), one course in computer system organization and assembly language programming (CS 101, or equivalent); one course in either programming languages (e.g., CS 103) or data structures (e.g., CS 104), two courses in differential, integral, and multivariate calculus (Math 21, 22, or equivalent), one course in linear algebra (Math 124, or equivalent), and one course in applied probability (Stat 151, or equivalent).

International students whose native language is not English or who have not received their education in English are required to submit satisfactory results from the TOEFL

examination.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack a sufficiently strong computer science background.

Minimum Degree Requirements

Thesis Option: Thirty hours of which six to nine hours are thesis research, the remainder being course work to include at least one credit of CS 381.

Nonthesis Option: Thirty-three hours of course work, to include at least three credits of CS 381.

Students in both options must take or have completed the equivalent of the core sequence: Computer Science 201, 202, 222, 224, and 243; and must take additional graduate level courses in Computer Science, or related areas (not more than three credits of which may be independent study) with departmental permission, to fulfill the credit hour requirements. Students in both options must also pass a comprehensive exam.

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Counseling (M. S.)

College: Graduate College
Department(s): Integrated Professional Studies

Overview

The Counseling Program provides professional preparation for individuals who wish to work as counselors in schools, colleges; community mental health; social service agencies; or private practice. The program is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). It meets the requirements set by the State of Vermont Department of Education for preparing school counselors (K-12) for licensure in Vermont, and the academic requirements set by the Vermont Board of Allied Mental Health Practitioners for preparing clinical mental health counselors for licensure in Vermont.

To achieve professional competence, students are expected to become knowledgeable and skilled in the following areas: professional identity; social and cultural diversity; human growth and development; career development; helping relationships; group work; assessment; research and program evaluation. Supervised internship in an appropriate field setting is of major importance in the program.

The specific composition of students' programs, designed with the assistance of a faculty advisor, is based on University, College, and Program requirements as well as the individual student's background, current needs and desires, and future goals. Learning experiences consist of a balance between theory and supervised practice.

The Counseling Program offers three specialty tracks: school counseling, community counseling, and mental health counseling. Students may also select the dual option which includes preparation in two specialty tracks. Fifty-one hours of credit are required for completion of the school counseling track and the community counseling track. Sixty credit hours are required for the mental health counseling track. (Note: School counselor licensure in Vermont requires that the individual have at least a 30-credit-hour liberal arts concentration at the undergraduate level.) Successful completion of the program is based on the demonstration of appropriate knowledge, relevant skills, and personal characteristics, as well as the accumulation of credits.

In addition to the general application procedures, a resume and a group interview are required of each qualified applicant. For a more detailed description of the program, contact Department of Integrated Professional Studies, Counseling Program, 72 University Heights, Burlington, VT 05405-0972 (802-656-3888).

Please visit our website for Counseling Program information.

General Requirements

- Graduate (Master's)

Certificate of Advanced Study in Counseling (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Department(s): Integrated Professional Studies

Overview

A Certificate of Advanced Study (sixth-year certificate), a 24-30 graduate credit hour program beyond the master's degree, is offered in Counseling.

Individuals who have completed a master's degree in Counseling or a related field are eligible for admission to the C.A.S. program. The program is designed to further develop skills in counseling, consultation, and program planning and coordination. Inquiries about the Counseling program can be addressed to the Coordinator of the program in 72 University Heights, (802)656-3888.

Curriculum and Instruction (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Curriculum and Instruction master's program is designed to develop leadership in such educational settings as teaching, curriculum theory, curriculum development, and related areas of research for elementary and secondary public and private school settings. Areas of focus within the M. Ed., in addition to those described in detail below, include elementary or secondary education, information technology, and health/physical education. The program is also appropriate for those with instructional roles in human services agencies.

Programs are developed to provide a comprehensive background in fields basic to instruction and curriculum development as well as the application of that knowledge to a specialized field. They include courses aimed at the examination and improvement of instructional practices in elementary and secondary schools, and understanding of curriculum theory and the application of curriculum development. Opportunities for independent study and research are encouraged in all specializations.

Inquiries regarding these programs should be addressed to Barbara Kleptz.

Within Curriculum and Instruction, the Licensure Master of Education program for secondary teachers is designed for those students who aspire to earn both a master's degree and a license to teach in public secondary schools. The program particularly welcomes students from UVM and northeastern colleges and universities majoring in arts and sciences, agriculture and natural resources who have completed majors in humanities, the arts, social sciences, science and mathematics. Students will become licensed to teach in grades seven through twelve in one academic year and two summers. With additional study, an endorsement for the middle grades may be earned.

UVM students who have completed their third year of study for a bachelor's degree may apply to the Accelerated Licensure Master of Education program. These students, when accepted, may complete nine semester hours, six of which may be counted towards the

minimum requirements for the master's degree. Application forms and further information may be obtained from the Department of Education. Inquiries regarding this program should be addressed to Fran Keppler.

General Requirements

- Graduate (Master's)
- Education Department (Master of Education Degree)

Specific Requirements

Work at the graduate level draws upon other divisions of the University, thus enabling the College to develop strong programs of professional education which include academic offerings in the various teaching fields in elementary and secondary education. Degree concentrations, in addition to those listed below, can be developed on an interdisciplinary basis responding to student strengths and needs.

Courses in professional education include: 207, 209, 211, 217, 218, 225, 226, 227, 228, 241, 244, 245, 248, 256, 257, 259, 261, 270, 271, 321, 333, and 343.

Educational Leadership (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Educational Leadership program is designed to prepare leaders for public schools, educational and social agencies, and middle management positions in higher education.

Inquiries regarding this program should be addressed to Professor Judith A. Aiken.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

The M. Ed. program for licensure usually requires 30 to 36 credit hours of courses including seminars, internships, and research experiences.

The Certificate of Advanced Study (C.A.S.) Program requires 30 credit hours of study beyond the M. Ed. requirements.

Courses with an administration/planning focus include: 264, 266, 268, 280, 332, 333, 334, 335, 336, 337, 353, 354, 355, 356, and 358.

Certificate of Advanced Study in Educational Leadership (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Department(s): Education

Overview

A Certificate of Advanced Study (sixth-year certificate), a 30- to 36-graduate-credit hour program beyond the master's degree, is offered in Educational Leadership.

The program is designed to prepare administrators and planners for public schools, educational and social agencies, and middle management positions in higher education.

Educational Leadership and Policy Studies (Ed. D.)

College: Graduate College
Department(s): Education

Overview

A Doctor of Education (Ed. D.) degree is offered in Educational Leadership and Policy Studies. This is an applied research based program for professionals serving in educational management positions in schools and school-related organizations; e.g. state departments of education, professional associations, higher education, and human service agencies.
Program emphases include: the design and implementation of educational research; policy studies; adaptation of theoretical constructs and models related to leadership and change in educational and social service settings; knowledge and skills in interorganizational relationships; budget and strategic planning and program evaluation.

This program has been designed to respond to the expanding demands placed on leaders in educational and human service organizations where they are increasingly expected to design and supervise local research and varied evaluative studies; interpret and apply recent national research findings; analyze and apply governmental regulations and court decisions; develop organizational responses to emerging social expectations; organize and lead staff development programs; understand and apply broad-based economic principles and social and fiscal policy; develop and manage budgets; assess and respond to the psychological needs of educational consumers; employ effective interpersonal management and decision-making skills.

Specific Requirements

Prerequisites for Admission to Graduate Studies

Applicants must possess a master's degree or equivalent, from an accredited institution and a cumulative grade-point average of 3.00 for previous graduate study. Other requirements include a representative scholarly writing sample and a resume. Students applying for graduate fellowships and/or assistantships are required to demonstrate satisfactory scores on the Graduate Record Examination (GRE).

Students admitted to graduate studies must complete successfully a core of study consisting of courses in research, foundational, and policy studies, and organizational change and leadership. Upon such completion and submission of a qualifying paper, students will be considered for candidacy for the degree. Students must also pass a written comprehensive examination prior to the award of the degree of Doctor of Education.

Prerequisites for Acceptance to Candidacy for the Degree of Doctor of Education

Satisfactory completion of all core requirements and the qualifying paper will satisfy the prerequisites for acceptance to candidacy.

Requirements for the degree of Doctor of Education include a minimum of 56 semester credit hours of doctoral studies completed at UVM following formal admission to the program with the following distribution:

- 15 semester hours in the core courses (minimum)
- 21 semester hours general distribution (minimum)
- Dissertation Research - 20 semester hours (minimum).

All course credit hours beyond the core are distributed in educational leadership, research, critical perspectives, organizational change and selected specialty content areas.

Transfer of Credit

A maximum of nine (9) semester hours may be accepted in transfer from an accredited graduate program. Transfer credit may be completed prior to admission to the Doctor of Education Program provided that the credit is approved by the student's Studies Committee and that the credit conforms to all other Graduate College requirements.

Residency Requirement

The residency requirement for the Doctor of Education (Ed. D.) degree consists of the following:

1. Completion of the five core courses (15 semester hours), and
2. Completion of 12 semester credit hours of coursework during two contiguous semesters beyond the core.

For further requirements concerning Studies Committees, Research and Dissertation, and the Dissertation Defense Examination Committee, refer to General Requirements for the Degree of Doctor of Philosophy.

Application deadline is May 1.

Detailed information on the course of study is available from Program Director, Susan

Hasazi, Professor, The University of Vermont, Office of the Dean, College of Education and Social Services, 311 Waterman Bldg., Burlington, VT 05405-0160.

Educational Studies (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Foundations of Education faculty offer graduate courses in foundations of education and a master's degree in Educational Studies. The degree program is a research and scholarship based program for students from a diversity of educational fields including instruction, administration, policymaking and analysis, social services, state departments of education, allied educational professions (counselors, health care personnel, journalists), school boards, and international education. Students study past, present, and future educational problems and practices from the perspectives of the several disciplines; and they make cross disciplinary connections to discover the themes common to all the disciplines as well as to the theory and practice of education. Students study the process of making professional judgments about educational practice that include ethical, political, historical, literary, cultural, and social considerations. They strive to understand more profoundly not only the "what" and the "how" of the education professions, but the "why" as well.

Students in this program learn how to become competent scholars and researchers in the field of education by knowing the pertinent literature, staying abreast of the latest policy developments in the field, and communicating this information effectively to various audiences through competent, discipline-based research, publication, and teaching. Students also strive to acquire the values, understandings, and skills necessary to advance a conception of the good society which includes respect for human dignity, a belief in human rights, and an ethic of service to others.

Inquiries regarding this program should be addressed to Professor David Shiman.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

The master's degree in Educational Studies is tailored to the intellectual and professional interests of the student. Students plan their course of study with a faculty advisor in the program. Students are urged to elect courses and organize their research around problems of interest to them.

Courses applicable to the Educational Studies Program include: 204, 205, 206, 209, 255, 302, 303, 314, 322, 347, 352, and 354.

Electrical Engineering (M. S.)

College: Graduate College
Department(s): Electrical andComputer Engineering Department

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates normally have obtained the Bachelor of Science degree in Electrical Engineering prior to application for admission but other applicants are encouraged to consider the program if they have extensive background in mathematics and the basic sciences. In such cases, it may be necessary for a student to complete the entrance qualifications without receiving credit toward graduate studies. The general requirements for admission as outlined under the "Regulations of the Graduate College" must be met. Areas of research expertise are control systems, biomedical engineering, test engineering, machine vision, mechatronics, computer engineering, solid state physical electronics, electromagnetics, information processing, communication theory, semiconductor materials, devices and integrated circuits (VLSI).

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Science

An accredited bachelor's degree in an appropriate field.

Requirements for Advancement to candidacy for the Degree of Master of Science

An accredited bachelor's degree in electrical engineering or equivalent education.

Minimum Degree Requirements

Advanced courses in electrical engineering, physics, computer science, and mathematics (18 to 24) with at least 15 credit hours appropriately distributed in approved areas of study in the Electrical and Computer Engineering Department thesis research (six to 12 hours).

Although a thesis is normally required in the program leading to the M. S. in Electrical Engineering, the thesis may be waived with departmental approval, in favor of additional courses. In such cases, the student will be expected to have considerable professional experience, or to submit high quality technical reports as evidence of professional maturity.

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Electrical Engineering (Ph. D.)

College: Graduate College
Department(s): Electrical and Computer Engineering

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates normally have obtained the Bachelor of Science degree in Electrical Engineering prior to application for admission but other applicants are encouraged to consider the program if they have extensive background in mathematics and the basic sciences. In such cases, it may be necessary for a student to complete the entrance qualifications without receiving credit toward graduate studies. The general requirements for admission as outlined under the Regulations of the Graduate College must be met. Areas of research expertise are control systems, biomedical engineering, test engineering, computer engineering, solid state physical electronics, electro-optics, information processing, communication-theory, semiconductor materials, devices and integrated-circuits (VLSI).

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A master's degree in electrical engineering or the equivalent.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of Ph. D. comprehensive examinations.

The majority of students will have completed a core program comprising graduate courses before taking the comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

At least 45 credit hours in courses and seminars and 20 credit hours in dissertation. Four courses are to be chosen from a major area of concentration and two from a minor. The requirements specified under the Policies of the Graduate College must also be met. A total of 75 credit hours is required.

English (M. A.)

College: Graduate College
Department(s): English

Overview

The research interests of the faculty of the Department of English and library resources permit graduate students to undertake thesis subjects in virtually all fields of the discipline.

General Requirements:

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

An undergraduate major in English or its equivalent; satisfactory scores on the general (aptitude) Graduate Record Examinations; demonstration of proficiency in writing by a detailed statement concerning the purpose in pursuing graduate study in English. If admitted conditionally the student must complete satisfactorily a stipulated number of hours (usually six) of graduate level work.

Requirements for Advancement to Candidacy for the Degree of Master of Arts

Satisfactory completion of 18 hours of appropriate credit.

Minimum Degree Requirements for the Degree of Master of Arts

Thesis Option: Completion of 24 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours (at least three of these nine in English or Humanities, at most six in related fields). Candidates must submit a customized reading list, pass a comprehensive exam based on it, and complete six additional hours by writing an acceptable thesis and defending it successfully

(ENG 391).

Nonthesis Option: Completion of 30 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least fifteen additional hours (at least nine of these in English or Humanities, at most six in related fields). Candidates must pass a three-part comprehensive examination based on set Departmental reading lists, and must receive a grade of B+ or better on two seminar papers submitted to an ad hoc faculty Reading Committee (ENG 392).

Both Options: All M. A. candidates in English must demonstrate a reading knowledge of a foreign language by examination or by advanced coursework.

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English (M. A. T.)

College: Graduate College
Department(s): English

Overview

The research interests of the faculty of the Department of English and library resources permit graduate students to undertake thesis subjects in virtually all fields of the discipline.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

See General Requirements

Minimum Degree Requirements for the Degree of Master of Arts in Teaching

Thirty credit hours of course work; 24 in English (including five of the following six: English 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours of course work in English or Humanities – up to six of these in a related field), plus a comprehensive examination in English. Additional requirements in Education will differ for those already licensed to teach (at least 6 credit hours) and for those not licensed to teach (up to 33 credit hours). Completion of 24 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours (at least three of these nine in English or Humanities, at most six in related fields). Candidates must submit a customized reading list, pass a comprehensive exam based on it, and complete six additional hours by writing an acceptable thesis and defending it successfully (ENG 391).

Forestry (M. S.)

College: Graduate College
Department(s): School of Natural Resources

Overview

The goal of this Master of Science Program is to provide graduate students with advanced training in forestry science and the opportunity to further their knowledge and proficiency in some specialized aspect of forestry. The faculty has research interests which span the broad areas of biometry, ecology, genetics, tree improvement, management, pathology, physiological ecology, policy and administration, remote sensing, and silviculture.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate degree in forestry or in a discipline related to the intended specific field of study. Satisfactory scores on the general (aptitude) portion of the Graduate Record Examination.

Minimum Degree Requirements

The Forestry degree has two options.

Plan A (Thesis Option): Requires 15 to 24 credit hours of advanced forestry and related courses, including NR 378, a comprehensive examination, six to 15 hours of thesis research, and an oral defense of the thesis. A student's thesis research is often an integral part of ongoing research projects.

Plan B (Project Option): Requires at least 24 credit hours of advanced forestry and related

courses, including NR 378, a comprehensive examination, three to six hours for a project pertinent to the student's area of specialization, and an oral defense of the project. The project is typically a forest resources management plan, a major paper, or a series of papers.

French (M. A.)

College: Graduate College
Department(s): Romance Languages

Overview

Opportunities for thesis research in the literatures and cultures of France, Québec, and other regions of the Francophone world.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

An undergraduate major in French or equivalent. Satisfactory scores on the general (aptitude) Graduate Record -Examinations.

Minimum Degree Requirements

Master of Arts

Twenty-four credit hours of course work, including the Graduate Humanities Seminar and EDSC 259 (Teaching Foreign Language in the Schools). In addition, six hours of directed research, with the following options:

Plan A: Thesis research (six hours)

Plan B: Two research papers (six hours)

Candidates must pass an examination in four areas of their study.

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French (M. A. T.)

College: Graduate College
Department(s): Romance Languages

Overview

Opportunities for thesis research in the literatures and cultures of France,Québec, and other regions of the Francophone world.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Arts in Teaching

An undergraduate major in French or equivalent. Satisfactory scores on the general (aptitude) Graduate Record -Examinations.

Minimum Degree Requirements

Master of Arts in Teaching

If you are already a licensed teacher: Twenty-one credit hours in French (including the Graduate Humanities Seminar) and a comprehensive examination, plus six credit hours in education courses.

If you do not presently have licensure: Twenty-one credit hours in French (including a 3-credit interdisciplinary Graduate Humanities Seminar) and a comprehensive examination. In addition, thirty hours of professional education course work, including a year's internship in a Professional Development School, production of a Licensure Portfolio, and Teacher Licensure.

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Geography (M. A.)

College: Graduate College
Department(s): Geography

Overview

Faculty research interests include most systematic aspects of geography including social, urban, political, economic, historical and physical geography. Technique interests are in remote sensing, geographic information systems and quantitative methods. Regional interests and field experiences are in Africa, Europe, Canada and the US.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

Evidence of a strong interest in geography. Satisfactory scores on the general (verbal and quantitative) portion of the Graduate Record Examination.

Requirements for Advancement to Candidacy for the Degree of Master of Arts

Twelve semester hours or its equivalent in geography and supporting courses in related fields or demonstrated proficiency in geography which would be assurance of success in graduate study.

Minimum Degree Requirements

Twenty-one hours in geography courses including 203, 204, or a reading knowledge of a foreign language, and six hours of thesis research (391); nine additional hours in geography or a related field. For additional information, please write to the Graduate

Program Coordinator, Department of Geography.

Geography (M. A. T.)

College: Graduate College
Department(s): Geography

Overview

Faculty research interests include most systematic aspects of geography including social, urban, political, economic, historical and physical geography. Technique interests are in remote sensing, geographic information systems and quantitative methods. Regional interests and field experiences are in Africa, Europe, Canada and the US.

General Requirements

- Graduate (Master's)

Geology (M. A. T.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

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Geology (M. S.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate field: 12 semester hours in geology; satisfactory scores on the general (aptitude) Graduate Record Examination. Year courses in chemistry, physics or biology, and calculus or in an approved ancillary science strongly recommended.

Requirements for Advancement to candidacy for the Degree of Master of Science

Satisfactory completion of one year of graduate study plus a comprehensive examination.

Minimum Degree Requirements for the Degree of Master ofScience

Thesis and advanced courses in geology must total at least 30 semester hours, including at least one 300-level course. Advanced courses in related sciences are encouraged and may be substituted for some selected geology courses on approval by the departmental advisor. All students must complete successfully a course in field geology before graduation. This can be satisfied by Geology 201, or a comparable course at another institution, or recognized experience with a state survey, U.S. Geological Survey, an oceanographic institute, a geolimnological group or industry. Satisfactory completion will be determined by the DepartmentalStudies Committee.

Geology (M. S. T.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

1. A bachelor's degree from an accredited institution;
2. Certification as a teacher of a physical or natural science;
3. Satisfactory scores on the Graduate Record Examination (general portion).

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Satisfactory completion of one year of graduate study plus departmental recommendation.

Minimum Requirements for the Degree of Master of Science in Teaching (Geology)

Thirty hours of course work that will strengthen the student's background in earth science. Up to 12 hours of 100-level courses may be chosen if applicable. Course work may be chosen from supporting subject areas as well as from geology. Each student, in conference with an advisor, will develop a program suited to his/her needs and background. No thesis is required; however, each degree recipient must complete a general written or oral examination.

German (M. A.)

College: Graduate College
Department(s): German and Russian

Overview

Current research interests include GDR literature; history of the German language; medieval literature; literature of the 18th, 19th, and 20th centuries; and folklore.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

An undergraduate major in German, including a year course in literature and a year course in advanced composition and conversation or the equivalent. Satisfactory scores on the Graduate Record Examinations general (aptitude) section.

Minimum Degree Requirements

Thirty hours of graduate level courses including German 281, 282 or 295, 296; additional courses in German, which may include two advanced courses in a related field (six hours), thesis research (six to 12 hours).

The department also offers a program leading to the degree of Master of Arts in Teaching.

German (M. A. T.)

College: Graduate College
Department(s): German and Russian

Overview

Current research interests include GDR literature; history of the German language; medieval literature; literature of the 18th, 19th, and 20th centuries; and folklore.

General Requirements

- Graduate (Master's)

Specific Requirements

Satisfactory scores on the Graduate Record Examination general (aptitude) section are prerequisite to acceptance to candidacy for this degree.

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Greek and Latin (M. A.)

College: Graduate College
Department(s): Department of Classics

Overview

Current research interests include Homer; Mycenaean and Homeric Greece; Greek and Latin lyric and elegiac poetry; Greek drama; the Attic orators; ancient literary criticism; Greek and Roman philosophy and intellectual History; Greek and Roman historiography; Greek and Latin Prose; Cicero; Virgil; Latin epic; Petronius, satire; Greek and Roman technological authors; Roman history; Roman Imperial Families; Mythology; Archaeology; Medieval studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies in Greek and Latin for the Degree of Master of Arts

An undergraduate major or minor or the equivalent; a reading knowledge of a modern foreign language, usually French, German, or Italian.

Minimum Degree Requirements

Eighteen hours of advanced courses in Greek and Latin, six hours of which must be 381; six additional hours in Greek and Latin, History, or Philosophy; thesis research (normally six hours). Comprehensive examinations in Greek and Latin translation, at least one modern foreign language, Greek and Roman history, and literature and philology are required. In addition to course work, students will have a reading list of authors in Greek and Latin.

Those who expect the department's recommendation to go on for a Ph. D. elsewhere

must show competence in both German and French by the end of their first year of graduate study.

Greek or Latin (M. A. T.)

College: Graduate College
Department(s): Department of Classics

Overview

Current research interests include Homer; Mycenaean and Homeric Greece; Greek and Latin lyric and elegiac poetry; Greek drama; the Attic orators; ancient literary criticism; Greek and Roman philosophy and intellectual History; Greek and Roman historiography; Greek and Latin Prose; Cicero; Virgil; Latin epic; Petronius, satire; Greek and Roman technological authors; Roman history; Roman Imperial Families; Mythology; Archaeology; Medieval studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies in Latin and/or Greek for the Degree of Master of Arts in Teaching

A program in teaching of Latin and/or Greek leading to the degree of Master of Arts in Teaching and to licensure, is also offered in conjunction with the College of Education and Social Services. Satisfactory scores on the general (aptitude) Graduate Record Examination are prerequisite for acceptance to candidacy for this degree.

Higher Education and Student Affairs Administration (M. Ed.)

College: Graduate College
Department(s): Integrated and Professional Studies

Overview

The graduate program in Higher Education and Student Affairs Administration educates professionals who apply human development, organizational, and administrative principles to their work with students in higher education. Graduates of the master's degree program possess knowledge in administration and planning, organizational development, higher education policy and practice, and student affairs professional principles. Graduates further the goals of colleges and universities by serving as policy makers, student affairs educators, student service advisors, and administrators.

Pluralism is a primary curricular foundation of the Higher Education and Student Affairs program. Pluralism, a reality of American life and U.S. higher education, is expressed through course and experiential opportunities emphasizing the diversity of people, experiences, perspectives, and structures. The curriculum, including courses, practica internships, graduate assistantships, and volunteer opportunities with the University and local institutions integrate conceptual theory with administrative practice. Students gain an understanding of the student affairs profession, multiculturalism, college student development, history of and trends within U.S. higher education, organizational theory, and professional ethics.

An array of 60 practicum internships and 35 graduate assistantship (e.g., clinical internship) placements help students integrate their conceptual knowledge with student affairs and higher education practice. Assistantships are housed in University offices such as alumni affairs, the provost's office, admissions, judicial affairs, development, and residential life. The assistantship application process is separate from the admissions process but interviews for both are held concurrently in March of each year. Practica experiences (three selections during the course of the degree) are available within University and local college offices.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

Students are urged to hold either a full-time position in college and/or student affairs administration, if a part-time student, or a 20 hour per week graduate assistantship, if a full-time student. Assistantship stipends cover tuition for 20 credit hours of study each year and a bimonthly stipend.

Courses required for the M. Ed. degree in Higher Education and Student Affairs (EDHI) include: 297, 360, 361, 362, 375, 380, 383, 385, and 395. Forty credit hours are required for the M. Ed. degree.

There is also a Higher Education concentration in the Educational Leadership and Policy Studies doctoral degree (Ed. D.) that requires core courses (see Educational Leadership Ed. D.) and a program of studies focusing on the administration in higher education.

(Please visit our website for HESA program information at http://www.uvm.edu/~uvmhesa/.)

Inquiries regarding this program should be addressed to Professor Kathleen Manning, 72 University Heights, University of Vermont, Burlington, Vermont 05405.

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Historic Preservation (M. S.)

College: Graduate College
Department(s): Historic Preservation

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science in Historic Preservation

(1) A baccalaureate degree with a major in a preservation-related field such as architecture, architectural history, history, planning, business administration, economics, engineering, interior design, law, or environmental studies. (2) Applicants must take the general (aptitude) portion of the Graduate Record Examination and submit a sample independent research paper, design project, or other evidence of preservation-related professional ability. Almost all successful applicants have spent at least a year in a preservation-related job or volunteer work after the baccalaureate.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Admission to this highly competitive program constitutes acceptance to candidacy as well.

Minimum Degree Requirements for the Master of Science

(1) Thirty-six credit hours of course work. A minimum of 33 credit hours (including an internship or thesis) must be taken in historic preservation. (2) A written comprehensive examination given during the third semester. (3) An internship in a preservation agency, or a written thesis. This may be undertaken upon completion of two or three semesters of concentrated course work. At the conclusion of the internship, an oral presentation describing work accomplished will be given before a jury of practicing professionals for evaluation. (4) Historic Preservation 200, 201, 204, 205, 206, 301, 302, 306, 307 and 303

or 391 are required courses for the degree. Students also take one elective unless they elect to do a thesis instead of an internship. For the thesis option, a total of six credit hours is required for HP391.

History (M. A.)

College: Graduate College
Department(s): History

Overview

The History Department offers a comprehensive program of courses in the history of the Western Hemisphere, European history, and non-Western history.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

Applicants should have an undergraduate major in history, or in a related field of the social sciences or humanities with the equivalent of a minor in history. They must take the Graduate Record Examination and submit with the application a sample of writing, such as a research paper done in the course of undergraduate study.

Requirements for Advancement to Candidacy for the Degree of Masters of Arts

Each student's Studies Committee will certify admission to candidacy when it has approved a course of study (which may include remedial work such as courses in appropriate foreign languages) and a tentative thesis topic.

Minimum Degree Requirements for the Degree of Master of Arts

Plan A: (Non-thesis) Thirty hours of coursework in history, at least fifteen of which must be earned in seminar courses.

Plan B: (Thesis) Thirty hours of course work in history, including six hours of thesis research. The thesis must be successfully defended in an oral examination.

Each plan requires that the student pass a comprehensive exam (oral or written) in two areas of historical knowledge.

History (M. A. T.)

College: Graduate College
Department(s): History

Overview

The History Department offers a comprehensive program of courses in the history of the Western Hemisphere, European history, and non-Western history.

General Requirements

- Graduate (Master's)

Accelerated Master's Program in History (B. A. / M. A.)

College: Graduate College
Department(s): History

Overview

History majors in their third year of undergraduate standing at UVM may apply to the department for the AMP in history. Students accepted into the program will during their senior year work simultaneously on their B. A. and M. A. requirements, toward which they may count up to six concurrent credits. Application forms and further information may be obtained from the Director of Graduate Studies, Department of History.

Interdisciplinary (M. Ed.)

College: Graduate College
Department(s): Integrated and Professional Studies, Education

Overview

This degree program is for students who wish to pursue an individually designed, integrated program of study. The program draws primarily from graduate courses in Educational Leadership, Counseling, Higher Education and Student Affairs Administration, and Educational Studies but may include courses from other departments within the College and the University.

Applicants should have a clear understanding of how the Interdisciplinary Program will serve their career goals. For this reason, major emphasis in admissions is placed upon the applicant's Statement of Purpose. Applicants are strongly encouraged to contact the Department of Integrated Professional Studies, 72 University Heights, prior to making application for admission. Detailed information about the program and admissions criteria will be supplied upon request.

Inquiries regarding this program should be addressed to Professor Robert Nash.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

A minimum of 36 credit hours is required for completion of the program. The program is ideally suited for persons whose personal and professional development requires a combination of course work not readily available in other graduate programs, or for individuals who plan to assume new or emerging roles in the fields of education or social and human services.

Certificate of Advanced Study in Integrated Studies (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Department(s): Education, Integrated Professional Studies

Overview

A Certificate of Advanced Study (sixth-year certificate), a 30- to 36-graduate credit hour program beyond the master's degree, is offered in Integrated Studies.

The program is designed for students who have completed their master's degree and are interested in exploring a self-designed, integrated program of study drawing upon graduate level experiences currently provided by departments of Integrated Professional Studies and Education of the College of Education and Social Services. The program does not lead to any type of state licensure.

Materials Science (Multidisciplinary) (M. S.)

College: Graduate College
Department(s): Materials Science Program

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree in physics, chemistry, metallurgy, engineering, materials science, or mathematics. Applicants with other backgrounds will be evaluated individually.

Minimum Degree Requirements

The above requirements for admission must be supplemented in either of the following ways:

Plan A With Thesis: 30 graduate credit hours of an approved program of study including at least 18 credit hours of course work; completion of at least one three-credit hour course in each of the following categories; solid state theory, quantum mechanics, applied mathematics, and materials properties of solids; satisfactory completion of a comprehensive examination, and satisfactory completion of an M. S. thesis including its defense at an oral examination.

Plan B Without Thesis: 30 credit hours of an approved program of study; completion of at least one three-credit hour course in each of the following categories: solid state theory, quantum mechanics, applied mathematics, and materials properties of solids, and satisfactory completion of a comprehensive examination.

Materials Science (Multidisciplinary) (Ph.D)

College: Graduate College
Department(s): Materials Science Program

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Doctor of Philosophy

An accredited master's degree (or equivalent) in physics, chemistry, metallurgy, engineering, mathematics, or materials science.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of a Ph. D. comprehensive examination in Materials Science and demonstrated competence in computer programming. The comprehensive examination includes the areas of quantum mechanics, solid state theory, applied mathematics, thermodynamics, and materials properties of solids.

Minimum Degree Requirements

In addition to the above, the following are required:

A minimum of 75 graduate credit hours including a minimum of 20 in dissertation research. An overall grade-point average in graduate courses of 3.25 or better. Completion of at least one three-credit hour course in each of the following categories: solid state theory, quantum mechanics, applied mathematics, thermodynamics and kinetics, and one course in each of two categories dealing with materials properties of solids. Satisfactory completion of a Ph.D dissertation including its defense at an oral examination.

Accelerated Masters Program in Materials Science

College: Graduate College
Department(s): Materials Science Program

Overview

The program offers an Accelerated Masters Program leading to both B. S. and M. S. degrees in five years. The program is open to undergraduate chemistry, physics, electrical engineering, and mechanical engineering majors. Interested students should contact the Materials Science Director by the beginning of their junior year.

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Mathematical Sciences (Ph. D.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either pure or applied mathematics, a bachelor's degree with a major in mathematics or a closely related discipline, and satisfactory scores on both the general and subject (mathematics) sections of the Graduate Record Examination.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of four qualifying examinations, three written and one oral, in one of the areas of concentration.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Each student must complete the four qualifying exams and an approved plan of study including at least 75 credit hours in course work or dissertation research. The student is required to write a doctoral dissertation and pass a final oral defense of that dissertation. The Department requires two semesters of college-teaching experience. Students are expected to demonstrate appropriate proficiency in the use of computers. There is no formal language requirement.

Mathematics (M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

The department offers an Accelerated Master's Program (AMP) leading to a B. S. and M. S. degree in five years. Interested students should contact the department by the end of their sophomore year.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either pure or applied mathematics, a bachelor's degree with a major in mathematics or a closely related discipline, and satisfactory scores on both the general and subject (mathematics) sections

of the Graduate Record Examination.

Minimum Degree Requirements for the Degree of Master ofScience

Each student must complete one of the following options:

a. Twenty-four semester hours of acceptable graduate credits in advanced mathematics courses; six semester hours of thesis research culminating in a master's thesis, or

b. Thirty semester hours of acceptable graduate credits in advanced mathematics courses; no thesis required.

Under either option students must take, or acquire the knowledge of the content in, the courses Math 331 and 333, and must satisfactorily complete at least four 300-level mathematics courses and the seminar 382. In both options students must select a major concentration from among the areas: Analysis, Algebra, Applied Mathematics, or Discrete Mathematics. The concentration shall consist of at least nine approved hours in advanced mathematics courses in the respective area, three of which must be at the 300-level; students in option b. may count the six hours of thesis credit towards these nine hours. In both options students must also select a minor concentration consisting of at least three approved hours of advanced mathematics complementary to the major area. With approval of the student's advisor up to six hours of courses outside mathematics may be used to fulfill the major, minor, or degree requirements.

Mathematics (M. A. T.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for the Degree of Master of Arts in Teaching

Thirty hours of course work, including at least 21 in mathematics and six in education. Students must be certified to teach. With the approval of their advisor, students may choose courses from the 100-level or from closely related fields. The student must pass an oral comprehensive examination in mathematics and additional required examinations in education. No thesis is required.

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Mathematics (M. S. T.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and Advancement to Candidacy for the Degree of Master of Science for Teachers

A bachelor's degree from an accredited institution and certification as a teacher of mathematics. Experience teaching secondary school mathematics. Satisfactory scores on the Graduate Record Examination.

Minimum Degree Requirements for the Degree of Master of Science for Teachers

Thirty hours of course work in mathematics. With the approval of their advisor, students may choose courses from the 100-level or from closely related fields. The student must pass an oral comprehensive examination. No thesis is required.

Accelerated Master's Program in Mathematics, Statistics, and Biostatistics (B. S./M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

Accelerated master's programs in Mathematics, Statistics, and Biostatistics are also offered. These programs allow students to earn both their B. S. and M. S. degrees in as little as five years.

A master's degree in Statistics or in Biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the MS could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently towards the MS degree requirements. Students should discuss this possibility with the Statistics Program Director as soon as they think they may be interested in this program.

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Mechanical Engineering (M. S.)

College: Graduate College
Department(s): MechanicalEngineering

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encourages to apply. In such cases, it is typically necessary for students to complete some preparatory course work in addition to the graduate studies. In all courses, general requirements for admission, as outlined under the Regulations of the Graduate College, must be met. Areas of research interest include: applied mechanics, biomechanics, fluid mechanics, fuel science, heat transfer, mechatronics, microelectromechanical systems (MEMS), precision engineering, smart structures, tissue engineering, vibrations.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Science

An accredited bachelor's degree in Mechanical Engineering or equivalent is the typical requirement; however, students holding a bachelor's degree in a related engineering or scientific field may also qualify for admission.

Requirements for Advancement to Candidacy for the Degree of Master of Science

A cumulative grade point average of 3.0 or better for the first nine credit hours of graduate course work.

Minimum Degree Requirements for the Degree of Master ofScience

The Department of Mechanical Engineering offers both thesis and non-thesis options for the master's degree. Both options require the completion of advanced courses in mechanical engineering, mathematics, and other approved courses and research (for thesis students) totaling at least 30 credits. Graduate students. Graduate students receiving financial support via teaching or research fellowships are required to select the thesis option. Part-time students typically select the non-thesis option but may choose the thesis option if they prefer. Students normally decide on which option they intend to pursue at the beginning of their program.

All students are required to complete a prescribed set of fifteen core course credits which cover areas of advanced engineering mathematics, mechanics, and numerical methods. In addition, all students must select an area of specialization for their degree. Currently, the department offers specialization tracks in (1) solid mechanics and design; (2) thermo-fluid mechanics; and (3) biomechanics. Further details on the core course requirements and the areas of specialization can be obtained from the Department of Mechanical Engineering or its website.

Thesis Option: In addition to core courses, students selecting the thesis option must complete a minimum of six credits of course work in their chosen area of specialization. Students must also complete six to nine hours of independent thesis research; those opting for a six-credit thesis must complete an additional three credits of approved course work.

Non-Thesis Option: Students selecting the non-thesis option must complete an additional fifteen credits of course work beyond the core credits in lieu of a thesis. Of the additional course work, a minimum of nine credits must be in a chosen area of specialization.

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Mechanical Engineering (Ph. D.)

College: Graduate College
Department(s): MechanicalEngineering Department

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encourages to apply. In such cases, it is typically necessary for students to complete some preparatory course work in addition to the graduate studies. In all courses, general requirements for admission, as outlined under the Regulations of the Graduate College, must be met. Areas of research interest include: applied mechanics, biomechanics, fluid mechanics, fuel science, heat transfer, mechatronics, microelectromechanical systems (MEMS), precision engineering, smart structures, tissue engineering, vibrations.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Doctor of Philosophy

An accredited bachelor's or master's degree in mechanical engineering or closely related discipline is required.

Requirements for Advancement to Candidacy for the Degreeof Doctor of Philosophy

Successful completion of the Ph. D. comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor ofPhilosophy

The degree of Doctor of Philosophy requires of candidates a minimum of 75 credit hours

to be earned in course work and in dissertation research. The 75 credit hours must be distributed in such a way that at least 40 credit hours must be earned in courses and seminars and a minimum of 25 credit hours must be earned in dissertation research. All Ph. D. candidates complete a doctoral thesis consisting of original research and of sufficient quality to merit publication in an archival journal.

Accelerated Master's Program in Mechanical Engineering (B. S./M. S.)

College: Graduate College
Department(s): MechanicalEngineering

Overview

An Accelerated Masters Program is available for undergraduate students at the University of Vermont currently majoring in Mechanical Engineering. Further details can be obtained from the Department of Mechanical Engineering, 201 Votey Building, (802) 656-3320.

Concurrent Degree Programs: M.D./M. S. AND M.D./Ph. D.

College: Graduate College

Overview

Postsophomore students in the Doctor of Medicine program who have been accepted into a Graduate College program are permitted to apply credit from appropriate medical courses in which a letter grade of A, B, or C is earned toward a M. S. or a Ph. D. degree. Such students are enrolled in the Graduate College for one or more years to pursue research and enroll in those courses that normally are not included within their medical program of study. While students are working toward both the M.D. and M. S. or Ph. D., completion of each degree need not occur at the same time.

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Microbiology and Molecular Genetics (M. S.)

College: Graduate College, Medicine
Department(s): Microbiology and Molecular Genetics

Overview

Research activities include: Mutagenic mechanisms in human populations; the enzymology and regulation of cellular DNA replication and repair; molecular mechanisms of genetic recombination; structural biology of proteins and nucleic acids; cell cycle control of transcription and DNA replication in eukaryotes; regulation and enzymology of RNA polymerase II transcription; enzymology and atomic structure of mammalian cell mRNA processing factors; molecular basis of tRNA recognition; ribozyme structure and enzymology; signaling networks that regulate morphogenesis in yeast; isolation and regulation of mating type genes in Schizophyllum; plant growth and development; molecular mechanisms of bacterial adhesion and pathogenesis; molecular and cellular mechanisms of host-pathogen interactions; and bacterial transformations of organic pollutants.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Master of Science Degree

MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M. S. program should contact the individual faculty member with whom they wish to study. One year of biological science; one year physics (equivalent of Physics 11 and 12); one year of inorganic chemistry and one year of organic chemistry (equivalent of Chemistry 1, 2, 141 and 142), mathematics through calculus (equivalent of Math 19 and 20); additional courses required by the Department depending on the aims of the student. A student may be admitted pending satisfactory completion of one or two

of the above courses during the first semester(s) of graduate study. Satisfactory scores on the general aptitude portion of the Graduate Record Examination. Subject GRE tests are recommended but not mandatory.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Applicants may be accepted concurrent with admission, or candidacy may be deferred pending a period of satisfactory graduate study at The University of Vermont. Acceptance to candidacy is granted only to those students who have met all undergraduate course prerequisites.

Minimum Degree Requirements for the Degree of Master ofScience

Thirty total credits to include six credit hours of Thesis Research (MMG 391) and 24 course credits, including the Microbiology and Molecular Genetics core curriculum (six course credits each in Biochemistry, Genetics, and Microbiology); at least two credits in current Topics in Molecular Genetics (MMG 310); other approved courses such that at least 16 course credits are taken from courses offered by the Department of Microbiology and Molecular Genetics; qualifying exam; successful completion of dissertation.

Combined Medical College and Graduate College Degree Programs

Qualified students, following acceptance into the medical college, may simultaneously enroll in the Graduate College for a Master of Science or Ph. D. degree program in Microbiology and Molecular Genetics. The program would be developed with concurrence of the Dean for Student Affairs in the College of Medicine.

Microbiology and Molecular Genetics (Ph. D.)

College: Graduate College, Medicine
Department(s): Microbiology and Molecular Genetics

Overview

Research activities include: Mutagenic mechanisms in human populations; the enzymology and regulation of cellular DNA replication and repair; molecular mechanisms of genetic recombination; structural biology of proteins and nucleic acids; cell cycle control of transcription and DNA replication in eukaryotes; regulation and enzymology of RNA polymerase II transcription; enzymology and atomic structure of mammalian cell mRNA processing factors; molecular basis of tRNA recognition; ribozyme structure and enzymology; signaling networks that regulate morphogenesis in yeast; isolation and regulation of mating type genes in Schizophyllum; plant growth and development; molecular mechanisms of bacterial adhesion and pathogenesis; molecular and cellular mechanisms of host-pathogen interactions; and bacterial transformations of organic pollutants.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theEither the Master of Science or the Doctor of Philosophy Degree

MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M. S. program should contact the individual faculty member with whom they wish to study. One year of biological science; one year physics (equivalent of Physics 11 and 12); one year of inorganic chemistry and one year of organic chemistry (equivalent of Chemistry 1, 2, 141 and 142), mathematics through calculus (equivalent of Math 19 and 20); additional courses required by the Department depending on the aims of the student. A student may be admitted pending satisfactory

completion of one or two of the above courses during the first semester(s) of graduate study. Satisfactory scores on the general aptitude portion of the Graduate Record Examination. Subject GRE tests are recommended but not mandatory.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of one full year of graduate study at The University of Vermont, satisfactory performance on teaching assignments, successful completion of the Department core curriculum and qualifying exam, and approval of the student's thesis advisor and Studies Committee, the Faculty of the Department of Microbiology and Molecular Genetics, and the Dean of the Graduate College.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Seventy-five total credits to include at least 30 credit hours of Dissertation Research (MMG 491) and at least 30 course credits, including the Microbiology and Molecular Genetics core curriculum (six course credits each in Biochemistry, Genetics, and Microbiology); at least four credits in Current Topics in Molecular Genetics (MMG 310); other approved courses such that at least 20 course credits are taken from courses offered by the Department of Microbiology and Molecular Genetics; teaching assignments as arranged by Department; proficiency in computer applications; qualifying exam; successful completion of dissertation.

Combined Medical College and Graduate College Degree Programs

Qualified students, following acceptance into the medical college, may simultaneously enroll in the Graduate College for a Master of Science or Ph. D. degree program in Microbiology and Molecular Genetics. The program would be developed with concurrence of the Dean for Student Affairs in the College of Medicine.

Accelerated Master's Program in Microbiology and Molecular Genetics (B. S./M. S.)

College: GraduateCollege
Department(s): Microbiology and Molecular Genetics

Overview

Outstanding students with an interest in the graduate degree may apply to enter the Accelerated Masters Program of the Department. In this program students commence study for their master's degree in their senior year and have the potential to obtain a B. S./M. S. in a five-year period.

Microbiology and Molecular Genetics normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program.

Molecular Physiology and Biophysics (M. S.)

College: Graduate College
Department(s): Molecular Physiology and Biophysics

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Satisfactory performance on general (aptitude) section of Graduate Record Examination. Year courses in biology, organic chemistry, and physics. These requirements must be completed by the end of the first year of residency.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of basic courses and comprehensive exam; formation of studies committee.

Minimum Degree Requirements for Master of Science

MPBP 301, 303, 308, 323; Biochemistry 301-302; other graduate courses as arranged (three hours minimum); thesis research (six to 15 hours).

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Molecular Physiology and Biophysics (Ph. D.)

College: Graduate College
Department(s): Molecular Physiology and Biophysics

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Biology, one year; chemistry, organic and physical; physics, one year; mathematics, through calculus. These requirements must be completed by the end of the first year of residency. Satisfactory performance on general (aptitude) section of Graduate Record Examination. A master's degree is not a prerequisite for the Ph. D. degree.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of basic courses and comprehensive exam; formation of dissertation committee.

Minimum Degree Requirements

MPBP 301, 303, 308, 323; Biochemistry 301-302; in addition, 21 elective credits, six of which must be in the Department; dissertation research, minimum 20 hours. Other requirements are flexible and will be determined for each individual after consultation with the Studies Committee.

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Movement Sciences and Rehabilitation (M. S.)

College: Graduate College
Department(s): Physical Therapy

Overview

The Master of Science Degree Program is designed for graduate physical and occupational therapists or other rehabilitation specialists who desire to expand and enhance their scientific knowledge and professional skills in a scholarly environment in preparation for practicing as an advanced clinician. The advanced clinician is a practitioner with in-depth knowledge who can act as a mentor, coach, advocate, and resource for providers and consumers by demonstrating competent advanced clinical judgment and skill, as well as competent teaching skill, and by promoting research as a critical reader and contributor. The core of the program focuses on the scientific basis of normal and abnormal movement. It is accompanied by courses within a professional practice sequence, as well as a research sequence which will culminate in the completion of a thesis. The program is designed to accommodate practicing clinicians who wish to pursue part-time or full-time graduate studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Graduate of an accredited entry level educational program in physical or occupational therapy or, other rehabilitation specialties, with a minimum GPA of 2.67 (B-) desired. Submission of scores of the Graduate Record Examination. A minimum score of 1500 on the aptitude portion is expected. Three letters of reference, at least one each from professional and educational sources. Official transcript, completion of application form, completion of health form. At least two years of clinical practice as a physical or

occupational therapist or other rehabilitation specialist. Current knowledge of statistics, neuroscience, and biomechanics which may be demonstrated by prerequisite courses within the last five years or satisfactory performance on equivalency tests in each of these areas. (Appropriate courses on campus, or self-study guides will be recommended for anyone who does not initially meet these standards.) A personal interview during which clearly defined educational goals and objectives for graduate study are discussed as they are reflected in the application and supportive documentation. These goals will be discussed in relationship to departmental resources and goals to determine whether personal and departmental objectives are congruent and compatible.

Minimum Degree Requirements

Completion of 36 credits of graduate courses in movement sciences and rehabilitation, including six credits of thesis research and six credits of approved electives. Completion of a practicum in one of the following areas: teaching, clinical specialty, management, and consultation. Completion of a comprehensive written exam is required prior to the initiation of the masters thesis research. In addition to the exam, the student must defend the research proposal in an oral presentation.

Natural Resources (Ph. D.)

College: Graduate College
Department(s): NaturalResources

Overview

The Ph. D. program provides the opportunity for focused, in-depth research in any of the specialties of the school, while fostering an interdisciplinary appreciation and perspective through course work and interactions with ecological, physical, and social scientists in an integrated academic setting. Students can develop programs in areas such as pollution ecology, recreation and tourism, conservation biology, and environmental policy, as well as any of the traditional natural resource disciplines featured in our Masters programs.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate studies for theDegree of Doctor of Philosophy

While an undergraduate degree in a discipline appropriate to the field of study will be considered, applicants with a Master of Science degree are preferred. Satisfactory scores on the Graduate Record Examination general (aptitude) section. Acceptability to a potential faculty advisor holding an appointment in The Rubenstein School of Environment and Natural Resources.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is ordinarily expected that a student will complete the following requirements for advancement to candidacy prior to the end of the second year in the program: (1) one year of full-time graduate study in residence at The University of Vermont; (2) teaching

experience in one course; (3) at least 12 credit hours of research; (4) at least 15 credit hours of course work at the graduate level acceptable to the student's Studies Committee; (5) satisfactory performance on a comprehensive examination; and (6) a dissertation proposal accepted by the student's Studies Committee.

Minimum Degree Requirements

The student must (1) present at least 75 credit hours in approved course work and research, including not less than 20 and not more than 35 credit hours in research; (2) have a reading knowledge of a foreign language or an experience living in or working with another foreign or domestic culture (approved by the ENVNR Graduate Studies Committee); and (3) satisfactorily complete and defend the dissertation.

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Natural Resource Planning (M. S.)

College: Graduate College
Department(s): Natural Resource Planning Program

Overview

This interdisciplinary program prepares students for professional careers with public agencies and private organizations engaged in various aspects of environmental and natural resource planning and management. It provides theoretical and practical course work and experiences for those seeking to be environmentally-sensitive, resource-based planners and managers (town planners, regional planners, environmental regulation officials) as well as those seeking a broad natural resource education in such areas as: ecology and applied ecology; environmental law, policy, and administration; environmental economics; environmental education and interpretation; recreation management and tourism; management information systems (especially GIS), environmental studies, resource conservation, and sustainable development. Integrated resource management involving interdisciplinary problem-solving teams is stressed in most courses.

Efforts of faculty in The Rubenstein School of Environment and Natural Resources with the above specialties are augmented by those of colleagues in related fields at UVM, including the Field Naturalist, Public Administration, and Historic Preservation programs and the Center for Rural Studies. The academic program is further enriched by visiting faculty made up of leading Vermont planners and resource managers.

The program focuses on several concepts: seeking synergism between ecological concerns and economic health, considering the capacity of the land to support appropriate development (designing with nature as opposed to stressing technological solutions for transforming nature to meet human needs), understanding the "sense of place," understanding human institutions and behavior, and technical implementation (with emphasis on Geographic Information Systems).

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate degree in an appropriate field in the sciences, social services, or humanities/fine arts; satisfactory scores on the Graduate Record Examination, general (aptitude) section; and three letters of recommendation attesting to the candidate's academic potential for graduate work and motivation for pursuing this degree. Most successful applicants to this highly competitive program have had past experience in an environmental or natural resource-related job, internship, volunteer work, or international travel.

Minimum Degree Requirements

The Natural Resource Planning program offers two options.

Plan A (Thesis Option): Requires at least 24 credit hours of course work in related fields (including five hours of core courses and NR 378), a comprehensive examination, six hours of thesis research, and an oral defense of the thesis.

Plan B (Project Option): Requires at least 24 credit hours of course work in related fields (including five hours of core courses, NR 378, and three distributive courses), a comprehensive examination, six credit hours of project research, and an oral defense of the project.

Irrespective of the plan chosen, students in the Natural Resource Planning Program usually are in residence for two years.

Nursing (M. S.)

College: Graduate College
Department(s): Nursing

Overview

The Master of Science in nursing prepares professional nurses to assume leadership roles within the discipline of nursing in a variety of settings, to expand knowledge of nursing, develop expertise in a specialized area of nursing and acquire the foundation for doctoral study and continued professional development.

The tracks/majors offered are: Adult Health Nursing, Advanced Community / Public Health Nursing and Primary Health Care Nursing. Upon completion of the Adult or Advanced Population Focused Nursing tracks/majors, graduates are eligible to take the ANCC certification examination for Adult or Community Health Clinical Nurse Specialist. Upon completion of the Primary Health Care Nursing track/major, graduates are eligible to take the ANCC or AANP certification examination for Adult or Family Nurse Practitioner.

Current research interests of the faculty include: rural health issues, women's health issues, determinants of healthy aging, health promotion, caring, feminist theory, end of life decision making, ethical decision making, advanced practice framework, determinants of leadership, alcohol and drug use within a community health context, program evaluation, suicide, women's mental health, psychosocial concerns of consumers and health care providers, multidimensional healing, therapeutic touch, diabetes, cancer, and client self-teaching tools.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of

Science

A bachelor's degree with a major in nursing, preferably with a grade point average of 3.00 or better including a basic course in statistics. Eligible for licensure as a registered nurse in Vermont. Satisfactory scores on the Graduate Record Exam. Three letters of recommendation from persons who can assess your potential for graduate work. RN's with a bachelor's degree in another field may be admitted upon successful completion of the Bridge Process (a means to assess prior nursing knowledge).

Requirements for Advancement to Candidacy for the Degree of Master of Science

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to candidacy. Students who appear to be marginal in meeting admission requirements may be required to satisfactorily complete certain courses before acceptance as a degree candidate.

Minimum Degree Requirements for the Degree of Master of Science

Credit hour requirements vary depending on track and include thesis or project and successful completion of a comprehensive exam.

Accelerated Master's Programs

College: Graduate College

The following Accelerated Bachelors/Masters programs are cooperatively offered by the Graduate College and other Colleges and Schools.

- Animal Science
- Biology
- Biomedical Technologies
- Computer Science
- History
- Materials Science
- Mathematics/Statistics/Biostatistics
- Mechanical Engineering
- Microbiology and Molecular Genetics
- Nursing
- Physics
- Public Administration
- Secondary Education (7-12)/Master of Education

Nutrition and Food Sciences (M. S.)

College: Graduate College
Department(s): Nutrition and Food Sciences

Overview

The department mission is to study the relationship between nutrition, food science, health and fitness (preventive nutrition) and between diet and disease (therapeutic nutrition). Faculty research encompasses both basic and applied or community aspects of human nutrition and food science and technology. Research is being conducted on: the impact of attitudes and behaviors toward eating and exercise on body size, shape and composition, the elucidation of arrhythmogenicity of long-chain acyl-carnitines in humans, factors effecting energy intake and expenditure in aging, developing web-based interactive multimedia tools for use in teaching and research, inter-generational nutrition program development, developing behavior modification programs to improve individual eating behaviors and the nutritional status, health, and fitness of communities, testing the effectiveness of Internet support on the long term management of obesity, factors effecting the nutritional status of children, milk chemistry and cheese technology (i.e., structure, function, and properties of mozzarella and goat's milk cheese), chemistry and processing of infant formula, food microbiology, food material science, mathematical modeling of biological processes important to foods and cheese rheology.

For more information, contact Professor Robert S. Tyzbir, Chair of the Department of Nutrition and Food Sciences, 315 Terrill Hall, (802) 656-3374 or e-mail rtyzbir@zoo.uvm.edu.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in nutrition, dietetics, food science, or a science-related field. Satisfactory scores on the Graduate Record Examination, general (aptitude) portion.

Minimum Degree Requirements for the Degree of Master of Science

Thirty hours including six to fifteen hours of thesis research. Twenty-one hours should be earned in the field of specialization; nine hours may be selected from related areas; courses is statistics, Research Methods in Nutrition and Food Sciences, and Nutrition and Food Sciences Seminar are required.

Pathology (M. S.)

College: Graduate College
Department(s): Pathology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Satisfactory undergraduate or graduate course work in chemistry and the biological sciences. Microbiology and immunology are also recommended but not required. Satisfactory scores on the Graduate Record Examination, general (aptitude) section. Persons interested in a Ph. D. program may wish to consider the interdisciplinary program in Cell and Molecular Biology in which Pathology participates.

Minimum Degree Requirements for the Degree of Master of Science

Anatomy 311 (three hours), Pathology 305 (three hours), Biochemistry 301-302 (six hours); additional approved courses; thesis research (six to 15 hours).

Pharmacology (M. S.)

College: Graduate College
Department(s): Pharmacology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegrees of Master of Science

Year courses in biology, organic chemistry, physics, analytic geometry and calculus; physical chemistry and/or a reading knowledge of one foreign language may be additional prerequisites, depending on the requirements of the research supervisor; and acceptable scores on the general (verbal, quantitative) section of the Graduate Record Examination.

Minimum Requirements for the Master of Science Degree

Pharmacology 301, 302, 303, 381, 391; supporting courses in biochemistry and physiology.

Pharmacology (Ph. D.)

College: Graduate College
Department(s): Pharmacology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degrees of Doctor of Philosophy

Year courses in biology, organic chemistry, physics, analytic geometry and calculus; physical chemistry and/or a reading knowledge of one foreign language may be additional prerequisites, depending on the requirements of the research supervisor; and acceptable scores on the general (verbal, quantitative) section of the Graduate Record Examination.

Minimum Requirements for the Doctor of Philosophy Degree

Physiology and Biophysics 301; Biochemistry 301, 302; Pharmacology 301, 302, 303, 328, 381, 491; Biometrics and Applied Statistics 308.

Physical Therapy (M. P. T.)

College: Graduate College
Department(s): Physical Therapy

Overview

The MPT professional entry-level program contains course work related to the science and art of physical therapy practice including the basic sciences of anatomy, physiology and neuroscience, the clinical sciences of pathophysiology and pharmacology related to sensorimotor function, and the applied sciences of exercise, physical agents, orthotics and environmental modification. Principles of research, education, administration, and ethical practice in multicultural settings will be addressed throughout this curriculum.

Students will acquire necessary knowledge, skills, and behaviors through case studies and practice which integrate basic and clinical sciences, professional practice and critical inquiry in a progression from the foundational sciences and clinical care issues, to an integration of health care practice, research and policy issues.

The full-time Clinical Education Program (PT 232, 333, 334, 335, 336) is an integral part of the curriculum, offering the student opportunities to apply knowledge, skills and behaviors in the clinical setting. The program is widely affiliated throughout the U.S., but focused in the Northeast. Students affiliating will be responsible for the cost of medically required vaccinations, transportation and living expenses (including room and board) during the full-time clinical experiences. The first two full-time experiences, one for two weeks, and the second for four weeks, will be completed at the same clinical site. These will be located within a commutable distance from Burlington. The last three full-time experiences each will be eight weeks in length. All students in the program are required to carry professional liability insurance prior to enrolling in the clinical education experience. Students should plan their finances to include these expenses. The affiliations will be scheduled as indicated in the curriculum plan unless insufficient clinical sites are available; in that case, students may be required to complete clinical affiliation requirements in an alternate time period. Upon completion of the program, graduates will be eligible to sit for the national professional licensure examination.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Physical Therapy

There are two routes of entry into the MPT program. First, students who have entered The University of Vermont in one of the following majors may apply during their junior year to enter the MPT program in their senior year: all majors in the College of Arts and Sciences; Nutrition and Food Sciences or Biological Sciences in the College of Agriculture and Life Sciences. Students will be advised by faculty in their undergraduate major as well as in Physical Therapy so that they can complete the requirements for that major in three years. If admitted to Physical Therapy in their senior year, they will be awarded the baccalaureate degree in their undergraduate major after the successful completion of their first year of study in Physical Therapy. Thus, the total length of study for these students will be 6 years. The MPT program will also be open to applicants who have already completed baccalaureate, masters or doctoral degrees in other disciplines. Their course of study will be three academic years.

Prerequisites to the MPT Program for the Degree of Master of Physical Therapy

Students must have completed 2 semesters of college chemistry, with laboratory, including introduction to organic chemistry; 2 semesters of college physics, with laboratory; and 1 semester of college math at least at the pre-calculus level, calculus preferred, or statistics. One semester of biology is strongly recommended.

Admissions Requirements for the Degree of Master of Physical Therapy

Minimum GPA of 3.0 in college level courses. Competence in conveying ideas in an organized manner, critical thinking and logic, and writing as demonstrated in a writing sample. Excellent interpersonal and communication skills as evidenced by life and community experience. Commitment to the profession of physical therapy, as assessed by volunteer or work experience in PT settings. Three letters of reference, at least one each from professional and educational sources. Official transcript, completion of application form, completion of health form. For students who will have completed a minimum of a baccalaureate degree prior to enrolling in the MPT program, submission of scores of the Graduate Record Examination. A minimum score of 500 on the verbal and quantitative sections and 3.5 on the written analytical section is expected. If GRE's taken prior to fall of 2002, 500 minimum score on the analytical section is expected.

Minimum Degree Requirements for the Degree of Master of Physical Therapy

Satisfactory completion of 85 credits of graduate courses in physical therapy, including 5 credits in Anatomy, 5 credits in Neuroscience, 6 credits in Physiology, and 19 credits of

full-time Clinical Education.

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Physics (M. S.)

College: Graduate College
Department(s): Physics

Overview

The Department of Physics offers research opportunities in astrophysics, biophysics, condensed matter physics, and the physics of materials.

Astrophysical research centers on experimental radio astronomy, with particular emphasis on pulsars and the interstellar medium. Observations are carried out using major instruments of the U.S. National Observatories and generally involve computer analysis and interpretation.

Research in biophysical ultrasound is directed toward an understanding of the physical principles involved when ultrasound interacts with living systems. This often involves collaboration with the College of Medicine. Acoustical and optical tweezers permit manipulating single cells without touching them. New forms of ultrasonic transducers and biosensors are being developed in collaboration with Electrical Engineering, as part of the Materials Science Program.

Biophysical research includes studies on the development and employment of novel uses of in situ atomic force microscopy for biological applications, specifically high-resolution structural studies of membrane proteins, investigation of the packing of genetic materials on bilayer membranes, and studies on how DNA-bilayer interactions affect the use of cationic lipids as gene-delivery means. Other studies to better understand the structure and assembly kinetics of biological membranes focus on the physical properties of lipid layers employing in situ atomic force microscopy, fluorescence imaging, and differential scanning calorimetry.

Other research in biological physics and protein dynamics involves combining the detail of atomic-resolution X-ray crystallography with the sensitivity of optical and IR spectroscopy. We have access to a state-of-the-art protein crystallography diffractometer and make regular trips to synchrotrons in the US and Europe. Computational facilities for structural biology include several SGIs and a 12-node Beowulf parallel-processor Linux cluster.

Research in theoretical condensed matter physics focuses on the dynamics of quantum systems with application to electronic, magnetic, optical, structural, and thermal properties of nanomaterials including fullerene-derived solids (buckyballs) and carbon nanotubes. Basic research also includes the investigation of low energy scattering of atoms and molecules from surfaces and systems with many internal degrees of freedom and the development of new methods for studying quantum many-body systems, such as new extensions of density functional theory to van der Waals systems.

Theoretical studies of the optical properties of materials include the electronic structure of defect complexes in ionic crystals, the application of subtracted dispersion relations to optical data analysis, and the separation of inter- and intra-band effects in the infrared spectra of metals. Related studies are concerned with theories of X-ray scattering, of X-ray optical properties, and of X-ray optical elements.

Research in materials physics includes studies of the kinetics of thin film growth and surface processing, applied to materials with interesting and useful physical properties such as organic semiconductors and magnetic materials. Many of the research projects involve real-time X-ray or electron diffraction structural studies of surface phenomena, combined with computer simulation of relevant surface processes. We have an ultra-high vacuum thin-film deposition laboratory dedicated to these studies, and we make regular use of synchrotron X-ray facilities in the US.

Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate majors in science, engineering, or mathematics are considered for admission to the program. Satisfactory scores on the Graduate Record Examination (general and subject section) are required.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Physics 211, 213, and 273; two additional semester courses in physics above the

sophomore level; two semester courses in mathematics above the sophomore level.

Minimum Degree Requirements for the Degree of Master of Science

A total of 30 credit hours including a minimum of six hours of thesis research and at least nine hours of Physics courses numbered over 300.

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

Physics (M. A. T.)

College: Graduate College
Department(s): Physics

Overview

The Department of Physics offers research opportunities in astrophysics, biophysics, condensed matter physics, and the physics of materials.

Astrophysical research centers on experimental radio astronomy, with particular emphasis on pulsars and the interstellar medium. Observations are carried out using major instruments of the U.S. National Observatories and generally involve computer analysis and interpretation.

Research in biophysical ultrasound is directed toward an understanding of the physical principles involved when ultrasound interacts with living systems. This often involves collaboration with the College of Medicine. Acoustical and optical tweezers permit manipulating single cells without touching them. New forms of ultrasonic transducers and biosensors are being developed in collaboration with Electrical Engineering, as part of the Materials Science Program.

Biophysical research includes studies on the development and employment of novel uses of in situ atomic force microscopy for biological applications, specifically high-resolution structural studies of membrane proteins, investigation of the packing of genetic materials on bilayer membranes, and studies on how DNA-bilayer interactions affect the use of cationic lipids as gene-delivery means. Other studies to better understand the structure and assembly kinetics of biological membranes focus on the physical properties of lipid layers employing in situ atomic force microscopy, fluorescence imaging, and differential scanning calorimetry.

Other research in biological physics and protein dynamics involves combining the detail of atomic-resolution X-ray crystallography with the sensitivity of optical and IR spectroscopy. We have access to a state-of-the-art protein crystallography diffractometer and make regular trips to synchrotrons in the US and Europe. Computational facilities for structural biology include several SGIs and a 12-node Beowulf parallel-processor Linux cluster.

Research in theoretical condensed matter physics focuses on the dynamics of quantum systems with application to electronic, magnetic, optical, structural, and thermal properties of nanomaterials including fullerene-derived solids (buckyballs) and carbon nanotubes. Basic research also includes the investigation of low energy scattering of atoms and molecules from surfaces and systems with many internal degrees of freedom and the development of new methods for studying quantum many-body systems, such as new extensions of density functional theory to van der Waals systems.

Theoretical studies of the optical properties of materials include the electronic structure of defect complexes in ionic crystals, the application of subtracted dispersion relations to optical data analysis, and the separation of inter- and intra-band effects in the infrared spectra of metals. Related studies are concerned with theories of X-ray scattering, of X-ray optical properties, and of X-ray optical elements.

Research in materials physics includes studies of the kinetics of thin film growth and surface processing, applied to materials with interesting and useful physical properties such as organic semiconductors and magnetic materials. Many of the research projects involve real-time X-ray or electron diffraction structural studies of surface phenomena, combined with computer simulation of relevant surface processes. We have an ultra-high vacuum thin-film deposition laboratory dedicated to these studies, and we make regular use of synchrotron X-ray facilities in the US.

Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

General Requirements

- Graduate (Master's)

Specific Requirements

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

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Physics (M. S. T.)

College: Graduate College
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Overview

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cluster.

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Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

An undergraduate major in an appropriate field. Satisfactory scores on the general (aptitude) Graduate Record Examination. Completion of at least one full year of teaching.

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Successful completion of Physics 128, Chemistry 141 and 162, and Mathematics 121, or their equivalents. (These courses may have been taken at the undergraduate level, as part of this graduate program, or credit may be obtained by transfer or examination.)

Minimum Degree Requirements for the Degree of Master of Science for Teachers

The above prerequisites for admission to candidacy must be supplemented by: (1) completion of 30 hours of credit, of which at least 18 must be in Physical Sciences Option (A) or (B) as described below. The remaining 12 credits may be chosen, with the consent of the Joint Advisory Committee, from appropriate courses above 100 in science, engineering, mathematics, and education (credit in education courses is limited to six semester hours); (2) successful completion of a comprehensive examination administered by the Joint Advisory Committee.

Physical Sciences Option (A): Nine semester hours of Physics numbered 128 and above, Chemistry 131 and six semester hours of Chemistry chosen from Chemistry 161, 231, 201, 264, and 241. This option is primarily for teachers of chemistry.

Physical Sciences Option (B): nine semester hours of Chemistry numbered 141 and above and nine hours of Physics in courses numbered above 200. This option is primarily for teachers of physics.

Accelerated Master's Program in Physics (B. S./M. S.)

College: Graduate College
Department(s): Physics

Overview

Students must apply for the Accelerated Master's Program (AMP) during spring semester of their junior years. Students interested in the AMP can request information in writing from the Department. Recommendation for admission will be based upon the student's prior academic record with particular attention paid to performance in upper-division 200-level physics courses. Generally, AMP students must begin a research project by or during the summer prior to their senior years.

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Plant and Soil Science (M. S.)

College: Graduate College
Department(s): Plant and Soil Science

Overview

Current research projects are concerned with the solution of horticultural and agronomic problems with special emphasis on environmental physiology, soil chemistry, pasture management, plant nutrition, and pest management. Areas of research include winter hardiness of fruits, and woody and herbaceous ornamentals; cultural and environmental interrelationships as they affect plant growth, crop adaptation, and variety; pasture production and marginal land utilization; crop establishment and soil productivity; mycorrhizal fungi; soil chemistry of the rhizosphere; redox reactions in soils; the behavior of heavy metals; compost and organic matter research; behavior of nitrogen in the soil; nutrient availability to plants; agricultural waste management; biological control of insects, disease, and weeds; integrated pest management for control of insects, diseases, and weeds. A student's thesis research will be an integral part of the on-going research efforts of the department.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate agricultural, environmental, biological, or physical science. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of one academic year of graduate study in the Department of Plant and Soil Science, and a written or oral comprehensive examination. The decision on the type of comprehensive exam will be made by the major professor after consultation with the student.

Minimum Degree Requirements for the Degree of Master of Science

Eighteen to 22 hours in Plant and Soil Science and closely related fields; satisfactory participation in seminars during residency; thesis research (six to 12 hours).

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Plant and Soil Science (Ph. D.)

Department(s): Plant and Soil Science
College: Graduate College

Overview

Current research projects are concerned with the solution of horticultural and agronomic problems with special emphasis on environmental physiology, soil chemistry, pasture management, plant nutrition, and pest management. Areas of research include winter hardiness of fruits, and woody and herbaceous ornamentals; cultural and environmental interrelationships as they affect plant growth, crop adaptation, and variety; pasture production and marginal land utilization; crop establishment and soil productivity; mycorrhizal fungi; soil chemistry of the rhizosphere; redox reactions in soils; the behavior of heavy metals; compost and organic matter research; behavior of nitrogen in the soil; nutrient availability to plants; agricultural waste management; biological control of insects, disease, and weeds; integrated pest management for control of insects, diseases, and weeds. A student's thesis research will be an integral part of the on-going research efforts of the department.

General Requirements

- Graduate (Ph. D.)

Specfic Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A Master of Science degree in an appropriate agricultural, environmental, biological, or physical science. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of two academic years of graduate study in the Department of Plant and Soil Science at The University of Vermont. With the approval of the Dean of the Graduate College and the Department of Plant and Soil Science, a master's degree may be accepted in partial fulfillment of this requirement.

Satisfactory completion of a written and oral qualifying doctoral examination as prescribed by the Department.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

The course requirements are as follows: a total of at least 40 credit hours of which a minimum of 30 must be taken in Plant and Soil Science and closely related disciplines (e.g. botany, chemistry, forestry, microbiology, and biochemistry, geology). Satisfactory participation in seminars during residency is required. All master and doctoral students must take part in the Department's undergraduate teaching program.

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Postbaccalaureate Teacher Preparation Program

College: Education and Social Services

Overview

The Postbaccalaureate Teacher Preparation Program is designed for individuals who have a bachelor's degree from an accredited four-year institution and who want to become licensed to teach in Vermont. The basic program fulfills the professional education requirements for state licensure. Areas and levels of licensure include:

- PreK-Grade 3: Early Childhood
- Grades K-12: Art, Music, Physical Education
- Grades K-6: Elementary
- Grades 5-8: Middle-Level
- Grades 7-12: Secondary [English, Foreign Language (French, German, Latin, and Spanish), Mathematics, Science (Animal Sciences*, Biological Science, Chemistry, Earth Science, and Physics), Social Studies (Anthropology, Economics, Geography, History, Political Science, and Sociology]
- Grades 7-12: Family and Consumer Sciences

* Animal Sciences is an alternate route for Biology Endorsement.

Admissions Requirements

Applicants to the Postbaccalaureate (Postbac) Teacher Preparation Program must meet the following entrance criteria:

1. Hold a bachelor's degree from an accredited institution of higher education.
2. Possess a general education background based on those studies known as liberal arts which embrace the broad areas of social and behavioral sciences, mathematics, biological and physical sciences, the humanities, and the arts.
3. Demonstrate a commitment to the teaching profession.
4. Have a minimum overall GPA of 2.5 in undergraduate course work.
5. For elementary candidates: Previous course work must include 30 semester hours in a single liberal arts discipline.

6. For middle-level candidates: Previous course work must include two approved areas of concentration, with 18 credits in each.
7. For secondary candidates: Previous course work must include a minimum of 30 semester hours with a minimum GPA of 2.75 in one of the academic areas to meet Vermont state licensure requirements for the major academic concentration.

Middle Level and Secondary Education also have a master's degree option offered jointly by the College of Education and Social Services and the Graduate College:

Secondary Majors: Biological Science, Chemistry, Earth Science, English, French, Geography, German, History, Latin, Mathematics, Physics, Spanish.
Secondary Broad Field Majors: Anthropology, Biological Science, Economics, Geography, History, Physical Science, Political Science, and Sociology.
Middle Level students are required to have at least 18 credit hours in each of two disciplines.

The Post-Baccalaureate curriculum includes both undergraduate and graduate courses. Nine graduate credits may apply toward the M. Ed. degree at UVM, contingent on acceptance into the Graduate College.

The deadline for applications to the graduate licensure program in Secondary Education is April 1 for the next academic year. Course work begins during the summer or fall, depending upon the area of licensure. Applications are accepted and considered only once each year with updated informational materials and application forms available in January. Requests for further information about the Secondary Education PBTP Program and application forms may be obtained by contacting the PBTP Coordinator, Secondary Education Program, 405 Waterman Building.

Applications for qualified applicants for the Elementary Education Postbaccalaureate Program are reviewed on an ongoing basis. Acceptance to begin in a given semester is based on availability of courses and placements at field sites. Requests for further information about the PBTP Elementary Education Certification Program and application forms may be obtained by contacting the Elementary Education PBTP Coordinator, Elementary Education Program, 533 Waterman Building, (802) 656-3356.

Agriculture and Life Sciences Preveterinary Programs

College: Agriculture and Life Sciences
Departments: Animal Science, Biological Sciences

UVM/Tufts School of Veterinary Medicine Program

The UVM College of Agriculture and Life Sciences and Tufts School of Veterinary Medicine in Massachusetts offer a seven-year B.S./D.V.M. program to selected honors students. Students who meet rigorous eligibility criteria may enroll for three years of study at UVM majoring either in Animal Science or Biological Sciences. After completion of about 90 credits with a minimum GPA of 3.25 each year, the student enters Tufts School of Veterinary Medicine. The student will be awarded a B.S. degree from The University of Vermont following the successful completion of the first year of the D.V.M. program at Tufts. The successful student will earn a D.V.M. degree from Tufts School of Veterinary Medicine after the fourth year at Tufts.

Prospective students must apply to both UVM and Tufts University. Both applications may be obtained from the UVM Admissions Office. Candidates' files are first reviewed at Vermont, and admissible student applications are then forwarded to Tufts for their evaluation. Students will be notified of the results of these reviews through the UVM admissions process. Absolute standards may vary from year to year, but this is an intensive program with limited places. We expect that successful candidates will have:

1. Excellent grades in high school biology, chemistry, physics, and mathematics. It will be advantageous to have completed or be enrolled in AP (advanced placement) biology, AP calculus, and AP chemistry.
2. Standardized test scores at or above the 80th percentile nationally.
3. A class rank in the top ten percent of their high school class.
4. Some appropriate animal and/or veterinary experience.

It is important to recognize that some excellent students may not be admitted to the joint B. S./D.V.M. because of space limitation. These students may be admitted to UVM as preveterinary students and complete four years at UVM, graduate with a B. S. degree, and apply to any of the veterinary schools in the nation. There are many options to meet individual educational goals.

The specific courses to be taken for this option start with the Core Program of the College as discussed previously. In addition, each student will be required to successfully complete the following courses and credit hours within the three-year period:

Course	Credit
Biology	8
Calculus	4 or 6
Inorganic Chemistry	8
Organic Chemistry	8
Biochemistry	4
Physics	10
Microbiology	4
General Biology	3
Anatomy	3
Physiology	3
Genetics	3
Ecology	3
Undergraduate Research	6
English 50 (recommended)	3

Note: Beginning Fall 2003, Tufts offers a guaranteed admission program for students in their sophomore year at UVM. Students will apply directly to Tufts, and, if accepted, will be guaranteed admission to Tufts Veterinary School after completing their B.S. degree at UVM. The 3+4 UVM/Tufts early decision high school program is being discontinued.

UVM/Massey University Veterinary School Program

The UVM College of Agriculture and Life Sciences and Massey University Veterinary School in New Zealand offer a B.S./B.V.Sc program. Their B.V.Sc degree is equivalent to the D.V.M. or V.M.D. degree offered in the United States since Massey University is accredited by the American Veterinary Medical Association (AVMA). Massey has guaranteed admission for the top 5 UVM applicants each year.

The specific courses to be taken for this option start with the Core Program of the College. In addition, each student will be required to successfully complete the following courses and credit hours. The student must have maintained a minimum GPA of 3.0 in the sciences, and must also have met the required minimum score for the Graduate Record Exam (GRE) tests.

Course	Credit
Biology	8
Inorganic Chemistry	8

Organic Chemistry	8
Physics	10
Anatomy & Physiology of Domestic Animals	4

Applications will be made directly to Massey University during the Junior or Senior year at UVM and all decisions will be made by the Massey University Admissions Committee.

For information regarding admissions and/or applications to these exciting programs, contact the Admissions Office, 194 S. Prospect Street, Burlington, VT 05401-3596. For specific program information contact Dr. Karen Plaut, Chair, Animal Science, College of Agriculture and Life Sciences, 102 Terrill Hall, UVM, Burlington, Vermont 05405, 802-656-0155 or e-mail kplaut@uvm.edu.

Psychology (M. A.)

College: Graduate College
Department(s): Psychology

Overview

Additional clinical, research, and adjunct faculty supervise students in clinical and research placements.

The Ph. D. Program in General/Experimental psychology admits students in three broad areas of concentration ("clusters"): Biobehavioral Psychology; Developmental/Social Psychology; and Behavioral Psychopharmacology.

The Ph. D. program in Clinical Psychology places equal emphasis on research and clinical training. The clinical program is fully accredited by the American Psychological Association.

Further information about both programs can be obtained electronically, or by requesting a department graduate studies brochure from the Department of Psychology. Both contain details of requirements, funding opportunities, clinical and research facilities, specialty areas, ongoing research, and faculty, as well as general information about the University and the area.

Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted. The application deadline for admission is January 15.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Advancement to Candidacy for the Degree of Master of Arts

A major or its equivalent in undergraduate psychology including courses in statistics and

experimental psychology; satisfactory scores on the Graduate Record Examination, including the subject (advanced) subtest in Psychology.

Minimum Degree Requirements for the Degree of Master of Arts

Twenty-four hours of psychology courses and seminars, including Psychology 301, 302, 340, 341; Proseminar; thesis research for six credits. The requirements of the specific courses (301, 302, 340, 341) may be exempted by examination. There is no foreign language requirement.

Psychology (Ph. D.)

College: Graduate College
Department(s): Psychology

Overview

Additional clinical, research, and adjunct faculty supervise students in clinical and research placements.

The Ph. D. Program in General/Experimental psychology admits students in three broad areas of concentration ("clusters"): Biobehavioral Psychology; Developmental/Social Psychology; and Behavioral Psychopharmacology.

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Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted. The application deadline for admission is January 15.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A major or its equivalent in undergraduate psychology including courses in statistics and experimental psychology; satisfactory scores on the Graduate Record Examination, including the subject subtest in Psychology. A telephone interview is required of top applicants to the Clinical Program.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

For the General/Experimental Program, satisfactory completion of minimum degree requirements for Master of Arts degree or equivalent; for the Clinical Program, satisfactory performance of the Ph. D. comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Both the General/Experimental and the Clinical Program require a minimum of 75 credit hours. However, each program requires proficiency in several specific areas. In order to achieve such proficiency, most students must complete a total of 79 to 83 credit hours. A minimum of 20 credits must be accumulated in dissertation research and the remainder in course credits numbered in the 200 through 400 sequences of the psychology curriculum, or acceptable courses at the 200 or 300 level from other curricula. Detailed information on courses of study is available from the Department. Satisfactory performance on the department final oral examination. There is no foreign language requirement. Both programs have a required preliminary examination.

Public Administration (M. P. A.)

College: Graduate College
Department(s): Public Administration

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Public Administration

A sound academic record, including a baccalaureate degree from an accredited undergraduate institution, satisfactory scores on the general aptitude section of the Graduate Record Examination, three letters of recommendation attesting to the candidate's academic potential for graduate work and motivation for pursuing the MPA. Past experience in public service will be considered. Persons currently employed in administrative positions are encouraged to apply. In addition, a student must have completed these prerequisite courses: Economics, American Government and Statistics.

NOTE: The application deadlines for the MPA Program are February 1 and June 15 for summer/fall admission and November 15 for spring admission.

Requirements for Advancement to Candidacy for the Degree of Master of Public Administration

Successful completion of 36 credit hours, including core courses PA 301, 302, 303, 305 and 306, and an approved sequence of elective courses which may include up to nine credits of coursework from approved disciplines related to public administration. Pre-service students (those without substantial public administration experience) are required to complete an approved three-credit internship as part of their approved sequence of courses beyond the core courses.

Satisfactory completion of the written Comprehensive Examination, an evaluative device

and capstone experience, offered three times per year (March, August, and October) for students in their final semester of study in the UVM-MPA program.

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Reading and Language Arts (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The purpose of this program area is to prepare teachers and specialists in the field of reading. Classroom teachers, reading specialists or consultants, supervisors, administrators are responsible for developing programs which will enable every student to attain their maximum proficiency in the use of reading and language. To meet this end, several courses have been devised which focus on classroom reading instruction and reading difficulties. Through the Reading Clinic, students also have opportunities for laboratory experiences as well as for research and study in reading, literature, and language arts.

Inquiries regarding this program should be addressed to Professor Marjorie Lipson.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

Courses in reading and language arts include: 222, 223, 234, 246, 375, 376, 378, and 379. Various independent study and special topic courses are also available.

Curriculum and Instruction: Licensure Master of Education Program for Secondary Education (M. Ed.) Accelerated Master's Degree Option (B. S. / M. Ed.)

College: Graduate College
Department(s): Education

Within Curriculum and Instruction, the **Licensure Master of Education program for secondary teachers** is designed for those students who aspire to earn both a master's degree and a license to teach in public secondary schools. The program particularly welcomes students from UVM and northeastern colleges and universities majoring in arts and sciences, agriculture and natural resources who have completed majors in social sciences, science, mathematics, etc. Students will prepare for licensure to teach in grades seven through twelve in one academic year and two summers. With additional study, an **endorsement for the middle grades** may be earned.

Accelerated Licensure Master of Education

UVM students who are in their third year of study for a Bachelor's degree may apply to the Accelerated Licensure Master of Education program. These students, when accepted, may complete nine semester hours, six of which may be counted towards the minimum requirements for the Master's degree. Requests for further information and application forms may be obtained by contacting the Secondary Education Program Coordinator, 405A Waterman Building, (802) 656-1411. Qualified candidates would be studying in a major in an approved licensing area.

Inquiries regarding these programs should be addressed to the Secondary Education support person at (802) 656-1411.

General Requirements

- Graduate (Master's)
- Education Department (Master of Education)

Specific Requirements

- Curriculum and Instruction (Master of Education)

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Social Work (M. S. W.)

College: Graduate College
Department(s): SocialWork

Overview

The Master of Social Work Program prepares students for advanced practice which affirms diversity, reflects people's strengths and promotes social justice and human rights. The program emphasizes community and family-centered practice in a variety of professional roles and settings. An advanced standing option is available for qualified students who have earned a bachelor's degree from an accredited social work program. The Master of Social Work Program is fully accredited by the Council on Social Work Education.

Please request an M. S. W. Program Bulletin from the Department for more details and/or review our homepage. The first year curriculum has five components: human behavior and the social environment, social welfare policy and services, social work research, social work practice, and field practicum. The second year curriculum is built around either of two concentration areas: Social Work in Health/Mental Health or Social Work with Children and Families. Concentrations consist of two advanced practice courses, a field practicum and two concentration electives. Additionally, students take three courses which bridge both concentration areas: Advanced Social Welfare Policy Analysis and Practice, Critical Applications of Human Behavior and the Social Environment, and Advanced Social Work Research. The analytical paper/portfolio (SWSS 398) is a culminating experience which is evaluative, integrative, interpretive, and constructive. It requires students to demonstrate competency in written and oral expression; understanding of, and identification with, the program philosophy and social work values and ethics; and ability to think analytically, and self-critically in an area of concentration in social work. It also provides integration and closure to their educational experiences, and fulfills the Graduate College comprehensive examination requirement.

General Requirements

Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Social Work

Prospective students must meet the following minimum requirements:

1. Earned a baccalaureate degree from an institution accredited by the Council on Postsecondary Accreditation.
2. Attained satisfactory scores on the Graduate Record Examination (GRE). A holistic view of candidates' qualifications for graduate social work education is utilized; therefore, no minimum score for admission has been set. Applicants must submit GRE scores prior to admission.
3. Earned a minimum grade-point average (GPA) of 2.5 (where 4.0=A) in undergraduate studies.
4. Earned a minimum grade-point average of 3.0 in any previous graduate work in Social Work.
5. Be in good standing from the last institution they attended.
6. Demonstrated achievement of designated liberal arts content in their undergraduate studies including some courses in each of the following areas: social sciences (defined as including sociology, political science, anthropology, economics, etc.); behavioral and life sciences (defined as including psychology, human biology, human ecology, etc.); and humanities (defined as including history, philosophy, English, literature, religion, etc.). Most specifically, students must have completed at least one course in human biology and one in statistics. If they have not done so at the time of admission, they must complete these two prerequisite courses prior to starting the first fall semester of study in the advanced practice concentration curriculum.
7. Submission of a resume with their application materials before consideration of their file.

In addition to the above, the typed statement of purpose and written references (at least one of which is an academic and one of whish is a human services reference) are also important sources of information regarding the qualifications and experiences of applicants. For the academic year 2001-2002, a non-refundable deposit of $200 is required of accepted candidates to hold their place in the upcoming class; the deposit is applied toward the cost of the program when students become officially enrolled. Applicants should contact the Department of Social Work (802-656-8800) to receive an MSW Program Bulletin.

Applicants with a Bachelor of Social Work degree from a program accredited by the Council on Social Work Education (CSWE) may apply for Advanced Standing to the MSW program. Students granted advanced standing may waive certain program (Foundation) requirements. Full-time advanced-standing students start their programs in

January of each year, while regular-track students start their programs in the fall semester. This option is not available to students entering the program during the 2001-2002 academic year.

Minimum Degree Requirements for the Degree of Master of Social Work

The Master of Social Work degree requires 60 credits of graduate study, unless students are admitted with Advanced Standing status. Advanced Standing status requires a minimum of 42 credits and is granted solely to students who have earned a Bachelor's degree in a program accredited, or acknowledged as being equivalent to a Bachelor's in Social work, by the Council on Social Work Education. Both groups of students must take all required and three of their nine elective credits in social work courses. At least six of these elective credits must be taken during the second half of the program. The policies and standards for maintaining program accreditation do not permit the granting of academic credit toward graduation for life experience.

Curriculum

Foundation Courses (30 Credits)

Course	Credits
SWSS 212: Social Work Practice I	3
SWSS 213: Social Work Practice II	3
SWSS 216: Theoretical Foundations of HBSE* I	3
SWSS 217: Theoretical Foundations of HBSE II	3
SWSS 220: Social Welfare Policies and Services I	3
SWSS 221: Social Welfare Policies and Services II	3
SWSS 227: Foundations of Social Work Research	3
SWSS 290: Field Practicum I	6
An approved elective**	3

*Human Behavior in the Social Environment
**Electives require advanced approval of faculty advisors.

Advanced Courses (30 Credits)

Course	Credits
SWSS 301: Social Work in Health (and)	3
SWSS 302: Social Work in Mental Health (or)	3
SWSS 302: Social Work in Mental Health (and)	3
SWSS 311: Social Work with Children and Families II	3
SWSS 316: Critical Applications of HBSE	
SWSS 320: Advanced Social Welfare Policy Analysis and Practice	3
SWSS 327: Advanced Social Work Research	3
SWSS 390: Field Practicum II	6

SWSS 398: Analytical Paper/Portfolio	3
Two approved electives**	6

** Electives require advanced approval of faculty advisors.

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Special Education (M. Ed.)

College: Graduate College
Departments: Education, Integrated Professional Studies

Overview

This master's program is designed to prepare students to collaborate with families, educators, and other professionals and service agencies in the development, implementation and evaluation of instructional programs and supports for learners with disabilities in integrated school and community settings. The program requires that students have appropriate professional experience.

Three primary areas of emphasis within the program are Consulting Teacher/Learning Specialist, Essential Early Education and Intensive Special Education. All three areas have State of Vermont approved licensure endorsement tracks, and successful completion leads to a licensure endorsement for special education in Vermont.

- **Consulting Teacher/Learning Specialist:** Students are prepared to collaborate with families, educators and other professionals in the design, implementation and evaluation of instruction for learners with mild to moderate disabilities in integrated regular elementary, middle or high school classrooms.
- **Literacy and Special Education:** The purpose of this concentration is to prepare elementary and middle level educators in the field of reading and special education. These educators help promote student success both through their specific knowledge of assessment, planning and remediation, as well as their ability to work efficiently with teams of students, parents and teachers to collaboratively plan and deliver an integrated system of services. Graduates of the program earn the Master's of Education Degree or a Certificate of Advanced Study and are recommended for professional licensure and endorsement as either a reading teacher/coordinator or a consulting teacher/learning specialist in the State of Vermont. Inquiries regarding this concentration should be addressed to Professors Marjorie Lipson or George Salembier.

In addition, a Certificate of Advanced Study (sixth-year certificate) with a usual total of 36 credit hour program may be arranged for applicants who have already earned a Master's

degree.

Additional information on the above should be requested from the Program Coordinator.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

Specific courses are required for each area (Consulting Teacher/Learning Specialist, Essential Early Education or Intensive Special Education), as well as a full-year internship. Students seeking admission to a licensure endorsement track must meet additional requirements. Contact the Special Education Program for assistance with questions on admissions requirements.
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Certificate of Advanced Study in Special Education (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Departments: Education, Integrated Professional Studies

Overview

The Program in Special Education offers the Certificate of Advanced Study to students with appropriate master's degrees in the following areas: consulting teacher/learning specialist, intensive special education and literacy and special education. A minimum of 30 credit hours of course work is required.

Statistics (M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Statistics Program offers biostatistics, statistics, and probability courses for the entire University community along with traditional degree programs and individually designed degree programs emphasizing statistics applied to other fields. The degree programs are designed primarily for students who plan careers in business, actuarial science, industry, and government or advanced training in disciplines that make extensive use of statistical principles and methods. The Program faculty is deeply involved in consulting and collaborative research in a wide variety of fields, including industry, agriculture and in the basic and clinical medical sciences. These research activities along with the research of participating faculty from psychology, natural resources, etc., offer students unique opportunities to apply their classroom training to "real world" problems. Qualified students with the goal of learning statistics to use in a specialized area of application are especially encouraged to take advantage of these cooperative arrangements.

Program faculty have active statistics research efforts in areas such as quality control , sequential analysis, three stage sampling, time series analysis, survival data analysis, discriminant analysis, bootstrap methods, categorical data analysis, measurement error models, and experimental design. A track in quality and productivity improvement is available. Students seeking the traditional graduate degree in statistics (along with course work in mathematics and computer science, if desired) have excellent opportunities to participate in the faculty's research. (See also Biostatistics program description.)

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and Advancement to

Candidacy for the Degree of Master of Science

A baccalaureate degree. Three semesters of calculus, a course in matrix methods, and one semester of statistics. Provisional acceptance can be given prior to the completion of these requirements. Satisfactory scores on the -general (aptitude) portion of the Graduate Record Examination are required for most sources of financial aid. Computer experience is highly recommended.

Current undergraduate students at The University of Vermont should contact the program director for details on the Accelerated Master's Program (AMP).

Minimum Degree Requirements for the Degree of Master of Science

Plan A (Thesis): A 30 semester hour program requiring 24 semester hours of approved course work. This must include Statistics 221, 223, 224, 231, 251, 261, 321, 323, 324, other Statistics courses numbered 200 or above (except 211, 281, 308, 313), other mathematics or quantitative methods courses or (if appropriate) courses in a specialized field of application, plus six hours of approved thesis research (391).

Plan B (Nonthesis): A 33 semester hour program requiring 30 semester hours of approved course work. This must include Statistics 221, 223, 224, 231, 251, 261, 321, 323, 324, other Statistics courses numbered 200 or above (except 211, 281, 308, 313), other mathematics or quantitative methods courses or (if appropriate) courses in a specialized field of application, plus three semester hours of approved statistical research (381).

Under both plans, students must have or acquire a knowledge of the material in Statistics 201 and 211 in addition to their required course work. Additional specific courses may be required depending on the student,s background and interest. Other courses are selected with the approval of the student,s advisor from statistics, mathematics, computer science, and (if appropriate) graduate level courses from the student,s intended area of specialty application (e.g. business administration, engineering, ecology, genetics, psychology). The student is expected to participate in the Colloquium series of the Program. Plan A and Plan B require successful completion of a comprehensive examination which includes coverage of theoretical and applied aspects of the program's core statistics courses. Under Plan B a student, in lieu of a thesis, must carry out an approved comprehensive data analysis or methodological research project culminating in both an oral and written report to the faculty.

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Wildlife and Fisheries Biology (M. S.)

College: Graduate College
Department(s): Wildlife and Fisheries Biology Program

Overview

The Master of Science program is designed to provide a vehicle for a wildlife or fisheries biologist to develop research abilities and pursue a specialized course of study. Current areas of research emphasis include applied avian ecology, behavioral ecology, big game management, nongame wildlife populations, and freshwater fisheries ecology.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate degree in wildlife and fisheries biology or management or in the biological sciences. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Minimum Degree Requirements for the Degree of Master of Science

The Wildlife and Fisheries Biology degree requires 15 to 24 credit hours of course work in wildlife and related fields, including NR 378, a comprehensive examination, six to 15 hours of thesis research, and an oral defense of the thesis. The Studies Committee may require additional undergraduate preparation without credit toward the degree in instances of perceived deficiency.

Colleges and Schools

Graduate College

Contact Information:

University of Vermont
Graduate College
333 Waterman Building
Burlington, VT 05405-0160

Graduate General Information Phone: (802) 656-3160
Graduate Admissions Phone: (802) 656-2699
Fax:(802) 656-0519
E-mail: graduate.admissions@uvm.edu
Web Site: http://www.uvm.edu/~gradcoll

Overview

The Graduate College of The University of Vermont is responsible for all advanced degree programs except the program leading to the degree of Doctor of Medicine. The Mission Statement for the Graduate College is as follows: The mission of the Graduate College is

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to provide the environment for high quality graduate education by stimulating and supporting the intellectual and professional development of a diverse faculty and student body; by promoting interdisciplinary and innovative forms of scholarship, research, and curricula; and by recognizing scholarly excellence.

Although the Graduate College was established formally in 1952, the University recognized early the value of graduate education, awarding its first master's degree in 1807. Today, the Graduate College offers 70 different master's programs of study and 20 doctoral programs. During the 1999-2000 academic year, 346 master's and 59 doctoral degrees were awarded. The College enrolls approximately 1,200 students, with about 350 of these pursuing the doctorate.

The combination of sound library holdings, laboratories, and computer facilities, along with the engaging size of the University, affords a unique opportunity to pursue high quality graduate programs in a challenging yet personable environment.

A variety of scholarships, fellowships, assistantships, and loan programs are available in limited numbers to students with solid and sustained records of academic performance.

The Graduate College is served by an Executive Committee comprised of ten faculty and a graduate student member. The Executive Committee works closely with the Dean of the Graduate College to insure comprehensive and outstanding programs of study.

Address requests for transcripts from The University of Vermont to the Registrar, University of Vermont, Office of the Registrar, 360 Waterman Building, 85 So. Prospect, Burlington, VT 05405-016; Phone: (802) 656-2045, FAX: 802-656-8230, E-mail: Registrar@uvm.edu , Web Site: http://registrar.uvm.edu

Address requests for Summer Session and Evening Division to the Office of Continuing Education, University of Vermont, Continuing Education, 322 South Prospect St., Burlington, VT 05401; Phone: (802) 656-2085 or (800) 639-3210, Fax: (802) 656-0306, E-mail: learn@uvm.edu, Web Site: http://learn.uvm.edu

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College: Graduate College

Departments Offering Graduate Degrees

- Anatomy and Neurobiology
- Animal Science
- Biochemistry
- Biology
- Biomedical Technologies
- Biostatistics
- Botany
- Business Administration
- Cell and Molecular Biology
- Chemistry
- Civil and Environmental Engineering
- Classics
- Communication Sciences
- Community Development and AppliedEconomics
- Computer Science
- Education
- Electrical and Computer Engineering
- English
- Forestry
- Geography
- Geology
- Historic Preservation
- History
- Materials Science
- Mathematics and Statistics
- Mechanical Engineering
- Microbiology and Molecular Genetics
- Natural Resources
- Nursing

- Nutrition and Food Sciences
- Pathology
- Pharmacology
- Physical Therapy
- Physics
- Plant and Soil Science
- Psychology
- Public Administration
- Romance Languages
- Social Work
- Wildlife and Fisheries Biology

Departments and Programs

Anatomy and Neurobiology Department

Colleges: Graduate College

Faculty: Anatomy and Neurobiology

Courses: Anatomyand Neurobiology (ANNB)

Contact Information:

University of Vermont
Anatomy and Neurobiology Department
C427 Given Building
89 Beaumont Ave.
University of Vermont
Burlington, VT 05405-0068

Phone: (802) 656-2230
Fax: (802) 656-8704
Email:
Web Site: http://www.uvm.edu/annb/?Page=graduateprogram.html

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Anatomy and Neurobiology*
  - Doctor of Philosophy (Ph. D.)
    - Anatomy and Neurobiology

* Students are admitted to the Ph. D. program only, not to a M. S. program. Ph. D. students may subsequently complete a M. S. degree with the permission of the Department.

Overview

Departmental research activities center around nervous system structure, function and development. Specific areas of interest include: mechanisms regulating neuronal degeneration, regeneration and plasticity; role of extracellular matrix in glial differentiation; development and pattern formation in the autonomic nervous system; organization of somatosensory and autonomic pathways; neurotransmitter and neuropeptide expression and secretion; specific synaptic actions of neuroactive compounds; modification of calcium and other intracellular signaling pathways in excitable cells; cardiovascular, urinary and gastrointestinal functions in normal and diseased states; mechanisms of cell apoptosis; role of Notch signalling in neuronal development; mechanisms underlying neuronal cell death; use of mouse models for studies of neural degenerative disease; and mechanisms of transduction in sensory cells.

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Courses in Anatomy & Neurobiology

ANNB 197 - Undergrad Research

Individual laboratiory research under guidance of faculty member. Prerequisite: Departmental permission.

Credits: 3 or 6.

ANNB 198 - Undergrad Research

Individual laboratory research under guidance of faculty member. Prerequisite: Department permission.

Credits: 3-6.

ANNB 201 - Human Gross Anatomy

Lectures and detailed regional dissections emphasize functional anatomy of major systems (e.g. musculoskeletal, cardiovascular, nervous). Prerequisite: Permission.

Credits: 5.

ANNB 202 - Human Neuroscience

Structural basis of human nervous system function: spinal reflex organization, sensory/motor systems, clinical examples, brain dissection, cell biology of neurons & glia, membrane excitability, & synaptic transmission.

Credits: 5.

ANNB 261 - Neurobiology

development, plasticity and diseases. Prerequisites: Focus on molecular and cellular aspects of the nervous system. Electrical signaling, synaptic transmission, signal transduction, neural BIOL 103 or ANPS 19 & 20. (Same as BIOL 261).

Credits: 3.

ANNB 295 - Special Topics

UG only.

Credits: 3.

ANNB 296 - Advanced Special Topics

UG only.

Credits: 1-6.

ANNB 301 - Medical Gross Anatomy

Individualized laboratory instruction, small group conferences, clinically correlated lectures. Basic anatomical information. Emphasis on importance of the relationship between normal human structure and function.

Credits: 0-8.

ANNB 302 - Neuroscience

A correlated presentation of the neuroanatomy and neurophysiology of the mammalian central nervous system. Lectures, demonstrations, laboratory, and clinical correlation workshops.

Credits: 4.

ANNB 306 - Techniques in Neurobiology

Discussion, demonstration of techniques used to study the nervous system. Experience with light, fluorescence, electron microscopy; microsurgical procedures; electrophysiological stimulating, recording techniques; neuronal tracing techniques. Prerequisite: Neuroscience 302.

Credits: 3.

ANNB 311 - Medical Histology

Microscopic study of cells, tissues, and organs emphasizing the correlation of structure and function.

Credits: 3.

ANNB 320 - Developmental Neurobiology

Provides fundamental knowledge of cell-to-cell interactions necessary for proper development and organization of the nervous system. Topics include pattern formation, neuronal differentiation, axon guidance, and target interactions. Prerequisite: Neuroscience 302 or consent of instructor. Alternate years.

Credits: 1-10.

ANNB 323 - Neurochemistry

Biochemistry of the nervous system. Topics include ion channels, synaptic function, neurotransmitters and neuropeptides, signal transduction, and hormones in brain function. Prerequisite: 302 or Cell and Molecular Biology 301 or Biochemistry 301, 302. Alternate years.

Credits: 1-10.

ANNB 325 - Advanced Neuroanatomy

Morphology of the nervous system. Lectures and laboratory. Regional approach to anatomy. Units on development, blood supply, autonomic nervous system. Laboratory: brain dissection, microscopic examination (brain stem). Prerequisite: Neuroscience 302. Alternate years.

Credits: 3.

ANNB 342 - Spec Dissections in Gross Anat

A detailed and independent study of a single anatomical region, utilizing gross, microscopic, and embryologic materials. Prerequisite: 301.

Credits: 1-12.

ANNB 351 - Biological Electron Microscopy

Credits: 1-12.

ANNB 352 - Scanning Electron Microscopy

Credits: 1-12.

ANNB 381 - Sem in Anatomy & Neurobiology

Research presentations and critical review of the literature in various areas of anatomical and neurobiological sciences.

Credits: 1.

ANNB 382 - Sem in Anatomy & Neurobiology

Research presentations and critical review of the literature in various areas of anatomical and neurobiological sciences.

Credits: 1.

ANNB 391 - Master's Thesis Research

Credit as arranged.

Credits: 1-18.

ANNB 395 - Special Topics

A supplementary course to the medical neuroscience course (Neuroscience 302) designed for graduate students which will provide more detailed information concerning selected topics in neurobiology. Prerequisite: Neuroscience 302.

Credits: 1-3.

ANNB 396 - Special Topics

A supplementary course to the medical neuroscience course (Neuroscience 302) designed for graduate students which will provide more detailed information concerning selected topics in neurobiology. Prerequisite: Neuroscience 302.

Credits: 1-3.

ANNB 491 - Doctoral Dissertation Research

Credit as arranged.

Credits: 1-18.

Anatomy and Neurobiology (M. S.)

College: Graduate College
Department(s): Anatomy and Neurobiology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Students are admitted to the Ph. D. program only, not to a M. S. program. Ph. D. students may subsequently complete a M. S. degree with the permission of the Department.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of required courses and research rotations. Acceptance of a written report and oral presentation on the proposed thesis as approved by the Research and Dissertation Committee.

Minimum Degree Requirements

Thirty credits of courses and research, including Anatomy and Neurobiology 301, 302, 311; comprehensive examination. Additional credits as arranged for laboratory research leading to a dissertation. A grade of B or better must be obtained in any course taken in Anatomy and Neurobiology.

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Anatomy and Neurobiology (Ph. D.)

College: Graduate College
Department(s): Anatomy and Neurobiology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Bachelor's degree; one year of organic chemistry/biochemistry; a year of advanced biology; one course in college physics. Additional courses in calculus, differential equations, statistics, computer science, and physical chemistry are recommended. A deficiency in one prerequisite course can be made up in the summer session before entry into the program. A master's degree is not a prerequisite for the Ph. D. degree. Satisfactory scores on the general (aptitude) Graduate Record Examination.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of required courses and research rotations. Approval of the written and oral portions of the qualifying comprehensive examination.

Minimum Degree Requirements

Anatomy 301, 302, 306, 311, 395 or 396, and 491; Cell and Molecular Biology 301; Physiology and Biophysics 301; Biochemistry 301, 302. Additional elective courses and teaching assignments as arranged with the department; three reading courses; departmental research rotations; dissertation research; credits as required by the Graduate College. Candidacy examination; successful completion of dissertation. A grade of B or better must be obtained in any course taken in Anatomy and Neurobiology.

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Departments and Programs

Animal Science Department

Colleges: Agriculture and Life Sciences, Graduate College

Faculty: Animal Science

Courses: Animal Science (ASCI)

Contact Information:

University of Vermont
Animal Science Department
102 Terrill Hall
570 Main Street
Burlington, VT 05405

Phone: (802) 656-2070
Fax: (802) 656-8196
Email: ktatro@uvm.edu
Web Site: http://asci.uvm.edu/

Academic Offerings

- Graduate Majors
  - Master of Science (M. S.)
    - Animal Science
  - Doctor of Philosophy (Ph. D.)
    - Animal Science
- Concurrent Degree Programs
  - Animal Science (B. S. / M. S.)
  - Animal Science: Veterinary Medicine (B. S. / D. V. M.)

Overview

Domestic animals play a major role in our lives through agriculture, recreation, biomedical science, and companionship. The mission of the Department of Animal Science is to provide a high quality, broad-based education emphasizing domestic animals and their interactions with humans.

Our graduates enter the veterinary or other professions, biomedical science, the agribusiness industry, companion animal care and breeding, zoos and aquaria, or education. Additionally, many students use a B. S. in Animal Science as a stepping stone to careers in business and commerce. To provide the necessary flexibility to achieve this diversity students work closely with faculty advisors to individualize their programs.

To enhance the veterinary education of excellent students, the Department of Animal Science has established, with Tufts University School of Veterinary Medicine in Massachusetts, and with Massey University Veterinary School in New Zealand, highly competitive programs for early acceptance / guaranteed admission to veterinary school. For further information on these highly competitive options contact the Department of Animal Science directly at (802)656-0155 or e-mail ktatro@uvm.edu. Some limited veterinary scholarships are also available for upper-level students.

For students interested in dairy production, the FARMS (UVM/VTC Dairy Farm Management 2 + 2 Program) provides Vermont residents with scholarships and the opportunity to earn a B. S. after a two-year Associate's Degree in Dairy Farm Management from the Vermont Technical College.

An option for the outstanding student with an interest in a graduate degree is the Accelerated Master's in which students commence study for their master's degree in their senior year and have the potential to obtain a B. S. and M. S. in a five-year period.

The Department of Animal Science actively encourages participation in undergraduate research, internships, and study abroad. By combining classroom, laboratories, and practical experience students maximize their performance in a friendly environment and develop responsibility for and control over their education.

Courses in Animal Science

ASCI 001 - Introductory Animal Sciences

An overview of the genetics, nutrition, reproduction, and management of livestock and recreation species; introduction to animal behavior, animal disease, and biotechnology.

Credits: 4.

ASCI 006 - Companion Animal Care & Mgmt

Scientific principles of nutrition, breeding selection, health, management practices, pet therapy, and animal bonding. Primary emphasis on cat and dog.

Credits: 3.

ASCI 043 - Fundamentals of Nutrition

Comprehensive study of specific nutrients in terms of their availability, function, and utilization in mammalian species. Prerequisites: High school chemistry and biology.

Credits: 3.

ASCI 110 - Animal Nutrit, Metab & Feeding

Principles of meeting the nutrient requirements of animals, especially as they relate to the practical problems of formulation and production systems. Prerequisite: ASCI 043.

Credits: 4.

ASCI 115 - Introduction to Equine Studies

Overview of the scientific and practical application of equine management and selection principles. Housing, nutrition, herd health, reproduction, and career opportunities.

Credits: 4.

ASCI 117 - Horse Health and Disease

Discusses the basic anatomy and physiology of the horse, common equine diseases and problems, their diagnoses, prevention, and treatment. Prerequisite: ASCI 001; a Biology course, or Instructor permission.

Credits: 3.

ASCI 118 - Appl Animal Health

A study of small and large domestic animal diseases. Natural response to disease, methods of diagnosis, control, and treatment. Prerequisite: ASCI 001; a Biology

course, or Instructor permission.
Credits: 3.

ASCI 119 - Equine Training Techniques
Behavior modification and training of the young horse under saddle and in the cart. Introduction to interdisciplinary directions open to the equine athlete and to conditioning programs associated with these options.
Credits: 3.

ASCI 121 - Equus
A hands-on equine management experience. Students perform horse duties, recordkeeping, and make financial and management decisions on a horse boarding operation. Prerequisite: Sophomore standing; Instructor permission.
Credits: 2-4.

ASCI 122 - Animals in Soc/Animal Welfare
Designed to heighten awareness and understanding of human-animal relationships in society, agriculture, and science. Prerequisite: Sophomore standing.
Credits: 3.

ASCI 125 - Equine Instructing Techniques
Examines philosophies, concepts and teaching-learning strategies needed for the development of sound equine instructing skills. Prerequisite: ASCI 115 or Instructor Permission.
Credits: 3.

ASCI 134 - CREAM
A two-semester course in which students perform the work and make the financial and management decisions associated with the CREAM dairy herd. Prerequisite: Sophomore/Junior standing; Instructor permission.
Credits: 4.

ASCI 135 - CREAM
A two-semester course in which students perform the work and make the financial and management decisions associated with the CREAM dairy herd. Prerequisite: Sophomore/Junior standing; Instructor permission.
Credits: 4.

ASCI 141 - Anat&Physiol Domestic Animals
discussed. Prerequisite: BIOL 001; a chemistry course, or Instructor permission.
Credits: 4.

ASCI 143 - Forage Crop Management
(See Plant and Soil Science 143.) Alternate years, 2002-03.
Credits: 2.

ASCI 154 - Dog Training and Behavior
Canine behavior is thoroughly examined and applied to the training and behavior modifications of dogs. Prerequisite: ASCI Major or Instructor permission.
Credits: 3.

ASCI 161 - Lab Animal Health & Disease
An introduction to laboratory animal science and welfare covering animal care and management, the correct performance of experimental procedures, and the regulatory and legislative framework governing it. Prerequisite: ASCI 001; a

Biology course, or Instructor permission.
Credits: 3.

ASCI 171 - Zoos, Exotics & Endang Species
From gorillas to golden lion tamarinds, how human attitudes, activities, utilization, and management strategies impact wild and captive animal populations. Prerequisite: ASCI 001 or Instructor permission.
Credits: 3.

ASCI 195 - Field Experience
Professionally-oriented field experience under joint supervision by faculty and business or community permission. Total credits towards graduation cannot exceed 15 hours.
Credits: .5-15.

ASCI 196 - Field Experience
Professionally-oriented field experience under joint supervision by faculty and business or community representative. Prerequisite: Instructor permission. Total credits towards graduation cannot exceed 15 hours.
Credits: 1-15.

ASCI 197 - Undergraduate Research
Research activity under direction of qualified staff member. Must have faculty member approval. Written proposal and report required. Prerequisite: Junior standing; Department Chair permission.
Credits: 1-3.

ASCI 198 - Undergraduate Research
Research activity under direction of qualified staff member. Must have faculty member approval. Written proposal and report required. Prerequisite: Junior standing; Department Chair permission.
Credits: 1-3.

ASCI 205 - Equine Reproduction&Management
permission.
Credits: 3.

ASCI 211 - Summer Farm Management
A work-study program on the modern practices associated with farm management. Taught at Miner Institute, Chazy, NY. For students with a strong interest in farm management. Prerequisites: Junior, senior, or graduate standing. UG only.
Credits: 4.

ASCI 212 - Genetics & Breeding
A review of Mendelian genetics, the study of genetic engineering applications, a review of statistics, and the study of selection and mating schemes. Prerequisites: A course in statistics (141 preferred), Biology 1, or permission. UG only.
Credits: 4.

ASCI 213 - Dairy Herd Management
Organization and management of the dairy herd. Practical application of feeding, reproduction, milking, and general management principles. Prerequisites: Junior standing or
Credits: 4.

ASCI 214 - Dairy Herd Management

Organization and management of the dairy herd. Practical application of feeding, reproduction, milking, and general management principles. Prerequisites: Junior standing or instructor permission. UG only.
Credits: 4.

ASCI 215 - Physiology of Reproduction
Fundamental principles of the physiology of reproduction with emphasis on, but not limited to, farm animals. Prerequisite: 120 or instructor permission.
Credits: 4.

ASCI 216 - Endocrinology
Physiology of endocrine and autocrine/paracrine systems and growth factors. Prerequisite: Course in both biology and physiology; one course in anatomy desirable. Alternate years, 2001-2002.
Credits: 3.

ASCI 220 - Lactation Physiology
Physiological mechanisms that control and affect lactation in domestic and laboratory animals with emphasis on dairy cattle. Includes mammary anatomy, development and health, and milk synthesis. Prerequisite: One chemistry course and one course in anatomy and physiology, or Instructor permission.
Credits: 3.

ASCI 230 - Agricultural Policy & Ethics
Examines American agriculture and policies from various perspectives - historical, political, ecological, technological, social, economic, and ethical. Emphasis on contemporary issues, policy options, future developments. Prerequisite: Junior standing or permission.
Credits: 3.

ASCI 231 - Adv Ruminant Nutr&Dairy Feed
Integration of microbial growth and fermentation with metabolism to define nutrient requirements in ruminant animals and application to current feeding practices in dairy production systems. Prerequisite: 110. (Not offered for graduate credit.)
Credits: 2.

ASCI 233 - Dairy Cattle Breeding
Setting breeding goals, making selection and mating decisions; balancing opposing forces to maximize genetic progress, and understanding the underlying genetic principles. Prerequisites: A genetics course, a statistics course, and permission. (Not offered for graduate credit.)
Credits: 2.

ASCI 234 - Advanced Dairy Management
An intensive, residential program at the Miner Institute providing an in-depth experiential program in the management of the dairy herd. Prerequisites: ASCI 110, 134 or 135 or equivalents. Fifteen hours. (Not offered for graduate credit.)
Credits: 15.

ASCI 263 - Clin Top:Companion Animal Med
The use of case studies in companion animal medicine to develop clinical, analytical, and diagnostic skills. Prerequisites: 118, 141, junior standing.
Credits: 3.

ASCI 264 - Clin Topics:Livestock Medicine

An advanced study of diseases in cattle, sheep, goats, and pigs, emphasizing disease detection, pathobiology, treatment and prevention. Prerequisites: ASCI 118, ASCI 141, Junior standing.
Credits: 4.

ASCI 272 - Adv Top:Zoo,Exotic,Endang Spec
An exploration of modern zoo philosophy and ethics and the extent of human intervention necessary for the preservation of endangered species. Prerequisite: ASCI 171 and Instructor permission.
Credits: 3.

ASCI 281 - Animal Sciences Career Seminar
Discussion and workshop activities exploring careers in animal and food sciences. Includes resume preparation and interview training. Prerequisite: Junior standing ASCI major. UG only.
Credits: 1.

ASCI 297 - Spec Topics in Animal Science
Written courses, seminars or topics beyond the scope of existing offerings. See Schedule of Courses for specific titles. Prerequisite: Department Chair permission. May enroll more than once for maximum of fifteen hours.
Credits: 1-15.

ASCI 298 - Spec Topics in Animal Science
titles.
Credits: .5-15.

ASCI 301 - ASCI Graduate Journal Club
Students learn to critically read and discuss current scientific literature in terms of scientific method and merit. Pre/corequisite: Graduate standing.
Credits: 1.

ASCI 302 - ASCI Graduate Seminar
Topics of current faculty and graduate student interest Graduate standing.
Credits: 1.

ASCI 303 - Research Proposal Writing
Students develop and write a formal proposal for their graduate research project. Pre/co-requisite: Graduate standing; must be taken prior to/during the semester of student's first committee meeting.
Credits: 1.

ASCI 391 - Master's Thesis Research
Credits: 1-9.

ASCI 392 - Independent Literature Rsch
Reading and literature research culminating in a paper on a topic of current interest in Animal Sciences.
Credits: 1-6.

ASCI 491 - Doctoral Dissertation Research
Credits: 1-12.

Animal Science (M. S.)

College: Graduate College
Department(s): Animal Science

Overview

The research program focuses on Lactation Physiology and Mammary Gland Biology involving both a combination of courses and graduate research. Areas of research interests include lactation physiology, breast cancer, mastitis, developmental biology, nutrition, cell signaling and metabolism, biotechnology, and transgenics.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An acceptable undergraduate major in animal science, chemistry, biology, or a related field. Satisfactory scores on the general (aptitude) Graduate Record Examination must be presented. In some of the animal health areas, a degree of Doctor of Veterinary Medicine may be helpful.

Requirements for Advancement to Candidacy for the Degree of Master of Science

The applicant must satisfy the requirements of the Graduate College and pass the general qualifying examination administered by the Department of Animal Science. Both an oral and written exam are required.

Minimum Degree Requirements

Option A: 30 credit hours of study with a minimum of 15 credit hours in courses in Animal Science or related fields and a minimum of 9 credit hours of thesis research.

Students are required to attend and participate in Journal Club and Graduate Seminar every semester that they are enrolled for credits. Students must also participate in one semester of Research Proposal Writing.

Students are expected to meet with their committee during their second and third semester and during the final semester for their dissertation defense. Students are also expected to have one publication ready to submit or already submitted to an appropriate journal.

Option B: 30 credit hours of study with 24 credit hours in courses in Animal Science or related fields and a minimum of 6 credit hours of literature research. Students are required to attend and participate in Journal Club and Graduate Seminar every semester that they are enrolled for credits.

Animal Science (Ph. D.)

College: Graduate College
Department(s): Animal Science

Overview

The research program focuses on Lactation Physiology and Mammary Gland Biology involving both a combination of courses and graduate research. Areas of research interests include lactation physiology, breast cancer, mastitis, developmental biology, nutrition, cell signaling and metabolism, biotechnology, and transgenics.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory scores on the general (aptitude) Graduate Record Examination must be presented.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

The applicant must satisfy the prerequisites of the Graduate College and pass the general qualifying examination administered by the Department of Animal Sciences. Both an oral and written exam are required.

Minimum Degree Requirements

The Department of Animal Science believes each graduate program has its individual needs and must be arranged accordingly. The candidate must meet all the requirements as prescribed by the Graduate College for the degree of Doctor of Philosophy. The

candidate is required to attend and participate in Journal Club and Graduate Seminar every semester that he/she is enrolled for credit. The candidate must also participate in one semester of Research Proposal Writing. In addition, all courses and seminars as established by the Studies Committee must be satisfactorily met. The student is expected to meet with their committee within the first two semesters and then annually until the doctoral research is completed and an acceptable dissertation written and defended. It is also expected that a Ph.D. student will have at least two publications ready to submit, or already submitted, to an appropriate scientific journal. In accordance with the policy of the Animal Science Department, all doctoral students will be provided the opportunity to participate in the Department's undergraduate teaching program. Proficiency in a modern foreign language or computer language and programming is optional at the discretion of the Studies Committee.

Accelerated Master's Program in Animal Science (B. S./M. S.)

College: Graduate College
Department(s): Animal Science

Overview

An option for the outstanding student with an interest in a graduate degree is the Accelerated Master's in which students commence study for their master's degree in their senior year and have the potential to obtain a B. S./M. S. in a five-year period.

Further details about the Accelerated Master's Program (AMP), available for students majoring in Animal Sciences or Biological Sciences, can be obtained from the Department of Animal Science, 102 Terrill Hall, (802) 656-0155.

Agriculture and Life Sciences Preveterinary Programs

College: Agriculture and Life Sciences
Departments: Animal Science, Biological Sciences

UVM/Tufts School of Veterinary Medicine Program

The UVM College of Agriculture and Life Sciences and Tufts School of Veterinary Medicine in Massachusetts offer a seven-year B.S./D.V.M. program to selected honors students. Students who meet rigorous eligibility criteria may enroll for three years of study at UVM majoring either in Animal Science or Biological Sciences. After completion of about 90 credits with a minimum GPA of 3.25 each year, the student enters Tufts School of Veterinary Medicine. The student will be awarded a B.S. degree from The University of Vermont following the successful completion of the first year of the D.V.M. program at Tufts. The successful student will earn a D.V.M. degree from Tufts School of Veterinary Medicine after the fourth year at Tufts.

Prospective students must apply to both UVM and Tufts University. Both applications may be obtained from the UVM Admissions Office. Candidates' files are first reviewed at Vermont, and admissible student applications are then forwarded to Tufts for their evaluation. Students will be notified of the results of these reviews through the UVM admissions process. Absolute standards may vary from year to year, but this is an intensive program with limited places. We expect that successful candidates will have:

1. Excellent grades in high school biology, chemistry, physics, and mathematics. It will be advantageous to have completed or be enrolled in AP (advanced placement) biology, AP calculus, and AP chemistry.
2. Standardized test scores at or above the 80th percentile nationally.
3. A class rank in the top ten percent of their high school class.
4. Some appropriate animal and/or veterinary experience.

It is important to recognize that some excellent students may not be admitted to the joint B. S./D.V.M. because of space limitation. These students may be admitted to UVM as preveterinary students and complete four years at UVM, graduate with a B. S. degree, and apply to any of the veterinary schools in the nation. There are many options to meet individual educational goals.

The specific courses to be taken for this option start with the Core Program of the College as discussed previously. In addition, each student will be required to successfully complete the following courses and credit hours within the three-year period:

Course	Credit
Biology	8
Calculus	4 or 6
Inorganic Chemistry	8
Organic Chemistry	8
Biochemistry	4
Physics	10
Microbiology	4
General Biology	3
Anatomy	3
Physiology	3
Genetics	3
Ecology	3
Undergraduate Research	6
English 50 (recommended)	3

Note: Beginning Fall 2003, Tufts offers a guaranteed admission program for students in their sophomore year at UVM. Students will apply directly to Tufts, and, if accepted, will be guaranteed admission to Tufts Veterinary School after completing their B.S. degree at UVM. The 3+4 UVM/Tufts early decision high school program is being discontinued.

UVM/Massey University Veterinary School Program

The UVM College of Agriculture and Life Sciences and Massey University Veterinary School in New Zealand offer a B.S./B.V.Sc program. Their B.V.Sc degree is equivalent to the D.V.M. or V.M.D. degree offered in the United States since Massey University is accredited by the American Veterinary Medical Association (AVMA). Massey has guaranteed admission for the top 5 UVM applicants each year.

The specific courses to be taken for this option start with the Core Program of the College. In addition, each student will be required to successfully complete the following courses and credit hours. The student must have maintained a minimum GPA of 3.0 in the sciences, and must also have met the required minimum score for the Graduate Record Exam (GRE) tests.

Course	Credit
Biology	8
Inorganic Chemistry	8

Organic Chemistry	8
Physics	10
Anatomy & Physiology of Domestic Animals	4

Applications will be made directly to Massey University during the Junior or Senior year at UVM and all decisions will be made by the Massey University Admissions Committee.

For information regarding admissions and/or applications to these exciting programs, contact the Admissions Office, 194 S. Prospect Street, Burlington, VT 05401-3596. For specific program information contact Dr. Karen Plaut, Chair, Animal Science, College of Agriculture and Life Sciences, 102 Terrill Hall, UVM, Burlington, Vermont 05405, 802-656-0155 or e-mail kplaut@uvm.edu.

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Departments and Programs

Biochemistry Department (Graduate)

Colleges: Graduate College

Faculty: Biochemistry

Courses: Biochemistry(BIOC)

Contact Information:

University of Vermont
Biochemistry Department
C401 Given Building
89 Beaumont Ave.
University of Vermont
Burlington, VT 05405-0068

Phone: (802) 656-2220
Fax: (802) 862-8229
Email:
Web Site: http://biochem.uvm.edu/

Related Programs:

- Biochemistry Undergraduate Programs

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Biochemistry
  - Doctor of Philosophy
    - Biochemistry

Overview

Current research programs include protein structural dynamics during muscle contraction (Berger); synthesis of coagulation enzyme inhibitors (Butenas); regulation of gene expression in developing and neoplastic tissues (J-F. Chiu); physiology and biochemistry of thrombosis (D. Collen); protein crystallography of plasma proteins (S. Everse); thermodynamics of protein-protein and protein-nucleic acid interactions in transcriptional assemblies (M. Daugherty); regulation of procollagen synthesis (K. Cutroneo); protein-nucleic acid recognition (C. Francklyn); environmental, nutritional, and hormonal modulators of pulmonary defense mechanisms (B. Hart); molecular biology, cloning and expression of blood coagulation proteins; site-specific mutagenesis (G. Long); protein structure by multi-dimensional high field NMR techniques (B. Lyons); macromolecular assembly in blood coagulation and bone formation (K. Mann); transport of iron into cells by receptor mediated iron-binding proteins (A. Mason); enzymology of DNA replication, recombination and repair (S. Morrical); thrombosis, thrombolysis, and coronary artery disease (B. Sobel); cellular interactions with coagulation proteins (P. Tracy); determination of thrombosis related cardiovascular disease risk factors (R. Tracy); nature of the binding of metals to proteins, particularly the iron-binding proteins of blood plasma (R. Woodworth).

Courses in Biochemistry

BIOC 191 - Undergraduate Research
Participation in a research program currently being pursued by a faculty member of department. Written report due at end of each semester. Prerequisites: Chemistry 31, 32 or chemistry. Credit as arranged, up to four hours per semester.
Credits: 1-4.

BIOC 192 - Undergraduate Research
Participation in a research program currently being pursued by a faculty member of department. Written report due at end of each semester. Prerequisites: Chemistry 31, 32 or 35, 36. Some programs may require additional courses in chemistry. Credit as arranged, up to four hours per semester.
Credits: 1-4.

BIOC 196 - Intermediate Special Topics
Credits: 1-6.

BIOC 205 - Biochemistry I
CHEM 205 and MMG 205. UG only. Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems including enzyme catalysis, biosynthesis, regulation, and information transfer. Prerequisites: CHEM 142 or 144. Crosslisted with
Credits: 3.

BIOC 206 - Biochemistry II
Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular Prerequisite: 205. Crosslisted with CHEM 206 and MMG 206. information transfer, genomics, and proteomics. UG only.
Credits: 3.

BIOC 207 - Biochemistry Lab
with CHEM 207 and MMG 207. UG only. Introduction to biochemical tools, including spectrometry, chromatography, and electrophoresis; DNA-modifying enzymes; computer-based structure/function exercises. Corequisites: 205 or 206. Crosslisted natural and recombinant enzyme isolation; assays of
Credits: 2.

BIOC 212 - Biochemistry of Human Disease

Molecular approach to genetic, metabolic, and infectious diseases; recombinant DNA technology and medicine; 141.
Credits: 3.

BIOC 240 - Macromol Struct Prot&Nucl Acid
Introduction to structural biology and macromolecular structure with an emphasis on protein-protein and protein-nucleic acids interactions. Prerequisites: Biology 1,2; Organic Chemistry; Junior standing recommended; (Crosslisted with MMG 240) Alternate years; not approved for graduate credit.
Credits: 3.

BIOC 301 - General Biochemistry
Survey for science majors. Chemistry, structure, metabolism, and function of proteins, carbohydrates, lipids; enzymes, bioenergetics and respiratory processes. Prerequisites: Chemistry 141, 142 or 143, 144, and departmental permission.
Credits: 3.

BIOC 302 - General Biochemistry
Survey for science majors. Amino acids, nucleic acids, protein synthesis, cellular and physiological control mechanisms. Prerequisites: Chemistry 141, 142 or 143, 144, and departmental permission.
Credits: 3.

BIOC 305 - Medical Biochemistry
A survey course in human biochemistry, with particular emphasis on medical applications. Prerequisite: For medical students only.
Credits: 3.

BIOC 306 - Medical Biochemistry
A survey course in human biochemistry, with particular emphasis on medical applications. Prerequisite: For medical students only.
Credits: 3.

BIOC 307 - Special Topics in Biochemistry
Areas of biochemistry not treated in concurrent advanced course offerings. Prerequisites: 301, 302 or 305-306; Chemistry 162.
Credits: 1-3.

BIOC 308 - Special Topics
Areas of biochemistry not treated in concurrent advanced course offerings. Prerequisites: 301, 302 or 305-306; Chemistry 162.
Credits: 1-3.

BIOC 309 - Laboratory Research Rotations
Two sequential research projects in departmental faculty laboratories, composed of experimental work, an oral presentation, and a written report. (First semester).
Credits: 3.

BIOC 310 - Laboratory Research Rotations
presentation and a written report. (Second semester). faculty laboratories, composed of experimental work, an oral
Credits: 3.

BIOC 351 - Proteins I: Structure&Function
Special Topics: Introduction to concepts in protein structure and chemistry as well as exploration of ideas in a "hands on" fashion using computational resources.

Credits: 3.

BIOC 352 - Protein:Nucleic Acid Interact

Structure of DNA and RNA, and the structure and assembly of nucleoprotein complexes will be described using examples from prokaryotes, yeast, viruses, and mammalian cells in culture. Prerequisites: MMG 211 or equivalent, AGBI 201 or BIOC 301 and 302 or equivalent. Crosslisting: MMG 352. Alternate years.
Credits: 3.

BIOC 353 - Proteins II: Enzymology

General consideration of enzyme nomenclature, purification, assay, kinetics, mechanisms, cofactors, active sites, subunit structure, allosteric and regulatory properties, and control of multienzyme systems. Prerequisites: 301, 302, or 305-306; Chemistry 162.
Credits: 3.

BIOC 354 - Nucleic Acids II

The study of structure, composition, organization, function, synthesis, and metabolism of nucleic acids and nucleoprotein particles and matrices in eukaryotic organisms. Prerequisites: 301-302, 305-306.
Credits: 3.

BIOC 370 - Physical Biochemistry

related topics. Prerequisites: 301, 302 or 306; Chemistry 160 or 162.
Credits: 3.

BIOC 372 - Cancer Biology

Prerequisites: 301-302 or 305-306; under special circumstances , 212.
Credits: 3.

BIOC 381 - Seminar

A review of recent developments and current literature in the various fields of biochemistry. Prerequisite: Department permission.
Credits: 1.

BIOC 391 - Master's Thesis Research

Credit as arranged.
Credits: 1-12.

BIOC 392 - Independent Literature Rsch

Reading and literature research culminating in a paper on a topic of current interest in biochemistry.
Credits: 1-12.

BIOC 395 - Special Topics

Credits: 1-12.

BIOC 396 - Advanced Special Topics

Credits: 1-12.

BIOC 491 - Doctoral Dissertation Research

Credit as arranged.
Credits: 1-12.

Biochemistry (M. S.)

College: Graduate College
Department(s): Biochemistry

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Satisfactory score on the Graduate Record Examination. Subject (advanced) portion not required but helpful. In addition: Year courses in organic chemistry, physical chemistry, and physics (equivalent to Chemistry 141, 142 or 143; 144, Chemistry 162 and Physics 15, 16); quantitative chemistry; mathematics through differential and integral calculus, a year course in a biological science.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to either degree program.

Minimum Degree Requirements

Thirty credit hours, 16 of which must be taken from graduate courses offered by the Department of Biochemistry, including Biochemistry 301, 302, 303, 381, and 391 or 392.

Thesis Option: Up to 14 credit hours of Master's Thesis Research (391).

Nonthesis Option: Up to eight credit hours of Independent Literature Research (392).

Biochemistry (Ph. D.)

College: Graduate College
Department(s): Biochemistry

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory score on the Graduate Record Examination. Subject (advanced) portion not required but helpful. In addition: Year courses in organic chemistry, physical chemistry, and physics (equivalent to Chemistry 141, 142 or 143; 144, Chemistry 162 and Physics 15, 16); quantitative chemistry; mathematics through differential and integral calculus, a year course in a biological science.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to either degree program.

Minimum Degree Requirements

A total of 75 hours, including 20 hours from graduate courses offered by the Department of Biochemistry including Biochemistry 301, 302 or 305-306, 303 and participation throughout residence in Biochemistry Seminars; three hours from graduate courses offered by the Department of Chemistry; ten additional hours from courses in physical or biological sciences; 30 hours of Doctoral Dissertation Research.

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Departments and Programs

Biology Department

Colleges: Arts and Sciences, Graduate College

Faculty: Biology

Courses: Biology (BIOL)

Contact Information:

University of Vermont
Biology Department
Marsh Life Science Building, Room 120A
109 Carrigan Drive
Burlington, VT 05405-0086

Phone: (802) 656-2922
Fax: (802) 656-2914
Email: Biology@uvm.edu
Web Site: http://www.uvm.edu/~biology/

Academic Offerings

- Graduate Degrees
  - Master of Arts in Teaching (M. A. T.)
    - Biology
  - Master of Science (M. S.)
    - Biology
  - Master of Science for Teachers (M. S. T.)
    - Biology
  - Doctor of Philosophy (Ph. D.)
    - Biology
- Concurrent Degree Programs
  - Biology (B. S. / M. S.)

Courses in Biology

BIOL 001 - Principles of Biology

Principles of cellular biochemistry, cell biology, genetics and evolution. Topics presented: biochemistry; metabolism, cell structure and function; respiration; photosynthesis; molecular, Mendelian and population genetics; microevolution. Credit not given for both 1 and 11.

Credits: 4.

BIOL 002 - Principles of Biology

Principles of organismal biology; nature of scientific inquiry, plant form and function, pollination ecology, animal phylogeny illustrated by comparative anatomy and physiology; animal behavior. Credit not given for both 2 and 12.

Credits: 4.

BIOL 003 - Human Biology

For nonscience majors. Selected biological topics relevant to humans, such as cancer, human genetics, environmental toxicants; biological concepts necessary for understanding these problems.

Credits: 3.

BIOL 004 - The Human Body

Introduction to basic human anatomy and organ system physiology emphasizing normal homeostatic mechanisms and the changes that accompany common disorders and diseases. For nonscience majors.

Credits: 3.

BIOL 006 - Evolutionary Biology

For nonscience majors. The process of biological evolution, evidence for evolution, mechanisms of evolutionary change, origin of adaptations, evolution of behavior, social and reproductive behavior.

Credits: 3.

BIOL 009 - Science As a Way of Knowing

History of scientific method and its application to generation of knowledge. How science seeks to understand

Credits: 3.

BIOL 011 - Exploring Biology

Exploring biology from cells to organisms. Topics include origin of life; ancestral

organisms; uni- and multicellular energetics; evolution of respiration and metabolism; and the genetic code. Prerequisites: Biology/Zoology, Environmental Sciences (A&S) majors only, others by permission; concurrent enrollment or credit in Chemistry 31 or 32. Credit not given for both 1 and 11.
Credits: 4.

BIOL 012 - Exploring Biology

An evolutionary perspective to exploring biology. Topics include patterns of inheritance; Darwinian evolution; evolution of biodiversity; ecology of organisms; human effects on biological systems. Prerequisites: Biology/Zoology, Environmental Sciences (A&S) majors only, others by permission; enrollment or credit in Chemistry 31 or 32. Credit not given for both 2 and 12.
Credits: 4.

BIOL 095 - Special Topics

See Schedule of Courses for specific titles.
Credits: 0-6.

BIOL 096 - Special Topics

See Schedule of Courses for specific titles.
Credits: 0-6.

BIOL 101 - Genetics

Study of the basis of inheritance, covering topics from classical genetics to modern molecular studies. Analysis of genetic data emphasized. Prerequisites: 1, 2 or 11, 12; Chem 31, 32, organic chemistry recommended.
Credits: 3.

BIOL 102 - Environmental Biology

Ecosystem and community structure; population growth; species interactions and niche dynamics; population and chromosomal genetics; speciation in fossil records; ecology of animal behavior; applied ecology. Prerequisites: 1, 2; or 11,12; Math. 19 or 21.
Credits: 4.

BIOL 103 - Cell Function & Structure

BIOL 012; CHEM 031, CHEM 032,
Credits: 4.

BIOL 104 - Comparative Animal Physiology

103 recommended.
Credits: 4.

BIOL 191 - Research Apprenticeship

Participation in a faculty research project. Suitable for students in first through junior years. Students must follow all departmental guidelines. Prerequisite: Departmental permission.
Credits: 1-3.

BIOL 192 - Research Apprenticeship

Participation in a faculty research project. Suitable for students in first through junior years. Students must follow all departmental guidelines. Prerequisite: Departmental permission.
Credits: 1-3.

BIOL 193 - Internship in Biology

permission.
Credits: 3.

BIOL 194 - Internship in Biology
permission.
Credits: 3.

BIOL 195 - Special Topics
See Schedule of Courses for specific titles.
Credits: 0-6.

BIOL 196 - Special Topics
See Schedule of Courses for specific titles.
Credits: 0-6.

BIOL 197 - Undergraduate Research
Individual laboratory research under faculty guidance. Students must follow departmental guidelines or be disenrolled. Six credits given only with presentation in department Research Day or approved venue. Prerequisite: Junior or senior standing, departmental permission.
Credits: 3 or 6.

BIOL 198 - Undergraduate Research
Individual laboratory research under faculty guidance. Students must follow departmental guidelines or be disenrolled. Six credits given only with presentation in department Research Day or approved venue. Prerequisite: Junior or senior standing, departmental permission.
Credits: 3 or 6.

BIOL 202 - Quantitative Biology
Mathematical concepts applied to biological problems such as growth, metabolism, temperature effects, kinetics, and graphic interpretation of data. Statistics not treated. Prerequisite: At least one intermediate level course in biology, Math. 9, or instructor's permission.
Credits: 3.

BIOL 203 - Population Ecology
Analysis of growth, regulation, and interrelations of biological populations in theoretical, laboratory, and natural systems. Prerequisite: Biology 102.
Credits: 3.

BIOL 205 - Adv Genetics Lab
Lecture/discussions alternated with laboratories to provide experiences with genetic techniques. Bench work and data analysis emphasized. Prerequisite: 101.
Credits: 2 or 4.

BIOL 206 - Immature Insects
Evolution, morphology, taxonomy, and natural history of immature insects. Laboratory covers some morphology, but is predominantly identification. Prerequisites: Junior standing; major or minor in Biology. UG only.
Credits: 4.

BIOL 208 - Morphology&Evolution Insects
Interrelationships, fossil history, comparative anatomy of major insect groups. Morphology and way of life of representatives of important insect orders and classes of arthropods. Prerequisite: 102 or 104.

Credits: 4.

BIOL 209 - Field Zoology

Collection, identification of invertebrates; September field work. Half of student's collection is general, identified to family; half is one or two groups identified to species. Prerequisite: 102 or 104.

Credits: 4.

BIOL 212 - Comparative Histology

Anatomy of tissues, chiefly vertebrate. Tissue similarities and specializations of organs among the various groups of animals in relation to function. Prerequisite: 104.

Credits: 4.

BIOL 217 - Mammalogy

Classification, identification, morphology, evolution, and distribution of mammals. Prerequisite: 102.

Credits: 4.

BIOL 219 - Compar/Func Vertebrate Anatomy

(2-4) Structure, function, and phylogeny; survey of evolutionary and functional trends; investigation of the structure of all chordate groups. Prerequisite: 104. Alternate years, 2000-01.

Credits: 4.

BIOL 223 - Developmental Biology

An analysis of the cellular, subcellular, molecular, and genetic mechanisms that operate during oogenesis and embryogenesis in invertebrate and vertebrate organisms. Prerequisites: 101, 103.

Credits: 3.

BIOL 225 - Physiological Ecology

Processes by which animals cope with moderate, changing, and extreme environments. Prerequisites: 102, 104.

Credits: 3.

BIOL 238 - Winter Ecology

Natural history and winter adaptation of plants and animals of western Maine. Field work during winter break; oral and written report completed during spring semester. Prerequisite: Instructor permission.

Credits: 3.

BIOL 246 - Ecological Parasitology

Parasite-host interactions examined with evolutionary perspective. Topics include the origin of parasites, evolution of virulence, and ecological consequences of parasitism. Laboratory includes original experiments. Prerequisite: 102.

Credits: 3-4.

BIOL 254 - Population Genetics

The forces that change gene frequencies in populations are examined. Topics include Hardy-Weinberg-Castle equilibrium, selection, mutation, migration, genetic drift, and quantitative genetics. Prerequisites: 102; calculus and statistics recommended.

Credits: 4.

BIOL 255 - Compar Reproductive Physiology

Various means by which animals reproduce. Special emphasis on the embryological origin and evolutionary relationships of sex cell differentiation. Prerequisite: 104.
Credits: 3.

BIOL 261 - Neurobiology
Focus on molecular and cellular aspects of the nervous system. Electrical signaling, synaptic transmission, signal transduction, neural development, plasticity and disease. Prerequisite: 103. Cross-listing: ANNB 26.
Credits: 3.

BIOL 263 - Genetics Cell Cycle Regulation
Molecular events during the cell cycle; mutants defective in cell cycling; comparison of normal and transformed (cancer) cell cycling. Prerequisite: 101 or instructor's permission. Alternate years, 1999-00.
Credits: 3.

BIOL 264 - Community Ecology
Theoretical and empirical analyses of community structure. Topics include population growth, metapopulation dynamics, competition, predation, species diversity, niches, disturbance succession, island biogeography, and conservation biology. Prerequisites: 102; at least junior standing.
Credits: 3.

BIOL 265 - Developmntl Molecular Genetics
Current topics in developmental genetics explored through lectures and discussions of current literature; emphasis on molecular approaches. Prerequisites: 101. Alternate years, 2000-01.
Credits: 3.

BIOL 267 - Molecular Endocrinology
Study of hormone action at the cellular and molecular level. Prerequisite: 101.
Credits: 4.

BIOL 268 - Medical Entomology
permission. UG only. Examines the arthropod vectors of temperate and tropical diseases that affect human health, using an ecological and a systematics approach. Prerequisites: 102 or instructor
Credits: 3-4.

BIOL 269 - Plant-Animal Interactions
plants and animals. Topics include herbivory, pollination, seed predation, biocontrol, and effects of global climate change. Prerequisites: Biology 1,2 or 11,12; Biology 102 recommended. UG only.
Credits: 3.

BIOL 270 - Speciation and Phylogeny
Contributions of modern research in such fields as genetics, systematics, distribution, and serology to problems of evolutionary change. Prerequisite: 101 (102 recommended). Alternate years, 1999-00.
Credits: 3.

BIOL 276 - Behavioral Ecology
Adaptive significance of behavior in natural environments. Evolutionary theory applied to behavior and tested with field data. Prerequisites: 102 or instructor

permission. UG only.
Credits: 3.

BIOL 281 - Biology Seminar
Credits 0-1.
Credits: 0.

BIOL 282 - Eco Lunch
Review and discussion of current zoological research. Attendance required of Biology graduate students. Seniors in research programs may enroll for 0 credits.
Credits: 0-1.

BIOL 283 - Ecology-Evolution Journal Club
Review and discussion of current zoological research. Attendance required of Biology graduate students. Seniors in zoological research programs may enroll.
Credits: 0.

BIOL 284 - Cell Lunch
Review and discussion of current zoological research. Attendance required of Biology graduate students. Seniors in research programs may enroll for 0 credits.
Credits: 1.

BIOL 285 - John Dewey Honors Crs:Biology
Advanced Biology course for John Dewey Honors Students with Biology/Zoology/Environmental Sciences Majors. Requires enrollment in approved 200-level course and includes additional assignments. Prerequisites: Departmental permission. UG only.
Credits: 0.

BIOL 288 - Seminar in Forensic Biology
Capstone course in seminar format for undergraduates concentrating in Forensic Biology in the Biology major; discussions, readings, guest speakers.
Pre/corequisites:
Credits: 1.

BIOL 295 - Special Topics
See Schedule of Courses for specific titles.
Credits: 0-4.

BIOL 296 - Advanced Special Topics
See Schedule of Courses for specific titles.
Credits: 2-4.

BIOL 297 - Advanced Special Topics
See Schedule of Courses for specific titles. UG only.
Credits: 1-6.

BIOL 298 - Advanced Special Topics
See Schedule of Courses for specific titles. UG only.
Credits: 1-6.

BIOL 299 - Advanced Special Topics
See Schedule of Courses for specific titles. UG only.
Credits: 1-6.

BIOL 301 - Cell Biology
with: CLBI 301.
Credits: 3.

BIOL 302 - Specialized Cells & Cell Proc

Current issues and research in the field of plant, invertebrate, mammalian cell, and molecular biology. Prerequisite: BIOL 301. Cross-listed with: CLBI 302.

Credits: 3.

BIOL 371 - Graduate Colloquium

Topics of current faculty and graduate student interest presented in a seminar-discussion format. Specific titles for colloquia will be listed in the course schedule.

Credits: 1.

BIOL 381 - Special Topics

Readings with conferences, small seminar groups, or laboratories intended to contribute to the programs of graduate students in phases of zoology for which formal courses are not available. Prerequisite: An undergraduate major in life science.

Credits: 0-4.

BIOL 391 - Master's Thesis Rsch

Credit as arranged.

Credits: 1-10.

BIOL 491 - Doctoral Dissertation Research

Credits: 1-10.

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Biology (M. A. T.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

The department offers a program leading to the degree of Master of Arts in Teaching. Satisfactory scores on the Graduate Record Examination, general (aptitude) section, are

requirements for acceptance for this degree.

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Biology (M. S.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in Biology or its equivalent. Satisfactory scores on the Graduate Record Examination, general (aptitude) section. Acceptability to the faculty member with

whom the candidate wishes to do thesis research.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of a qualifying examination.

Minimum Degree Requirements

Biology Graduate Colloquia, fours hours; 11 to 18 additional hours in biology and related fields; thesis research (eight to 15 hours). Each candidate must participate in the teaching of at least one undergraduate course.

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Biology (M. S. T.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science in Teaching

A bachelor's degree from an accredited institution and certification as a teacher of biology or an associated field. At least three years of secondary school teaching.

Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Minimum Degree Requirements

Thirty hours of course work to include a selection of courses in the Departments of Botany and Biology which will broaden and balance the undergraduate work in biology. At least two 200-level courses in each department. Courses in four of the five following areas: anatomy; morphology and systematics; genetics; developmental biology; and environmental biology. Up to 12 hours of 100-level courses may be used for the above requirements where approved by the advisor and the Dean. Appropriate courses in related science departments may be used to complete the required 30 hours. No thesis is required; however, each degree recipient must complete a written and oral examination.

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Biology (Ph. D.)

College: Graduate College
Department(s): Biology

Overview

Faculty research interests fall into two broad groupings: A) developmental biology/cell and molecular biology/physiology; and B) ecology/evolution/natural history. Current ongoing research projects include: A) molecular biology of receptors; cell biology; signal transduction and development; identification of novel muscle proteins by means of biochemical and genetic approaches; how molecular interactions define mechanical properties of muscles; genetics of chemoreception and chemotactic behavior of protozoa; electrophysiological basis of signal transduction; analysis of G protein signaling in Drosophila using genetic, molecular and immunohistochemical approaches; B) taxonomy and natural history of insects, particularly Rhysodid beetles; null models; community assembly; population and community ecology of carnivorous plants; parasite-host ecology; ecology and evolution of plant-animal interactions; population and community ecology of lizards; behavioral ecology; population genetics and molecular systematics in taxa such as Himalayan rodents, Polynesian black flies, and neotropical mosquitoes; genetic differentiation and evolution in structured populations; population genetics; cytoplasmically inherited reproductive incompatibility; evolutionary consequences of parasite-host interactions; physiological energetics of insects.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Satisfactory completion of: college level courses appropriate for science majors including a year of mathematics, a year of physics, organic chemistry, at least one year of biology;

the Graduate Record Examination, general (aptitude) section; and acceptability to the faculty member with whom the candidate wishes to do dissertation research. Deficiencies in prerequisites may be made up after entering the program.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

The diagnostic examination prior to registration for the first semester; the comprehensive exam; minimum requirement course work of 30 hours and additional courses as required by the advisor and Studies Committee; at least one academic year of graduate study at The University of Vermont.

Minimum Degree Requirements

Of the 75 credit hours required for the degree, at least 30 hours must be earned in courses suitable for graduate credit and must include six hours of Graduate Colloquia. The selection of courses will be designated for each student by his/her advisor and Studies Committee. At least 20, but not more than 45, credits must be earned in dissertation research. Each candidate must participate in the teaching of at least one undergraduate course.

Accelerated Master's Program in Biology (B. S./M. S.)

College: Graduate College
Department(s): Biology

Overview

A master's degree in Biology can be earned in a shortened time by careful planning in the junior and senior years of Biology B. S. majors at UVM. Students' should discuss this possibility with the Department Graduate Program Director as soon as they think they might be interested in the program. The M. S. can typically be earned in one additional year. Up to six credits of undergraduate course work taken in the junior and senior year can be counted towards the M. S. degree requirement, including BIOL 202, 203, 205, 208, 209, 212, 217, 219, 223, 225, 238, 246, 254, 255, 263, 264, 265, 267, 270, and 276.

To be eligible for the AMP, a student must be a declared Biology B. S. major and have identified a faculty sponsor. Other requirements include a G.P.A. typically higher than 3.1 overall and 3.3 in biology courses. Following admission, students are required to take at least 3 credit hours of undergraduate research. After graduation with the B. S. degree, students are eligible to become candidates for the M. S. degree. Applications and further information may be obtained from the Department of Biology.

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Departments and Programs

Biomedical Technologies Department

Colleges: Nursing and Health Sciences, Graduate College

Faculty: Biomedical Technologies

Courses: Biomedical Technologies (BMT), Biomedical Technology (BMED), Medical Laboratory Science (MLS), Nuclear Medicine Technology (NMT), Radiation Therapy (RADT)

Contact Information:

University of Vermont
Biomedical Technologies Department
302 Rowell Building
106 Carrigan Drive
University of Vermont
Burlington, VT 05405

Phone: (802) 656-3811
Fax: (802) 656-2191
Email: bmt@uvm.edu
Web Site: http://www.uvm.edu/~cnhs/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Biomedical Technology
- Concurrent Degree Programs
  - Biomedical Technology (B. S. / M. S.)

Courses in Biomedical Technologies

BMT 001 - First Year Seminar

Discussion of relevant issues in the Biomedical Sciences. Topics include public health, cancer prevention, radiation science, and health and well-being. S/U grading.

Credits: 1.

BMT 003 - Medical Terminology

Terminology related to medical science and hospital services. Fall and Spring.

Credits: 1.

BMT 004 - Intro Radiologic Science

Introduction to ionizing radiation, emphasizing its interaction with matter, its effect on the human body, and methods of protecting patients and technologists.

Credits: 3.

BMT 034 - Human Blood Cells

Lecture and laboratory experiences in cells of the blood, their quantitation, physiology, and alterations in disease. Spring.

Credits: 3.

BMT 054 - Principles of Microbiology

Lectures and laboratory experiences dealing with the structure, physiology, and control of microorganisms, in particular those of medical importance. Spring.

Credits: 4.

BMT 110 - Phlebotomy

Basic techniques in blood collection, including choice of anticoagulants, equipment, sterility, and protection from blood-borne pathogens.

Credits: .5.

BMT 111 - Phlebotomy

Basic techniques in blood collection, including choice of anticoagulants, equipment, sterility, and protection from blood-borne pathogens.

Credits: .5.

BMT 120 - Health Care Ethics

modern health care. Prerequisite: Sophomore standing A study of ethical principles and applications used to help resolve dilemmas in health care delivery. Introduction to ethical decision-making models used in the practice of or Instructor

permission.
Credits: 3.

BMT 123 - Intro to Clinical Chemistry
test results are correlated with clinical case studies. Prerequisite: Chemistry 23 or 31 and 32. Fall.
Credits: 0-4.

BMT 229 - Seminar: Clinical Chemistry
Discussion of recent advances in clinical chemistry.
Credits: 1.

BMT 239 - Seminar: Hematology
Discussion of recent advances in hematology.
Credits: 1.

BMT 242 - Immunology
techniques and applications. Pre/corequisites: One Lecture and laboratory experiences dealing with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. Laboratory covers immunological semester of Biochemistry.
Credits: 4.

BMT 249 - Seminar: Immunology
Discussion of recent advances in immunology.
Credits: 1.

BMT 259 - Seminar: Clinical Microbiology
Discussion of recent advances in clinical microbiology.
Credits: 1.

BMT 269 - Sem: Immunohematology
Discussion of recent advances and practices used in transfusion medicine. Spring.
Credits: 1.

BMT 291 - Honors:Biomedical Tech
Contact the Department for specific requirements.
Credits: 3.

BMT 292 - Honors:Biomedical Tech
Contact the Department for specific requirements.
Credits: 3.

BMT 295 - Prin of Education & Management
Introduction to theories of education and management. Undergraduate only.
Credits: 3.

BMT 296 - Senior Seminar
Review of case studies for clinical correlation. Fall. Undergraduate only.
Credits: 2.

BMT 299 - Special Topics
Courses or seminars beyond scope of existing departmental offerings. Prerequisite: Department permission. Variable credit. Undergraduate only.
Credits: 1-6.

BMT 381 - Special Topics Seminar
Credits: 1.

BMT 391 - Masters Thesis Research

Credits: 1-6.

BMT 395 - Advanced Topics

Credits: 1-3.

Courses in Biomedical Technology

BMED 281 - Molecular Applications

Lecture and laboratory course focused on application of molecular biology techniques to diagnostic testing and biotechnology. Techniques include Northern and Western blot analysis, In situ hybridization, tissue culture, immunoassay development and use. Prerequisite: CHEM 031, CHEM 032, or CHEM 023; CHEM 141, CHEM 142, or CHEM 042; BIOL 001, BIOL 002, or ANPS 019, ANPS 020. Fall.

Credits: 4.

BMED 284 - Undergraduate Research I

Laboratory course in research methodologies. Prerequisite: Instructor permission. Undergraduate only.

Credits: 1-3.

BMED 285 - Undergraduate Research II

only.

Credits: 1-3.

BMED 286 - Undergraduate Research III

Research projects sponsored by faculty. Prerequisite: BMED 285; Instructor permission. Undergraduates only.

Credits: 1-3.

BMED 293 - Research Concepts

Discussion of research methodology including analysis of primary scientific literature. Spring.

Credits: 1.

BMED 297 - Undergraduate Research

Research projects sponsored by faculty. Prerequisite: Instructor permission. Spring, Fall.

Credits: 1-6.

BMED 298 - Undergraduate Research Seminar

Current literature related to student research project will be presented and discussed. Students will be required to present a seminar on their research project. Prerequisite: BMED 284, BMED 285, BMED 286 or BMED 297; advanced standing. Spring.

Credits: 3.

Courses in Medical Laboratory Science

MLS 095 - Special Topics
Credits: 1-6.

MLS 096 - Special Topics
Credits: 1-6.

MLS 170 - Medical Cytology Practicum
Development of diagnostic expertise (speed and accuracy) through the daily evaluation of slides of gynecologic and nongynecologic materials. Spring.
Credits: 10.

MLS 171 - Medical Cytology I
Identification of cells and concepts of cell growth and differentiation. Biology and cytopathology of the female genital tract. Patient management and specimen collection techniques introduced.
Credits: 4.

MLS 172 - Medical Cytology II
Biology and cytopathology of the nongynecologic body systems. Prerequisite: MLS 171, MLS 173; Cytology Lab I.
Credits: 4.

MLS 173 - Medical Cytology Lab I
Microscopic study and recognition of normal and abnormal cellular manifestations in gynecologic materials.
Credits: 3.

MLS 174 - Medical Cytology Lab II
Microscopic study and recognition of normal and abnormal cellular manifestations in the nongynecologic body systems. Prerequisite: MLS 171, MLS 173.
Credits: 3.

MLS 175 - Cytology Seminar
Interesting case reports and journal review articles are developed and presented in written and oral form.
Credits: 3.

MLS 179 - Cytology Techniques
Handling and processing of cellular specimens. Includes collection, fixation, smear preparation, cytocentrifuge, staining, and safety techniques. Summer.

Credits: 3.

MLS 195 - Special Topics

Credits: 1-18.

MLS 196 - Special Topics

Credits: 1-18.

MLS 201 - Body Fluid Analysis

Lectures and laboratory experiences focusing on the complete analysis of urine, cerebral spinal fluids, serous fluids, synovial fluid, and other human body fluids. Majors only. Spring, Fall.

Credits: 1.

MLS 220 - Clinical Practicum: Chemistry

Experiences with chromatography, immunoassays, random access analyses, and a variety of manual and automated test systems. MLS majors only. Fall, spring.

Credits: 3.5.

MLS 222 - Advanced Clinical Chemistry

electrochemistry, and automation; clinical case studies on the pathophysiology of diseases when abnormal chemistry

Credits: 3.5.

MLS 230 - Clinical Practicum: Hematology

Experiences in clinical analysis of blood cells in the FAHC laboratories. MLS majors only. Fall, spring.

Credits: 2.

MLS 231 - Pathophysiology of Blood Cells

Advanced theory and analysis of blood cell physiology and related pathology. Concepts of hemostasis and clinical assessment methods. Prerequisite: One semester of biochemistry. Fall.

Credits: 3.

MLS 250 - Clin Practicum: Microbiology

majors only. Fall, spring.

Credits: 2.

MLS 255 - Adv Clinical Microbiology

microorganisms, infectious disease process, and laboratory methods used for the isolation and identification of microorganisms from clinical specimens. Fall. Prerequisite:

Credits: 3.

MLS 256 - Parasitology

Lectures and laboratory experiences in the identification of parasitic organisms and their relationship to disease. MLS majors only. Fall, Spring.

Credits: 1.

MLS 260 - Clin Pract:Immunohematology

Clinical experiences in operation of a hospital transfusion service and regional reference laboratory. MLS majors only. Fall, spring.

Credits: 1.5.

MLS 262 - Advanced Immunohematology

Advanced theory and experience related to human blood groups and transfusion practice. Prerequisites: One semester of biochemistry. Spring.

Credits: 4.

MLS 295 - Special Topics

Credits: 1-18.

MLS 296 - Special Topics

Credits: 1-18.

Courses in Nuclear Medicine Technology

NMT 051 - Principles Nuclear Med Tech

Lecture and laboratory experiences to introduce the theories and practice of nuclear medicine technology. Fall.

Credits: 3.

NMT 052 - Nuclear Medicine Radiopharmacy

The radiopharmacological aspects of nuclear medicine technology, including radiation physics, safety, tracer principles, and dosimetry. Prerequisite: BMT 004. Spring.

Credits: 3.

NMT 153 - Nuclear Med Clin Procedures I

Procedures I Principles of diagnostic imaging procedures emphasizing the nuclear medicine technologist's role in patient care and preparation, radiopharmaceutical selection, image acquisition, and data processing and analysis. Prerequisite: 52. Fall.

Credits: 3.

NMT 154 - Nuclear Med Clin Procedures II

Procedures II Principles and technical considerations of in vivo and in vitro nuclear medicine diagnostic and therapeutic procedures. Prerequisite: 153. Spring.

Credits: 3.

NMT 155 - Instrumentation I

Nuclear medicine instrumentation, with emphasis on planar imaging devices, computer, and quality control; introduction to SPECT camera systems. Prerequisite: 52. Fall.

Credits: 3.

NMT 156 - Instrumentation II

Advanced nuclear medicine instrumentation with emphasis on state-of-the-art imaging devices. Prerequisite: 155. Spring.

Credits: 3.

NMT 163 - Nuclear Med Clin Practicum I

Students observe and participate in Fletcher Allen Health Care's Nuclear Medicine Department. NMT majors only. Fall.

Credits: 1.

NMT 164 - Nuclear Med Clin Practicum II

Students participate in routine imaging procedures emphasizing patient care, positioning, and instrumentation. NMT majors only. Prerequisite: 163. Spring.
Credits: 2.

NMT 175 - Medical Imaging Techniques

Introduction to radiographic anatomy and the various imaging techniques presently available to include magnetic resonance imaging (MRI), positron emission tomography (PET), ultrasound, etc. Fall. Crosslisted w/RADT.
Credits: 2.

NMT 263 - Adv Nuclear Med Clin Pract III

Experience in advanced clinical and pharmacological procedures. NMT majors only. Prerequisite: 164. Fall.
Credits: 3.

NMT 264 - Nuclear Medicine Internship

Full-time clinical experience at an affiliated institution. NMT majors only. Prerequisite: 263. Spring.
Credits: 15.

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Courses in Radiation Therapy

RADT 052 - Principles Radiation Therapy

Introduction to the practice and theory of radiation therapy through lectures and discussions.

Credits: 2.

RADT 144 - Seminar:Patient Care Issues

Topics will include new treatment modalities, outreach programs, coping with disease, etc. RADT majors only. Prerequisite: Junior standing in Radiation Therapy. S/U grading.

Credits: 1.

RADT 173 - Clinical Lab:Radiation Therapy

Introduction to the clinical environment through activities which include patient care and handling, immobilization techniques, therapy unit calibrations and manipulation, etc. RADT majors only. Prerequisite: 52. Fall.

Credits: 2.

RADT 174 - Clinical Practicum

Students participate and observe in the Fletcher Allen Health Care Radiation Therapy Department. RADT majors only. Prerequisite: RADT 173. Spring.

Credits: 2.

RADT 175 - Medical Imaging

Introduction to radiographic anatomy and the various imaging techniques presently available to include magnetic resonance imaging (MRI), positron emission tomography (PET), ultrasound, etc. Fall.

Credits: 2.

RADT 176 - Clinical Radiation Oncology

The various types of neoplasms, methods of diagnosis of treatment, and elementary pathology are presented. RADT majors only. Prerequisites: Anatomy and Physiology 19-20, concurrent enrollment in RADT 174. Spring.

Credits: 3.

RADT 223 - Clin Pract: Radiation Therapy

A continuation of RADT 174 emphasizing increasing clinical capabilities. RADT majors only. Prerequisite: 174. Fall.

Credits: 3.

RADT 274 - Clin Intern:Radiation Therapy

Students are assigned to approved clinical education sites to observe and increase their participation in the clinical environment. Evaluations based on defined clinical objectives and competencies to be completed by the clinical and University faculty. RADT majors only. Prerequisite: Successful completion of all previous required major courses and concurrent enrollment in RADT 280. Spring.
Credits: 14.

RADT 275 - Dosimetry

Treatment plan verification using three-dimensional computer models, simulation data, and knowledge of treatment unit capabilities. RADT majors only. Prerequisites: Physics 11 & 12, BMT4. Fall.
Credits: 2.

RADT 277 - Techniques Radiation Therapy

Instructs students in the theory and clinical application of radiotherapeutic techniques. RADT majors only. Prerequisites: Concurrent enrollment in 275 and 223. Fall.
Credits: 4.

RADT 280 - Qual Assurance&Treatment Plan

The integration of clinical oncology, radiobiology, dosimetry, and treatment planning, and how they affect patient outcomes. RADT majors only. Spring.
Credits: 3.

Biomedical Technology (M. S.)

College: Graduate College
Department(s): Biomedical Technologies

Overview

The Department of Biomedical Technologies offers a Master of Science degree in Biomedical Technology that provides in-depth preparation in the biomedical sciences. It is an appropriate course of study for professionals interested in advanced clinical practice, research and development, education or the pursuit of further graduate opportunities.

Opportunities for research include: regulation of cell growth, DNA repair, infectious diseases, immunology, and clinical projects in Medical Laboratory Science, Nuclear Medicine Technology and Radiation Therapy offered in conjunction with various basic science and clinical departments in the College of Medicine and the Fletcher Allen Health Care.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Completion of an accredited baccalaureate program in Biomedical Technology, medical laboratory science, nuclear medicine technology, radiation therapy or related fields, and national certification or equivalent in one of these areas. A minimum of one year's pertinent professional experience is preferred. GRE aptitude score is required.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of a two semester, graduate-level course in Biochemistry

(equivalent to Biochemistry 301-302) and the comprehensive examination.

Minimum Degree Requirements

Thirty credits total consisting of at least the following: Biomedical Technology 381 (two credits), thesis research (six credits), biochemistry lecture (six credits), plus other approved graduate courses. A noncredit teaching practicum in the Department's undergraduate programs is required.

Accelerated Master's Program in Biomedical Technology (B. S./M. S.)

College: Graduate College
Department(s): Biomedical Technologies

Overview

A master's degree in Biomedical Technology (BMED) can be earned in a shortened time by careful planning in the junior and senior years at UVM. Students should discuss this possibility with the Department Graduate Program Director as soon as they think they might be interested in this program. For example, the M. S. could be earned in one additional year, as six credits of undergraduate courses may also be counted concurrently towards the M. S. degree requirements.

To be eligible for the AMP a student must be a declared major in one of the Department's program offerings. After application for admission to the Graduate College is accepted, up to six approved credits on concurrent undergraduate/graduate credit basis are taken. Eligible courses include BMT 242, 244, 281, 293 and a maximum of 2 credits selected from BMT 229, 239, 249, 259 and 269. Other admission requirements are a minimum G.P.A. of 2.67 in the basic science core (CHEM 23 or 31 & 32, CHEM 42 or 141 & 142, ANPS 19 & 20 or BIOL 1 & 2, MATH 19 or higher); and an overall G.P.A. of 3.0 or higher. Following admission, students are required to take at least 3 credit hours of undergraduate research. After graduation with the B. S. degree, students are eligible to become a candidate for the M. S. degree. Applications and further information may be obtained from the Graduate Program Director in the Department.

Departments and Programs

Mathematics and Statistics Department

Colleges: Engineering and Mathematics, Arts and Sciences, Graduate College, Continuing Education

Faculty: Mathematics and Statistics

Courses: Mathematics (MATH), Statistics (STAT)

Contact Information:

University of Vermont
Mathematics and Statistics Department
16 Colchester Ave
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Web Site: http://www.emba.uvm.edu/EM/Math/

Academic Offerings

- Graduate Degrees
  - Master of Arts in Teaching (M. A. T.)
    - Mathematics
  - Master of Science (M. S.)
    - Biostatistics
    - Statistics
    - Mathematics
  - Master of Science for Teachers (M. S. T.)
    - Mathematics
  - Doctor of Philosophy (Ph. D.)
    - Mathematical Sciences
- Concurrent Degree Programs
  - Mathematics, Statistics, or Biostatistics (B. S. / M. S.)

Overview

Students can concentrate in mathematics or statistics while pursuing a broad foundation in the liberal arts in the Department of Mathematics and Statistics. It is also possible to earn a second degree in any college combining mathematics and statistics with another discipline to obtain a double major in Arts and Sciences. The Department also offers an accelerated five-year B.S./M.S. program.

Please view our mission statement at:
http://www.emba.uvm.edu/math/info/mission.html

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Courses in Mathematics

MATH 001 - Elementary College Algebra

Review of fundamental operations and a more extensive study of fractions, exponents, radicals, linear and quadratic equations, ratio, proportion, variation, progressions, and the binomial theorem. Topics normally included in intermediate algebra in high school. Students who have satisfactorily completed two years of high school algebra, or the equivalent, receive no credit for this course. Offered only in Evening Division and Summer Session. Prerequisite: One year of high school algebra.

Credits: 3.

MATH 002 - Plane Trigonometry

Trigonometric functions, their graphs and other properties, solution of triangles, trigonometric equations and identities, and inverse trigonometric functions. May not be taken for credit concurrently with, or following receipt of, credit for any mathematics course numbered MATH 020 or above. Prerequisite: MATH 001 or MATH 009. Offered only in Evening Division and Summer Session.

Credits: 3.

MATH 009 - College Algebra

Sets, relations, and functions with particular attention to properties of algebraic, exponential, and logarithmic functions, their graphs and applications. May not be taken for credit concurrently with, or following receipt of, credit for any mathematics course numbered 19 or above. Prerequisites: Two years of secondary school algebra, one year of secondary school geometry.

Credits: 3.

MATH 010 - Pre-Calculus Mathematics

secondary school algebra; one year of secondary school geometry.

Credits: 3.

MATH 011 - Technical Calculus I

Introduction to calculus of functions of one variable, emphasizing techniques and applications of differentiation and integration. Prerequisite: MATH 010 or MATH 009 and MATH 002, or strong background in secondary school algebra and trigonometry; an associates degree in engineering. Dual credit not given for MATH 011 and MATH 021.

Credits: 3.

MATH 012 - Technical Calculus II

coordinates, sequences, series and vectors. Prerequisite: MATH 011 or MATH 021; associates degree in engineering.

Credits: 3.

MATH 013 - Calculus via Modeling I

Introduction to mathematical modeling and differential calculus with a graphical, problem-solving approach. Requires graphing calculator. Prerequisite: Three years high school math, or MATH 009. Credit not given for both MATH 013 and MATH 019.

Credits: 3.

MATH 014 - Calculus via Modeling II

Further modeling and an introduction to integral and multivariate calculus with a graphical, problem-solving approach. Requires graphing calculator. Credit not given for both MATH 014 and MATH 020. Prerequisite: MATH 013.

Credits: 3.

MATH 015 - Elementary School Math

Comprehension of operations with real numbers, measurements, and informal geometry provide background for algebra, number theory, statistics, probability, compass and ruler constructions, and problem solving. Prerequisite: 15 for 16. Open only to students in elementary education.

Credits: 3.

MATH 016 - Fund Concepts Elem School Math

Comprehension of operations with real numbers, measurements, and informal geometry provide background for algebra, number theory, statistics, probability, compass and ruler constructions, and problem solving. Prerequisite: 15 for 16. Open only to students in elementary education.

Credits: 3.

MATH 017 - Applications of Finite Math

Introduction to mathematics of finite systems with applications, such as probability, statistics, growth and symmetry, graph theory, fair division and apportionment problems, voting systems. Prerequisite: Two years of secondary school algebra or 9 or 10.

Credits: 3.

MATH 018 - Basic Mathematics

Data, statistics, modeling, algebra, word problems, calculus. Students who do well in the algebra section may continue with MATH 19 or MATH 21. Prerequisites: 3 years high school math. No credit for EM students.

Credits: 3.

MATH 019 - Fundamentals of Calculus I

Introduction to limits and differential calculus with a wide variety of applications. Students interested in intensive use of mathematics should take 21. Credit not given for more than one of the courses 19, 21 unless followed by 22. Credit not given for both Math. 13 and 19. Prerequisite: 9, 10, or sufficiently strong background in secondary school algebra and geometry.

Credits: 3.

MATH 020 - Fundamentals of Calculus II

019.* 022 is preferable to MATH 019, MATH 020, MATH 022. Credit

Credits: 3.

MATH 021 - Calculus I

Introduction to calculus of functions of one variable including: limits, continuity, techniques and applications of differentiation and integration. Credit not given for more than one course in the pair 19, 21. Prerequisite: 10; or 9 and 2; or strong background in secondary school algebra and trigonometry

Credits: 4.

MATH 022 - Calculus II

Techniques and applications of integration. Polar coordinates, Taylor polynomials, sequences and series, power series. Prerequisite: 21.

Credits: 4.

MATH 052 - Fundamentals of Mathematics

Fundamental mathematical concepts and techniques, theory. Credit not given for both 52 and 54. emphasizing proofs and algorithms, are investigated within the context of topics such as number theory and graph Corequisite: Math 21.

Credits: 3.

MATH 054 - Fund of Math of Computation

Introduction to mathematical theory and techniques underlying computer science. Co-requisite: MATH 019 or MATH 021.

Credits: 3.

MATH 095 - Special Topics

Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. Prerequisite: Instructor permission.

Credits: 1-6.

MATH 111 - Technical Calculus III

Calculus of functions of several variables, partial derivatives, gradient, divergence, curl, multiple integrals. Prerequisite: MATH 012 or MATH 022; associates degree in engineering. Dual credit not given for MATH 111 and MATH 121.

Credits: 3.

MATH 121 - Calculus III

Vectors, vector-valued functions. Calculus of functions of several variables: partial derivatives, gradient, divergence, curl, multiple integrals, line integrals, Stokes' and Green's theorems. Prerequisite: MATH 022.

Credits: 4.

MATH 124 - Linear Algebra

Matrices, linear dependence, vector spaces, linear transformations, characteristic equations and applications. Co-requisite: MATH 121 recommended but not required. .

Credits: 3.

MATH 141 - Real Analysis in One Variable

Principles of analysis in one variable. Heine-Borel and Bolzano-Weierstrass theorems; rigorous development of differential and integral calculus infinite sequences and series of functions. Prerequisite: 52.

Credits: 3.

MATH 151 - Groups and Rings

An introduction to the basic concepts of abstract algebra emphasizing examples, including modular arithmetic, symmetric groups, cyclic groups, polynomial rings, homomorphisms, and isomorphisms. Prerequisite: 52.

Credits: 3.

MATH 161 - Development of Mathematics

Historical development of mathematical sciences emphasizing interrelations among them. Individual assignments correspond to background and interests of students. Prerequisite: Nine hours of college mathematics.

Credits: 3.

MATH 162 - Geometry El&Mid School Teacher

An informal, investigative approach to geometry. Extensive use of discovery experiences through inductive procedures as opposed to the traditional emphasis on deductive process found in high school geometry. Credit not given for Math. majors in EM. Prerequisite: MATH 015 or a teaching certificate.

Credits: 3.

MATH 167 - Physical Chemistry Preparation

Review of relevant mathematical and physical concepts as applied to physical chemistry. Credit cannot be obtained for both MATH 167 and MATH 121. Not available for credit for E&M students. Prerequisite: MATH 022; CHEM 032 or CHEM 036. Cross-listed with: CHEM 167.

Credits: 1.

MATH 173 - Basic Combinatorial Theory

Introduction to basic combinatorial principles emphasizing problem-solving techniques. Enumeration, Generating Functions, Fibonacci Numbers, Pigeonhole Principle, Inclusion-Exclusion, and Graph Theory. Prerequisite: 52 or 54.

Credits: 3.

MATH 179 - Teaching Secondary School Math

Contemporary secondary school mathematics curricula, their content from an advanced standpoint, unifying mathematical concepts and their implications at various levels, and introduction of selected mathematical topics. Intended only for students with an interest in teaching secondary school mathematics. Not acceptable as part of any mathematics requirement for a degree. Prerequisite: EDEC 178; acceptance to teacher education, or Instructor permission.

Credits: 3.

MATH 191 - Special Topics

An approved project under guidance of a staff member and culminating in a written report. Involvement with off-campus groups permitted. Prerequisite: Junior/ Senior standing; approval of Department Chair.

Credits: 1-3.

MATH 192 - Special Topics

An approved project under guidance of a staff member and culminating in a written report. Involvement with off-campus groups permitted. Prerequisite: Junior/ Senior standing; approval of Department Chair.

Credits: 1-3.

MATH 193 - College Honors
Credits: 1-3.

MATH 194 - College Honors
Credits: 1-3.

MATH 195 - Special Topics
Credits: 1-4.

MATH 207 - Probability Theory
(Same as Statistics 251.)
Credits: 3.

MATH 221 - Deterministic Modls Oper Rsch
The linear programming problem. Simplex algorithm, dual problem, sensitivity analysis, goal programming. Dynamic programming and network problems. Prerequisites: 124; 121 desirable.
Credits: 3.

MATH 222 - Stochastic Models in Oper Rsch
Development and solution of some typical stochastic models. Markov chains, queueing problems, inventory models, and dynamic programming under uncertainty. Prerequisite: MATH 207, STAT 151, or Instructor permission.
Credits: 3.

MATH 224 - Analysis of Algorithms
(Same as Computer Science 224.)
Credits: 3.

MATH 230 - Ordinary Differential Equation
Solutions of linear ordinary differential equations, the Laplace transformation, and series solutions of differential equations. Prerequisite: MATH 121. Corequisite: MATH 124 or Instructor permission. Credit not granted for more than one of the courses MATH 230 or MATH 271.
Credits: 3.

MATH 236 - Calculus of Variations
Necessary conditions of Euler, Legendre, Weierstrass, and Jacobi for minimizing integrals. Sufficiency proofs. Variation and eigenvalue problems. Hamilton-Jacobi equations. Prerequisite: 230. Alternate years, 1997-98.
Credits: 3.

MATH 237 - Intro to Numerical Analysis
Error analysis, root-finding, interpolation, least squares, quadrature, linear equations, numerical solution of ordinary differential equations. Prerequisite: MATH 121, MATH 124 or MATH 271; Knowledge of computer programming.
Credits: 3.

MATH 238 - Numerical Diff Equations
Numerical solution of differential equations: initial-value and boundary-value problems; finite difference and finite element methods. Prerequisite: 237, either 230 or 271 recommended.
Credits: 3.

MATH 240 - Fourier Series&Integral Trans
MATH 271.
Credits: 3.

MATH 241 - Anyl in Several Real Vars I

Properties of the real numbers, metric spaces, infinite sequences and series, continuity. Prerequisites: 52, 121, 124 or instructor's permission.
Credits: 3.

MATH 242 - Anyl Several Real Variables II

Differentiation in Rn, Riemann-Stieltjes integral, uniform convergence of functions, Inverse and Implicit Function Theorems. Prerequisite: 241.
Credits: 3.

MATH 243 - Theory of Computation

(Same as Computer Science 243.)
Credits: 3.

MATH 251 - Abstract Algebra I

Basic theory of groups, rings, fields, homomorphisms, and isomorphisms. Prerequisite: MATH 052, MATH 124, or Instructor permission.
Credits: 3.

MATH 252 - Abstract Algebra II

of quintic equations. Prerequisite: MATH 251. Modules, vector spaces, linear transformations, rational and Jordan canonical forms. Finite fields, field extensions, and Galois theory leading to the insolvability
Credits: 3.

MATH 255 - Elementary Number Theory

Divisibility, prime numbers, Diophantine equations, congruence of numbers, and methods of solving congruences. Prerequisite: MATH 052 or MATH 054.
Credits: 3.

MATH 257 - Topics in Group Theory

Topics may include abstract group theory, representation theory, classical groups, Lie groups. Prerequisite: 251. Alternate years, 2000-01.
Credits: 3.

MATH 260 - Foundations of Geometry

Geometry as an axiomatic science; various non-Euclidean geometries; relationships existing between Euclidean plane geometry and other geometries; invariant properties. Prerequisite: MATH 052 or MATH 054.
Credits: 3.

MATH 264 - Vector Analysis

Gradient, curl and divergence, Green, Gauss, and Stokes Theorems, applications to physics, tensor analysis. Prerequisite: MATH 121, MATH 124, or MATH 271.
Credits: 3.

MATH 266 - Chaos,Fractals&Dynamical Syst

Discrete and continuous dynamical systems, Julia sets, the Mandelbrot set, period doubling, renormalization, Henon map, phase plane analysis and Lorenz equations. Corequisite: 271 or 230 or instructor's permission.
Credits: 3.

MATH 268 - Mathematical Biology&Ecology

Mathematical modeling in the life sciences. Topics include population modeling, dynamics of infectious diseases, reaction kinetics, wave phenomena in biology, and biological pattern formation. Prerequisites: 124, 230; or instructor's

permission.
Credits: 3.

MATH 271 - Appl Math for Engr&Scientists
Matrix theory, linear ordinary differential equations. Emphasis on methods of solution, including numerical methods. Co-requisite: 121. No credit for mathematics majors. Credit not granted for more than one of the courses Math. 230 and Math. 271.
Credits: 3.

MATH 272 - Applied Analysis
Partial Differential Equations of Mathematical Physics, Calculus of Variations, Functions of a Complex Variable, Cauchy's Theorem, integral formula. Conformal mapping. Prerequisite: 230 or 271.
Credits: 3.

MATH 273 - Combinatorial Graph Theory
Paths and trees, connectivity, Eulerian and Hamiltonian cycles, matchings, edge and vertex colorings, planar graphs, Euler's formula and the Four Color Theorem, networks. Prerequisite: MATH 052 or MATH 054, or Instructor permission.
Credits: 3.

MATH 274 - Numerical Linear Algebra
Direct and iterative methods for solving linear equations, least square factorization methods, eigenvalue computations, ill-conditioning and stability. Prerequisite: MATH 237.
Credits: 3.

MATH 275 - Advanced Engineer Analysis I
(Same as Mechanical Engineering 304, 305; Civil Engineering 304, 305.) Prerequisites: 271 or 230; 275 for 276.
Credits: 3.

MATH 276 - Adv Engineering Analysis II
(Same as Mechanical Engineering 304, 305; Civil Engineering 304, 305.) Prerequisites: 271 or 230; 275 for 276.
Credits: 3.

MATH 283 - Junior-Senior Seminar
Students required to give presentations on selected topics. Prerequisite: Instructor permission.
Credits: 1.

MATH 293 - Undergraduate Honors Thesis
Program of reading and research culminating in written thesis and oral presentation. Honors notation appears on transcript and Commencement Program. Contact department chairperson for procedures. (Not offered for graduate credit.)
Credits: 3-4.

MATH 294 - Undergraduate Honors Thesis
Program of reading and research culminating in written thesis and oral presentation. Honors notation appears on transcript and Commencement Program. Contact department chairperson for procedures. (Not offered for graduate credit.)

Credits: 3-4.

MATH 295 - Special Topics

For advanced students in the indicated fields. Lectures, reports, and directed readings on advanced topics. Prerequisite: Instructor permission. Credit as arranged. Offered as occasion warrants.

Credits: 1-9.

MATH 330 - Adv Ordinary Diff Equations

Linear and nonlinear systems, approximate solutions, existence, uniqueness, dependence on initial conditions, stability, asymptotic behavior, singularities, self-adjoint problems. Prerequisite: MATH 230.

Credits: 3.

MATH 331 - Theory of Func of Complex Var

meromorphic functions, conformal mappings, Riemann Differentiation, integration, Cauchy-Riemann equations, infinite series, properties of analytic continuation, Laurent series, calculus of residues, contour integration, surfaces. Prerequisite: MATH 242.

Credits: 4.

MATH 332 - Approximation Theory

Interpolation and approximation by interpolation, uniform approximation in normed linear spaces, spline functions, orthogonal polynomials. Least square, and Chebychev approximations, rational functions. Prerequisite: MATH 124, MATH 237.

Credits: 3.

MATH 333 - Thry Functions Real Variables

The theory of Lebesgue integration, Lebesgue measure, sequences of functions, absolute continuity, properties of LP-spaces. Prerequisite: MATH 242.

Credits: 4.

MATH 335 - Advanced Real Analysis

L2-spaces, LP-spaces; Hilbert, Banach spaces; linear functionals, linear operators; completely continuous operators (including symmetric); Fredholm alternative; Hilbert-Schmidt theory; unitary operators; Bochner's Theorem; Fourier-Plancherel, Watson transforms. Prerequisites: MATH 333.

Credits: 3.

MATH 336 - Advanced Real Analysis

L2-spaces, LP-spaces; Hilbert, Banach spaces; linear functionals, linear operators; completely continuous operators (including symmetric); Fredholm alternative; Hilbert-Schmidt theory; unitary operators; Bochner's Theorem; Fourier-Plancherel, Watson transforms. Prerequisite: MATH 333 and MATH 335.

Credits: 3.

MATH 339 - Partial Differential Equations

Classification of equations, linear equations, first order equations, second order elliptic, parabolic, and hyperbolic equations, uniqueness and existence of solutions. Prerequisite: MATH 230; MATH 242.

Credits: 3.

MATH 351 - Topics in Algebra

credit with Instructor permission.

Credits: 3.

MATH 353 - Point-Set Topology

MATH 241. Topological spaces, closed and open sets, closure operators, separation axioms, continuity, connectedness, compactness, metrization, uniform spaces. Prerequisite:

Credits: 3.

MATH 354 - Algebraic Topology

Homotopy, Seifert-van Kampen Theorem; simplicial, singular, and Cech homology. Prerequisite: MATH 353.

Credits: 3.

MATH 373 - Topics in Combinatorics

Topics will vary each semester and may include combinatorial designs, coding theory, topological graph theory, cryptography. Prerequisite: MATH 251 or MATH 273; or Instructor permission.

Credits: 3.

MATH 382 - Seminar

Topical discussions with assigned reading. Required of M.S. degree candidates.

Credits: 1.

MATH 391 - Master's Thesis Research

Credits: 1-18.

MATH 395 - Special Topics

Subject will vary from year to year. May be repeated for credit.

Credits: 1-6.

MATH 491 - Doctoral Dissertation Research

Credits: 1-18.

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Courses in Statistics

STAT 011 - Intro to Stats via Microcomp

Various study designs considered. Graphical and analytic techniques for presenting results. Wide variety of applications surveyed. PC-based software used. Experience gained in sample survey work. Prerequisite: High school algebra.

Credits: 3.

STAT 051 - Probability With Statistics

Introduction to probabilistic and statistical reasoning, including probability distribution models and applications to current scientific/social issues. Roles of probability, study design, and exploratory/confirmatory data analysis. Prerequisite: Two years H.S. algebra. No credit for Sophomores, Juniors, or Seniors in the mathematical and engineering sciences.

Credits: 3.

STAT 095 - Special Topics

Lectures, reports, and directed readings at an introductory level. Prerequisite: As listed in course schedule.

Credits: 1-3.

STAT 111 - Elements of Statistics

Basic statistical concepts, methods, and applications, including correlation, regression, confidence intervals, and hypothesis tests. Prerequisite: Two years of high school algebra; Sophomore standing.

Credits: 3.

STAT 140 - Natural Resource Biostatistics

Cross-listed with: NR 140.

Credits: 4.

STAT 141 - Basic Statistical Methods

Foundational course for students taking further quantitative courses. Exploratory data analysis, probability distributions, estimation, hypothesis testing. Introductory regression, experimentation, contingency tables, and nonparametrics. Computer software used. Prerequisites: Math. 11, 13, 19 or 21, sophomore standing.

Credits: 3.

STAT 143 - Statistics for Engineering

Data analysis, probability models, parameter estimation, hypothesis testing. Multi-factor experimental design and regression analysis. Quality control, SPC, reliability. Engineering cases and project. Statistical analysis software.
Prerequisites: Math. 12, 14, 20 or 22, sophomore standing.
Credits: 3.

STAT 151 - Applied Probability
Foundations of probability, conditioning, and independence. Business, computing, biological, engineering reliability, and quality control applications. Classical discrete and continuous models. Pseudo-random number generation.
Prerequisites: Math. 12, 14, 20 or 22.
Credits: 3.

STAT 191 - Special Projects
Student-designed special project under supervision of a staff member culminating in a report. Prerequisite: Junior standing; permission of Program Director.
Credits: 1-4.

STAT 195 - Special Topics
Lectures, reports, and directed readings. Prerequisite: As listed in course schedule.
Credits: 1-3.

STAT 200 - Med Biostatistics&Epidemiology
(Same as Biostatistics 200.) Introductory design and analysis of medical studies. Epidemiological concepts, case-control and cohort studies. Clinical trials. Students evaluate statistical aspects of published health science studies. Prerequisite: 141 or 143; or 211.
Credits: 3.

STAT 201 - Stat Analysis Via Computers
(Same as Biostatistics 201.) Intensive coverage of computer-based data processing and analysis using statistical packages, subroutine libraries, and user-supplied programs. Students analyze real data and prepare a comprehensive report. Prerequisites: 111 with instructor's permission, or 141, or corequisite 211.
Credits: 3.

STAT 211 - Statistical Methods I
(Same as Biostatistics 211.) Fundamental concepts for data analysis and experimental design. Descriptive and inferential statistics, including classical and nonparametric methods, regression, correlation, and analysis of variance. Statistical software. Prerequisite: Junior standing.
Credits: 3.

STAT 221 - Statistical Methods II
(Same as Biostatistics 221.) Multiple regression and correlation. Basic experimental design. Analysis of variance (fixed, random, and mixed models). Analysis of covariance. Computer software usage. Prerequisites: 141 or 143; or 211.
Credits: 3.

STAT 223 - Applied Multivariate Analysis
(Same as Biostatistics 223.) Multivariate normal distribution. Inference for mean vectors and covariance matrices. Multivariate analysis of variance (MANOVA),

discrimination and classification, principal components, factor analysis. Prerequisites: Any 200-level Statistics course, 221 or 225 recommended, matrix algebra recommended.
Credits: 3.

STAT 224 - Stats for Quality&Productivity
(Same as Biostatistics 224.) Statistical process control; Shewhart, cusum and other control charts; process capability studies. Total Quality Management. Acceptance, continuous, sequential sampling. Process design and improvement. Case studies. Prerequisites: 141 or 143; or 211.
Credits: 3.

STAT 225 - Applied Regression Analysis
(Same as Biostatistics 225.) Simple linear and multiple regression models; least squares estimates, correlation, prediction, forecasting. Problems of multicollinearity and influential data (outliers).
Credits: 3.

STAT 227 - Adv Statistical Methods II
(Same as Psychology 341.) Prerequisite: 211 with computer experience or Psychology 340.
Credits: 3.

STAT 229 - Survival Analysis
(Same as Biostatistics 229.) Probabilistic models and inference for time-to-event data. Censored data, life tables, Kaplan-Meier estimation, logrank tests, proportional hazards regression. Specialized applications (e.g. clinical trials, reliability). Prerequisites: Any 200-level Statistics course, one year of calculus.
Credits: 3.

STAT 231 - Experimental Design
(Same as Biostatistics 231.) Randomization, complete and incomplete blocks, cross-overs, Latin squares, covariance analysis, factorial experiments, confounding, fractional factorials, nesting, split plots, repeated measures, mixed models, response surface optimization. Prerequisites: 211; 221 recommended.
Credits: 3.

STAT 233 - Survey Sampling
(Same as Biostatistics 233.) Design and data analysis for sample surveys. Simple random, stratified, systematic, cluster, multistage sampling. Practical issues in planning and conducting surveys. Prerequisites: 211; or 141 or 143 with instructor's permission.
Credits: 3.

STAT 235 - Categorical Data Analysis
(Same as Biostatistics 235.) Measures of association and inference for categorical and ordinal data in multiway contingency tables. Log linear and logistic regression models. Prerequisite: 211.
Credits: 3.

STAT 237 - Nonparametric Statistical Mthd
(Same as Biostatistics 237.) Nonparametric and distribution free methods; categorical, ordinal, and quantitative data; confidence intervals; rank and chi-square hypothesis tests; computer-intensive procedures (bootstrap, exact tests).

Prerequisites: 211; or 141 or 143 with instructor's permission.
Credits: 3.

STAT 241 - Statistical Inference
(Same as Biostatistics 241.) Introduction to statistical theory: related probability fundamentals, derivation of statistical principles, and methodology for parameter estimation and hypothesis testing. Prerequisites: 151 or 251; 141 or equivalent; Math. 121.
Credits: 3.

STAT 251 - Probability Theory
(Same as Math. 207.) Distributions of random variables and functions of random variables. Expectations, stochastic independence, sampling and limiting distributions (central limit theorems). Concepts of random number generation. Prerequisite: Math. 121, Statistics 151 recommended.
Credits: 3.

STAT 252 - Appl Models
Markov chain models for biological, social, and behavioral systems models. Random walks, transition and steady-state probabilities, passage and recurrence times. Prerequisite: 151 or 251.
Credits: 1-2.

STAT 253 - Appl Time Series & Forecasting
(Same as Biostatistics 253.) Autoregressive moving average (Box-Jenkins) models, autocorrelation, partial correlation, differencing for nonstationarity, computer modeling. Forecasting, seasonal or cyclic variation, transfer function and intervention analysis, spectral analysis. Prerequisite: 211 or 225; or 141 or 143 with instructor's permission.
Credits: 3.

STAT 256 - Neural Computation
(See Computer Science 256.)
Credits: 3.

STAT 261 - Statistical Theory I
(Same as Biostatistics 261, 262.) Point and interval estimation, hypothesis testing, and decision theory. Application of general statistical principles to areas such as nonparametric tests, sequential analysis, and linear models. Prerequisites: For 261: 151 with instructor permission or 251; for 262: 241 with instructor permission or 261.
Credits: 3.

STAT 262 - Statistical Theory II
(Same as Biostatistics 261, 262.) Point and interval estimation, hypothesis testing, and decision theory. Application of general statistical principles to areas such as nonparametric tests, sequential analysis, and linear models. Prerequisites: For 261: 151 with instructor permission or 251; for 262: 241 with instructor permission or 261.
Credits: 3.

STAT 265 - Integrated Product Development
(Same as Business Administration 293.)
Credits: 3.

STAT 270 - Stochastic Thry in Elec Eng
(See Electrical Engineering 270.)
Credits: 3.

STAT 271 - Least Squares Est & Filtering
(See Electrical Engineering 271.)
Credits: 3.

STAT 281 - Statistics Practicum
Intensive experience in carrying out a complete statistical analysis for a research project in substantive area with close consultation with a project investigator. Prerequisites: Any one of 200, 201, 221 through 237; or 253; some statistical software experience. No credit for graduate students in Statistics or Biostatistics.
Credits: 1-4.

STAT 293 - Undergrad Honors Thesis
Contact Statistics Program Director for procedures. A program of reading, research, design, and analysis culminating in a written thesis and oral defense. Honors notation appears on transcript and Commencement Program.
Credits: 1-8.

STAT 294 - Undergrad Honors Thesis
A program of reading, research, design, and analysis culminating in a written thesis and oral defense. Honors notation appears on transcript and Commencement Program. Contact Statistics Program Director for procedures.
Credits: 1-8.

STAT 295 - Special Topics
For advanced students. Lectures, reports, and directed readings on advanced topics. Prerequisite: As listed in course schedule.
Credits: 1-4.

STAT 308 - Applied Biostatistics
Intensive introduction to the rationale for and application of biostatistical methods in planning experiments and interpreting data in the biological, health and life sciences. Cross-listings: Molecular Physiology and Biophysics 308, Biostatistics 308.
Credits: 5.

STAT 313 - Stat Analysis for Management
See BSAD 313.
Credits: 3.

STAT 321 - Seminar in Advanced Statistics
Seminar presentations and discussions of statistical literature pertaining to the theoretical aspects of methods studied in STAT 221, STAT 223, STAT 224, STAT 225, and STAT 229, respectively. Corequisites: STAT 221 for STAT 321; STAT 223 for STAT 323; STAT 224 for STAT 324; STAT 225 or STAT 221 for STAT 325, STAT 229 for STAT 329. STAT 241 or STAT 261 recommended.
Credits: 1.

STAT 323 - Seminar in Advanced Statistics
Seminar presentations and discussions of statistical literature pertaining to the theoretical aspects of methods studied in STAT 221, STAT 223, STAT 224, STAT 225, and STAT 229, respectively. Co-requisites: STAT 221 for STAT 321; STAT

223 for STAT 323; STAT 224 for STAT 324; STAT 225 or STAT 221 for STAT 325, STAT 229 for STAT 329. STAT 241 or STAT 261 recommended.
Credits: 1.

STAT 324 - Seminar in Advanced Statistics
Seminar presentations and discussions of statistical literature pertaining to the theoretical aspects of methods studied in STAT 221, STAT 223, STAT 224, STAT 225, and STAT 229, respectively Co-requisites: STAT 221 for STAT 321; STAT 223 for STAT 323; STAT 224 for STAT 324; STAT 225 or STAT 221 for STAT 325, STAT 229 for STAT 329. STAT 241 or STAT 261 recommended.
Credits: 1.

STAT 325 - Seminar in Advanced Statistics
Seminar presentations and discussions of statistical literature pertaining to the theoretical aspects of methods studied in STAT 221, STAT 223, STAT 224, STAT 225, and STAT 229, respectively. Co-requisites: STAT 221 for STAT 321; STAT 223 for STAT 323; STAT 224 for STAT 324; STAT 225 or STAT 221 for STAT 325, STAT 229 for STAT 329. STAT 241 or STAT 261 recommended.
Credits: 1.

STAT 329 - Seminar in Advanced Statistics
Seminar presentations and discussions of statistical literature pertaining to the theoretical aspects of methods studied in STAT 221, STAT 223, STAT 224, STAT 225, and STAT 229, respectively. Co-requisite: STAT 221 for STAT 321; STAT 223 for STAT 323; STAT 224 for STAT 324; STAT 225 or STAT 221 for STAT 325, STAT 229 for STAT 329. STAT 241 or STAT 261 recommended.
Credits: 1.

STAT 380 - Sem:Statistics & Biostatistics
and guest speakers. Prerequisite: Instructor Permission. Presentation and discussion of current topics, methodological research and applications in Statistics and Biostatistics by graduate students, faculty
Credits: .5-1.

STAT 381 - Statistical Research
Methodologic or data analytic research culminating in oral and written reports to the faculty. Prerequisite: Instructor Permission. Cross-listed with: BIOS 381.
Credits: 1-3.

STAT 385 - Consulting Practicum
Statistics Program Director.
Credits: 1-3.

STAT 391 - Master's Thesis Research
Credits: 1-6.

STAT 395 - Advanced Special Topics
with: BIOS 395. Lectures or directed readings on advanced and contemporary topics not presently included in other statistics courses. Prerequisites: As listed in course schedule. Cross-listed
Credits: 1-3.

Mathematics (M. A. T.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for the Degree of Master of Arts in Teaching

Thirty hours of course work, including at least 21 in mathematics and six in education. Students must be certified to teach. With the approval of their advisor, students may choose courses from the 100-level or from closely related fields. The student must pass an oral comprehensive examination in mathematics and additional required examinations in education. No thesis is required.

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Biostatistics (M. S.)

College: Graduate College
Department(s): Mathematics

Overview

This program is administered through the Statistics Program in close collaboration with the faculty and staff of the Medical Biostatistics Unit of the College of Medicine (Dr. Taka Ashikaga, Director). Dr. Larry Haugh is the program director.

The program offers a concentration in biostatistics leading to the M. S. degree. The curriculum takes full advantage of courses taught in the Statistics Program and includes experience in a variety of health, biomedical, and related research projects in the College of Medicine. This experience is designed to provide candidates with opportunities to use their academic training and work experience in defining research problems, formulating rational methods of inquiry, and gathering, analyzing, and interpreting data. The Medical Biostatistics research activities cover the full range of studies that take place within an academic medicine environment. These include population-based health surveys of various types and evaluations of health promotion programs and professional education activities, such as community intervention studies to prevent adolescent smoking, to enable women to quit smoking, and to promote breast cancer screening. They also include clinical studies of disability due to low back pain, bioengineering experiment design and measurement studies, and clinical trials for neurologic diseases, as well as data from other preclinical, clinical, and epidemiologic studies. Emphasis is placed on learning to perform computerized data analysis as the statistician in a research team.

Opportunities are also available for biostatistical and biometrical research related to problems in agriculture and the life sciences, as well as natural resources and environmental science. Collaborating faculty in these areas are available to provide consulting or research experiences. Opportunities include multivariate or spatial data analyses for ongoing wildlife and water quality studies. (See also Statistics Program description.)

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major which provides a foundation for the application of statistical methodology and concepts to health and biomedical or agriculture/natural resource problems. For example, premedicine majors who have delayed their application to medical school will be well suited for the program. It is anticipated that candidates will have completed three semesters of calculus and a course including matrix algebra methods. However, provisional admission to the program can be given prior to the completion of these requirements. Computer experience is desirable. The Graduate Record Examination is strongly advised and is required of any applicant who wishes to be considered for a teaching or research assistantship. Current undergraduate students at The University of Vermont should contact the program director for details on the Accelerated Master's Program.

Minimum Degree Requirements

Plan A (Thesis): A 30-hour degree program which includes 24 semester hours of approved course work, with at least 21 hours in Biostatistics/Statistics courses. This must include Biostatistics 200, 221, 223, 231, 241 or 261, 321, 323, other Biostatistics courses numbered 201 or above (except 211, 308), and other quantitative methods courses, or (if approved) courses in a specialized field of application, plus six semester hours of approved thesis research (391).

Plan B (Nonthesis): A 33-hour degree program which includes 30 semester hours of approved course work with at least 21 hours in Biostatistics/Statistics courses. This must include Biostatistics 200, 221, 223, 231, 241 or 261, 321, 323, other Biostatistics courses numbered 201 or above (except 211, 308), and other quantitative methods courses, or (if approved) courses in a specialized field of application, and three semester hours of approved statistical research (381).

Under both plans, students must have or acquire a knowledge of the material in Biostatistics 201 and 211, and are expected to participate in the projects of the College of Medicine Biometry Facility as advised, and to attend the regular colloquium series as part of their training. The comprehensive examination covers theoretical and applied aspects acquired in the core courses of the program. During the latter part of their training the students will be expected to take major responsibility for some project, including the presentation of the final report for this project.

Statistics (M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Statistics Program offers biostatistics, statistics, and probability courses for the entire University community along with traditional degree programs and individually designed degree programs emphasizing statistics applied to other fields. The degree programs are designed primarily for students who plan careers in business, actuarial science, industry, and government or advanced training in disciplines that make extensive use of statistical principles and methods. The Program faculty is deeply involved in consulting and collaborative research in a wide variety of fields, including industry, agriculture and in the basic and clinical medical sciences. These research activities along with the research of participating faculty from psychology, natural resources, etc., offer students unique opportunities to apply their classroom training to "real world" problems. Qualified students with the goal of learning statistics to use in a specialized area of application are especially encouraged to take advantage of these cooperative arrangements.

Program faculty have active statistics research efforts in areas such as quality control , sequential analysis, three stage sampling, time series analysis, survival data analysis, discriminant analysis, bootstrap methods, categorical data analysis, measurement error models, and experimental design. A track in quality and productivity improvement is available. Students seeking the traditional graduate degree in statistics (along with course work in mathematics and computer science, if desired) have excellent opportunities to participate in the faculty's research. (See also Biostatistics program description.)

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and Advancement to

Candidacy for the Degree of Master of Science

A baccalaureate degree. Three semesters of calculus, a course in matrix methods, and one semester of statistics. Provisional acceptance can be given prior to the completion of these requirements. Satisfactory scores on the -general (aptitude) portion of the Graduate Record Examination are required for most sources of financial aid. Computer experience is highly recommended.

Current undergraduate students at The University of Vermont should contact the program director for details on the Accelerated Master's Program (AMP).

Minimum Degree Requirements for the Degree of Master of Science

Plan A (Thesis): A 30 semester hour program requiring 24 semester hours of approved course work. This must include Statistics 221, 223, 224, 231, 251, 261, 321, 323, 324, other Statistics courses numbered 200 or above (except 211, 281, 308, 313), other mathematics or quantitative methods courses or (if appropriate) courses in a specialized field of application, plus six hours of approved thesis research (391).

Plan B (Nonthesis): A 33 semester hour program requiring 30 semester hours of approved course work. This must include Statistics 221, 223, 224, 231, 251, 261, 321, 323, 324, other Statistics courses numbered 200 or above (except 211, 281, 308, 313), other mathematics or quantitative methods courses or (if appropriate) courses in a specialized field of application, plus three semester hours of approved statistical research (381).

Under both plans, students must have or acquire a knowledge of the material in Statistics 201 and 211 in addition to their required course work. Additional specific courses may be required depending on the student,s background and interest. Other courses are selected with the approval of the student,s advisor from statistics, mathematics, computer science, and (if appropriate) graduate level courses from the student,s intended area of specialty application (e.g. business administration, engineering, ecology, genetics, psychology). The student is expected to participate in the Colloquium series of the Program. Plan A and Plan B require successful completion of a comprehensive examination which includes coverage of theoretical and applied aspects of the program's core statistics courses. Under Plan B a student, in lieu of a thesis, must carry out an approved comprehensive data analysis or methodological research project culminating in both an oral and written report to the faculty.

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Mathematics (M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

The department offers an Accelerated Master's Program (AMP) leading to a B. S. and M. S. degree in five years. Interested students should contact the department by the end of their sophomore year.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either pure or applied mathematics, a bachelor's degree with a major in mathematics or a closely related discipline, and satisfactory scores on both the general and subject (mathematics) sections

of the Graduate Record Examination.

Minimum Degree Requirements for the Degree of Master ofScience

Each student must complete one of the following options:

a. Twenty-four semester hours of acceptable graduate credits in advanced mathematics courses; six semester hours of thesis research culminating in a master's thesis, or

b. Thirty semester hours of acceptable graduate credits in advanced mathematics courses; no thesis required.

Under either option students must take, or acquire the knowledge of the content in, the courses Math 331 and 333, and must satisfactorily complete at least four 300-level mathematics courses and the seminar 382. In both options students must select a major concentration from among the areas: Analysis, Algebra, Applied Mathematics, or Discrete Mathematics. The concentration shall consist of at least nine approved hours in advanced mathematics courses in the respective area, three of which must be at the 300-level; students in option b. may count the six hours of thesis credit towards these nine hours. In both options students must also select a minor concentration consisting of at least three approved hours of advanced mathematics complementary to the major area. With approval of the student's advisor up to six hours of courses outside mathematics may be used to fulfill the major, minor, or degree requirements.

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Mathematics (M. S. T.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and Advancement to Candidacy for the Degree of Master of Science for Teachers

A bachelor's degree from an accredited institution and certification as a teacher of mathematics. Experience teaching secondary school mathematics. Satisfactory scores on the Graduate Record Examination.

Minimum Degree Requirements for the Degree of Master of Science for Teachers

Thirty hours of course work in mathematics. With the approval of their advisor, students may choose courses from the 100-level or from closely related fields. The student must pass an oral comprehensive examination. No thesis is required.

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Mathematical Sciences (Ph. D.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science in Teaching, Master of Arts in Teaching, and the Doctor of Philosophy in Mathematical Sciences. There are two areas of concentration: pure mathematics and applied mathematics. The programs emphasize the interaction between these two areas and the common role of scientific computation. Students can take courses common to both areas, enabling them to gain an appreciation of the mathematical techniques and the connections between theory and applications.

Department research interests include classical analysis, harmonic analysis, Fourier analysis, approximation theory, algebra, number theory, graph theory, combinatorics, fluid mechanics, biomathematics, differential equations, numerical analysis, and modeling.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either pure or applied mathematics, a bachelor's degree with a major in mathematics or a closely related discipline, and satisfactory scores on both the general and subject (mathematics) sections of the Graduate Record Examination.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of four qualifying examinations, three written and one oral, in one of the areas of concentration.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Each student must complete the four qualifying exams and an approved plan of study including at least 75 credit hours in course work or dissertation research. The student is required to write a doctoral dissertation and pass a final oral defense of that dissertation. The Department requires two semesters of college-teaching experience. Students are expected to demonstrate appropriate proficiency in the use of computers. There is no formal language requirement.

Accelerated Master's Program in Mathematics, Statistics, and Biostatistics (B. S./M. S.)

College: Graduate College
Department(s): Mathematics and Statistics

Overview

Accelerated master's programs in Mathematics, Statistics, and Biostatistics are also offered. These programs allow students to earn both their B.S. and M.S. degrees in as little as five years.

A master's degree in Statistics or in Biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the MS could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently towards the MS degree requirements. Students should discuss this possibility with the Statistics Program Director as soon as they think they may be interested in this program.

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Departments and Programs

Botany Department

Colleges: Agriculture and Life Sciences, Arts and Sciences, Graduate College

Faculty: Botany

Courses: Botany (BOT)

Contact Information:

University of Vermont
Botany Department
Marsh Life Science Building
Burlington, VT 05405

Phone: (802) 656-2930
Fax: (802) 656-0440
Email: lreade@zoo.uvm.edu
Web Site: http://www.uvm.edu/~plantbio/

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Graduate Degrees

- Master of Arts in Teaching (M. A. T.)
  - Botany
- Master of Science (M. S.)
  - Botany
    - Field Naturalist Option
- Master of Science for Teachers
  - Botany
- Doctor of Philosophy (Ph. D.)
  - Botany

Courses in Botany

BOT 004 - Intro to Botany

Structure, function, and reproduction of plants. Fundamental aspects of plant science with implications of Credit not given for both Botany 4 and Biology 1.
Credits: 4.

BOT 006 - The Green World

Evaluation of the impact of plants on the aesthetic, cultural, social, medical, and religious lives of peoples of the world. Botany and Biological Science majors will not receive credit for Botany 6 as part of program distribution requirements.
Credits: 3.

BOT 095 - Special Topics

Credits: 1-4.

BOT 096 - Special Topics

Credits: 1-4.

BOT 104 - Plant Physiology

Study of the plant as a whole, growth and development, water and mineral relations, environmental factors, and regulatory processes. Prerequisites: One year of plant or biological science, beginning chemistry recommended, or instructor's permission.
Credits: 4.

BOT 108 - Morph & Evol Vasc Pl

Evolutionary relationships of vascular plants as inferred from plant structure, ecology, geography, and reproductive biology. Synthesis includes both fossil and extant groups. Prerequisite: 4 or Biology 1, 2. Alternate years.
Credits: 4.

BOT 109 - Systematics & Phylogeny

Classification; evolution of flowering plants; characterization and recognition of major families; species and generic concepts; biosystematics; taxonomic keys; preparation of herbarium specimens. Prerequisite: 4 or Biology 1, 2.
Credits: 4.

BOT 117 - Plant Pathology

Diagnosis, life history, control of diseases caused by fungi, viruses, bacteria, nematodes, parasitic plants, and environmental factors. Physiology, biochemistry,

and genetics of host-parasite interaction. Prerequisite: 4 or Biology 1, 2. Alternate years, 2001-02.
Credits: 4.

BOT 132 - Principles of Genetics
Introduction to transmission and molecular genetics with reference to prokaryotic, animal, and plant systems. Prerequisites: Biology 1, 2; Chemistry 31, 32.
Credits: 3.

BOT 151 - Plant Anatomy
Credits: 3.

BOT 160 - Plant Ecology
Interactions among plants and their environment. Topics covered include individuals, populations, communities, and ecosystems. Field methods and experimental design covered; ecological applications. Prerequisite: Botany 4 or Biology 1, 2; Math 19 or 21 recommended. Four Hours. Molofsky.
Credits: 4.

BOT 193 - College Honors
(For Arts and Sciences seniors.)
Credits: 3.

BOT 194 - College Honors
(For Arts and Sciences seniors.)
Credits: 3.

BOT 195 - Special Topics
Credits: 1-3.

BOT 197 - Undergrad Research
Individual projects under direction of a faculty member. Project may involve original research, readings, or apprenticeships. Prerequisites: Junior or senior standing, departmental permission. One to six hours.
Credits: 1-6.

BOT 198 - Undergrad Research
Individual projects under direction of a faculty member. Project may involve original research, readings, or apprenticeships. Prerequisites: Junior or senior standing, departmental permission. One to six hours.
Credits: 1-6.

BOT 205 - Mineral Nutrition of Plants
Role of essential elements for plant growth including classical and modern approaches to the study of ion availability and transport. Prerequisite: BOT 104.
Credits: 3.

BOT 209 - Biology of Ferns
Evolutionary biology; a survey of New England ferns and discussion of their phylogenic relationships; current research emphasizing morphological, biogeographical, genetic, and phytochemical aspects of speciation. Prerequisite: 108; 101 or 132 recommended. Alternate years.
Credits: 3.

BOT 213 - Plant Communities
Plant sociology; structure and organization of the plant community; sampling methods and analysis of data; climatic and edaphic factors; field work.

Prerequisite: 109 or departmental permission.
Credits: 0-3.

BOT 223 - Fundamentals of Field Science

Pattern and process in natural systems. Weekly discussion of unifying questions in science. Field labs teach sampling and analysis of vegetation, soils, and animals. Prerequisite: Graduate standing or several university courses in earth sciences, life sciences, and chemistry.
Credits: 3.

BOT 226 - Environmental Problem Solving

and map and inventory forested natural areas as they apply problem solving skills to Vermont environmental project. Prerequisites: Instructor permission. One to three hours.
Credits: 1-3.

BOT 229 - Water Relations of Plants

See Forestry 299.
Credits: 3.

BOT 232 - Botany Field Trip

Trips to selected environments outside Vermont, led by faculty members representing different fields of botany. Overall, integrated approach to ecology, structure, and function.
Credits: 1.

BOT 234 - Ecology of Freshwater Algae

Community, population and physiological ecology of algae. Topics include taxonomy; diversity; distribution and seasonal succession; productivity and grazing; growth kinetics; and competitive and synergistic reactions. Prerequisites: Botany 160 or Natural Resources 103 or Biology 102. Alternate years.
Credits: 3.

BOT 241 - Tropical Plant Systematics

Principles and methods of angiosperm phylogeny. Recent systematic and evolutionary research on flowering plants; survey of tropical flowering plant families. Student presentations on recent research. Prerequisite: 109. Alternate years.
Credits: 4.

BOT 250 - Microtechnique

Theory and practice in the preparation of biological materials for anatomical and cytological study, including histochemistry and photomicrography. Prerequisites: Introductory chemistry; some knowledge of organic chemisty,
Credits: 3.

BOT 251 - Principles of Light Microscopy

Introduction to the optics, construction, and care of the light microscope. Theory of phase and interference contrast, fluorescense, and video methods. Prerequisite: One year of physics or permission.
Credits: 1.

BOT 252 - Molecular Genetics II

How cells control the flow of genetic information from gene into active gene product. Distinctions between quiescent and active genes, mechanisms of genetic

communication/regulation. Prerequisites: Biology 101 or Agricultural Biochemistry 201 or Biochemistry 301, or equivalent; others by instructor's permission.
Credits: 3.

BOT 254 - Genetics of Fungi

Understanding the classical and molecular genetics of fungi with respect to their contributions in agriculture, basic genetics, biotechnology, industry, recombinant DNA, and gene expression. Prerequisites: Biology 101, or Agricultural Biochemistry 201 or Biochemistry 301 or equivalents; others by instructor's permission.
Credits: 3.

BOT 256 - Adv Plant Genetics

Review of major topics in higher plant genetics and cytogenetics. Designed to be applied to the systematics, breeding, and gene engineering of higher plants. Prerequisite: 132 or Biology 101.
Credits: 3.

BOT 257 - Plant Cell Physiology

Detailed study of photosynthesis, plant cell membrane function, and plant cell growth. Prerequisites: 104, Chemistry 141, 142 or Chemistry 42, Physics 11, 12 or 31, 42. Alternate years.
Credits: 4.

BOT 258 - Biology of the Fungi

microbiological technique and laboratory culture of the Taxonomy, genetics, physiology, ecology, and economic importance of the fungi. Representatives of each major group are explored with respect to the above. Includes fungi. Prerequisites: 101 or 104 or 132 or permission.
Credits: 4.

BOT 260 - Plant Population Biology

Study of how environmental and life-history characteristics of plants determine the dynamics and evolution of populations. Prerequisites: Biology 102 or Botany 160 or instructor permission. UG only.
Credits: 3.

BOT 261 - Plant Growth & Development

Concepts in plant structure and development. Biophysics of plant structure and pattern-formation. Introduction to methods of plant microscopy and microtechnique. Prerequisites: 104, 108, Intro. Physics or permission.
Credits: 4.

BOT 281 - Botany Seminar

Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of botany graduate students and seniors in botanical research programs. Without credit.
Credits: 0.

BOT 282 - Botany Seminar

See Botany 281.
Credits: 0.

BOT 295 - Special Topics

For advanced students within areas of expertise of faculty. Aspects of ecology,

physiology, genetics, cytology, bryology, pteridology, paleobotany, photobiology, membrane physiology, and cell biology. Prerequisite: Departmental permission.
Credits: 0-6.

BOT 296 - Special Topics

Special Topics. UG only.
Credits: 1-6.

BOT 301 - Cell & Molecular Biology

Advanced survey of cell organelles, their composition, origin, and the relationship between their structure and function. Emphasis on recent literature and current controversies. Prerequisites: Chemistry 142, graduate standing in biology or permission. Cross-listing: Cell and Molecular Biology 301.
Credits: 3.

BOT 311 - Field Naturalist Practicum

Landscape analysis; planning and designing field projects; integrated problem solving. Prerequisites: Enrollment in the Field Naturalist program. Variable hours up to three.
Credits: 0-3.

BOT 381 - Problems in Modern Botany

Subject matter varies. Topics will stress current graduate student and staff research interests in a journal review or presentation-discussion format. Prerequisite: Permission.
Credits: 1-4.

BOT 391 - Master's Thesis Research

Credit as arranged.
Credits: 1-10.

BOT 392 - Master Project Rsch

Credit as arranged.
Credits: 0-3.

BOT 491 - Doctoral Dissertation Research

Credit as arranged.
Credits: 1-10.

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Botany (M. A. T.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

The Department offers a program leading to the degree of Master of Arts in Teaching. Satisfactory scores on the Graduate Record Examination general (aptitude) section are requirements for acceptance for this degree.

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Botany (M. S.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

The equivalent of a UVM major or minor in a natural or physical science. Satisfactory scores on the Verbal and Math sections of the Graduate Record Examination.

Minimum Degree Requirements

A total of 30 credits of course work and thesis research. A minimum of 15 credits of course work should be in botany, other natural sciences, and supporting fields, and at least nine credits should be in thesis research.

Requirements for Admission to Graduate Studies for the Degree of Master of Science, Field Naturalist Option

An undergraduate or graduate degree in earth or life sciences is expected; additionally, a demonstrated commitment to field sciences (e.g., participation in environmental and conservation organizations, workshops, field trips, research); strong scores on the Graduate Record Examination. A subject (advanced) test in biology or geology is advised for students who lack an undergraduate degree in natural sciences. Recent college graduates are encouraged to pursue interests outside academe before application to the Field Naturalist program.

Minimum Degree Requirements, Field Naturalist Option

Thirty credit hours of courses to include at least two courses in each of three core areas: (1) life science; (2) earth science; and (3) ecology, the course selection to be determined by the student's studies committee. Enrollment in the Field Naturalist Practicum (Botany 311) each semester; oral comprehensive examination the fourth semester; written field research project (Botany 392) at the end of the fourth semester.

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Botany (M. S. T.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers (Biology)

A bachelor's degree from an accredited institution and certification as a teacher of biology or an associated field. At least three years of secondary school teaching. Satisfactory scores on the Graduate Record Examinations general (aptitude) section.

Minimum Degree Requirements for the M. S. T. (Biology)

Thirty hours of course work to include a selection of courses in the Departments of Botany and Biology which will broaden and balance the undergraduate work in biology. At least two 200-level courses in each department. Courses in four of the five following areas: anatomy; morphology and systematics; genetics; developmental biology; and environmental biology. Up to 12 hours of 100-level courses may be used for the above requirement where approved by the advisor and the Dean. Appropriate courses in related science departments may be used to complete the required 30 hours. No thesis is required; however, each degree recipient must complete a written and oral examination.

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Botany (Ph. D.)

College: Graduate College
Department(s): Botany and Agricultural Biochemistry

Overview

The Botany Department has ongoing research programs in: ecology and evolution including physiological ecology of aquatic plants, effects of acid depositions on forest ecosystems, physiological ecology of acid depositions, systematics and evolution of vascular plants, biogeography; physiology including morphogenesis and developmental biology of embryonic plant systems, mineral nutrition, growth and development, translocation, cellular electrophysiology, membrane function, amino acid transport, aluminum effects on cell membranes; and cell and molecular biology including molecular genetics; recombinant DNA of fungi and plant molecular development.

The Botany Department participates actively in the Cell and Molecular Biology Program which provides opportunities for interdisciplinary research with other life science departments.

The Botany Department offers a multidisciplinary non-thesis program leading to the degree of Master of Science, Field Naturalist Option. Enrollment is limited to a small number of mature, highly talented individuals who have demonstrated sustained interest in field aspects of the natural sciences. The program is designed to provide students with: (1) a solid grounding in field-related sciences; (2) the ability to integrate scientific disciplines into a coherent whole at the landscape level; (3) the ability to evaluate sites from a number of perspectives and/or criteria; (4) the ability to translate scientific insights into ecologically sound decisions; and (5) the ability to communicate effectively to a wide range of audiences.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

The equivalent of a UVM major or minor in a natural or physical science. Satisfactory scores on the Verbal and Math sections of the Graduate Record Examination.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of one academic year in graduate study at The University of Vermont; completion of any language required by the student's studies committee. The candidate must demonstrate ability to comprehend the contents of articles in the biological sciences in a modern foreign language appropriate to the student specialty and approved by the Studies Committee.

Minimum Degree Requirements

A total of 75 credits of course work and dissertation research. A minimum of 40 credits of course work should be in botany, other natural sciences and supporting fields, and at least 20 credits should be in dissertation research. In addition, each candidate must participate in six semester hours of supervised teaching.

Colleges and Schools

School of Business Administration

Contact Information:

University of Vermont
School of Business Administration
Kalkin Hall
55 Colchester Ave
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Overview

The mission of the School of Business Administration is to educate Vermont, national, and international students for careers in management, to conduct research that extends knowledge and contributes to the effectiveness of teaching and learning, to forge productive links with business and not-for-profit organizations, and to develop faculty capabilities to interpret and respond to significant changes in management education, research, and practice. In its education, research, and service programs, the School is committed to our special responsibility to serve the citizens of Vermont.

The program integrates forward-looking professional studies with rigorous studies in the

liberal arts and sciences by graduating bachelors' candidates who

- know how to think critically, learn independently, and search for and integrate new information;
- understand what managers do, how businesses operate, and how markets behave;
- understand how knowledge is created;
- use knowledge, creative abilities, and analytical skills to frame and solve management problems;
- have strong communication skills;
- use information technologies to improve individual and organizational performance;
- have a sense of history, familiarity with great world literature and an understanding of global economic, political and technological developments;
- appreciate the diversity of cultures, values and ideas.

During their first two years, students build the conceptual and analytical base for studying the art and science of management. They partially complete general education requirements and learn required skills for upper level business courses. Students take business field courses and business discipline concentration courses in their junior and senior years.

The School of Business Administration cooperates with the College of Engineering and Mathematics in offering a B. S. in Engineering Management. (See Engineering Management Department)

The undergraduate and graduate programs offered by the School are accredited by AACSB International: The Association to Advance Collegiate Schools of Business.

The offices of the School of Business Administration are located in Kalkin Hall.

Academic Offerings

College: School of Business Administration

Graduate Degrees

- Master of Business Administration (M. B. A.)

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Business Administration (M. B. A.)

College: Graduate College
Department(s): School of Business Administration

Overview

Management is the art of applying principles of the mathematical and social sciences to decision making in an organizational environment characterized by uncertainty and limited resources. The program is designed (1) to develop the individual's ability to practice the art and (2) to build a foundation that will facilitate and encourage the continuation of this development beyond a formal university setting. Courses in the program emphasize the understanding and critical evaluation of conceptual and theoretical principles relevant to the decision process in the functional areas of business.

Upon completion of the program, students will have been exposed to each functional area, will have been required to demonstrate an ability to engage in individual and group research projects, and will have demonstrated capacity to present coherently and defend their views orally and in writing.

The MBA program is accredited by AACSB - International Association for Management Education.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies and for Advancement to Candidacy for the Degree of Master of Business Administration

The MBA program consists of Prerequisite (basic skills), Core, and Advanced (beyond the core) courses. A student can be admitted to the Graduate College before completion of Prerequisite courses, but all prerequisites must be completed before the student is admitted to candidacy for the MBA degree.

All applicants must meet the general requirements for admission to the Graduate College. In addition to transcripts of prior undergraduate and graduate work, the applicant is required to submit scores on the Graduate Management Admissions Test. Students are selected for admission based on high promise of academic achievement in the MBA program. That promise will be judged by previous academic work, GMAT scores, relevant work experience, writing ability, and recommendations.

Minimum Degree Requirements

Students must complete all of the courses listed. Each Prerequisite course normally will be satisfied by completion of an appropriate three hour undergraduate level course. Computer usage skill may be demonstrated by appropriate experience. Prerequisite courses must be completed before enrollment in Core courses. Enrollment in Advanced courses is restricted to students who have completed the appropriate Core course in that functional area.

Prerequisite Courses

1. Macroeconomic Principles*
2. Microeconomic Principles*
3. Differential Calculus
4. Computer Usage
5. Statistics

*BSAD 302 may be taken to fulfill both the Macroeconomics and Microeconomics prerequisites.

- **Core Courses** (18 hours)
  1. BSAD 305 Fundamentals of Marketing Management
  2. BSAD 306 Fundamentals of Accounting
  3. BSAD 307 Organization and Management Studies
  4. BSAD 308 Corporate Finance
  5. BSAD 309 Fundamentals of Legal Environment of Business
  6. BSAD 340 Production and Operations Management

- **Advanced Courses** (30 hours)
  (Of the 30 hours in this category, at least 24 must be in 300-level courses)
  I. Functional Area Courses (one selected from each area):
     1. Accounting and Finance (BSAD 260, 263, 266, 267, 282, 285, 360, 365, 380, Special Topics)
     2. Economic and Political Environment (BSAD 234, 337, Special Topics)
     3. Human Resources Management (BSAD 222, 226, 331, 375, 376, 379, Special Topics)
     4. Marketing (BSAD 251, 252, 258, 352, Special Topics)
     5. Management Information Systems (BSAD 345, 347, Special Topics)
     6. Production and Operations Management and Quantitative Methods (BSAD 270, 293, 341, 346, Special Topics)

  II. Electives: Nine hours of graduate business courses

III. BSAD 396 Business Policy

A normal course load for full-time students is 12 hours per semester. Part-time students typically take six hours per semester. Substantially all Core courses must be completed before enrollment in Advanced courses. Business Policy will be taken during the student's last semester in the MBA program. Successful completion of the BSAD 396 course will be considered as fulfilling the Graduate College requirement that all master's degree students pass a comprehensive examination in their field of specialization.

Students who have received undergraduate degrees in business within the past five years from schools accredited by the AACSB are allowed to waive the Core courses and may complete the program in one year by taking 15 hours of coursework per semester. Other students with academic experience covering material in particular Core courses may waive such courses upon successful completion of qualifying examinations.

Course Sequencing

For full-time students needing to complete all Core (18 hour) and Advanced (30 hours) courses, the usual sequencing of courses is as follows:

First Year - Fall Semester
- BSAD 305
- BSAD 306
- BSAD 307
- BSAD 340

First Year - Spring Semester
- BSAD 308
- BSAD 309
- 2 Functional Area Courses

Second Year -Fall Semester
- 2 Functional Area Courses
- 2 Elective Courses

Second Year - Spring Semester
- 2 Functional Area Courses
- Elective Course
- BSAD 396

For full-time students needing to complete only the Advanced (30 hours) courses, a typical course sequencing is as follows:

Fall Semester
- 3 Functional Area Courses
- 2 Elective Courses

Spring Semester
- 3 Functional Area Courses
- Elective Course
- BSAD 396

As an alternative, some students may choose to complete two Advanced courses during the summer session (if available, since summer offerings are limited) in order to reduce their regular semester program to 12 hours.

Courses in Business Administration

BSAD 017 - Business Law

Concepts of law as related to business, including law of contracts, sales, bailments, and negotiable instruments, business and laws of agency, partnerships, and corporations. Prerequisite: Sophomore standing.

Credits: 3.

BSAD 018 - Business Law

Concepts of law as related to business, including law of contracts, sales, bailments, and negotiable instruments, business and laws of agency, partnerships, and corporations. Prerequisite: Sophomore standing.

Credits: 3.

BSAD 040 - Information Technology & Mgmt

and programming. Credit cannot be received for Computer Introduction to use of technology and computers in decision-making functions of management. Includes coverage of information technology, computer software applications, Science 2 or Computer Science 3 after completion of BSAD 40.

Credits: 3.

BSAD 060 - Financial Accounting

Introduction to generally accepted accounting principles and techniques regarding corporations, partnerships, and proprietorships as they apply to income determination and financial position presentation. Prerequisite: Sophomore standing.

Credits: 4.

BSAD 061 - Managerial Accounting

Introduction to use of accounting for planning, cost behavior and control, and decision making. Prerequisite: BSAD 60 or 65.

Credits: 4.

BSAD 065 - Fundamentals of Accounting

Overview of the financial accounting model and basic managerial accounting concepts, including accounting for service, merchandising and manufacturing companies, financial Statement components (assets, liabilities and equity), cost analysis, and budgeting. Prerequisite: Sophomore standing. Business Administration majors will not receive credit for BSAD 65.

Credits: 4.

BSAD 095 - Special Topics

Credits: 0-3.

BSAD 096 - Special Topics

Credits: 1-4.

BSAD 120 - Prin Mgmt & Org Behavior

Fundamentals of management, organization theory, behavior, and interpersonal communication in a transnational context. Prerequisite: Junior standing.

Credits: 3.

BSAD 121 - ST in Organizational Behavior

Focuses on ways in which individuals and work groups within organizations can be better utilized as organizational resources. Prerequisite: BSAD 120.

Credits: 3.

BSAD 123 - Collective Barg & Conflict Res

Focuses on union-employer relations and on developing the student's negotiation skills. Topics include the union contract, the causes of strikes, and the techniques for resolving conflict. A bargaining simulation is incorporated. Prerequisite: BSAD 120.

Credits: 3.

BSAD 127 - International Management

Reviews special problems in the management of human resources in a global economy. Focuses on cultural differences, a comparison of labor-management systems in a number of countries, the role of multinational corporations, and the impact of foreign enterprises on employment practices in host countries. Prerequisite: BSAD 120; Senior standing.

Credits: 3.

BSAD 132 - Legal & Political Envir of Bus

Interaction of business and society. Emphasis on business roles in the complex and dynamic, legal, political, and social environment. Prerequisites: Economics 11, 12; junior standing.

Credits: 3.

BSAD 137 - Entrepreneurship

Understanding of the business challenges that confront entrepreneurs and their approaches to opportunities. Emphasizes real-world information gathering and integrated approaches needed for entrepreneurial success. Prerequisite: Junior standing and strong personal motivation.

Credits: 3.

BSAD 138 - New Venture Creation I

Students develop business plans for their own new business ideas. Evaluate market and financial feasibility and develop strategy and business objectives for the new venture. Prerequisite: BSAD 137 or permission of the instructor plus strong personal motivation.

Credits: 6.

BSAD 139 - New Venture Creation II

Continuation of BSAD 138. Students develop detailed and integrated operational business plans to support the business concept, strategy and objectives

developed in BSAD 138. Prerequisite: BSAD 138.
Credits: 3.

BSAD 141 - Mgmt Information Systems

Integrates computer hardware and software concepts with a classical methodology for developing business information systems. Presents the relevant factors in the development of information systems. Discusses the problems of analyzing, designing, and implementing such systems. Prerequisites: Statistics 141 or 111, Math 20 or 21, BSAD 40 or Computer Science major, junior standing.
Credits: 3.

BSAD 142 - Structured Business Prgmming

Fundamental principles of business computer programming. Topics include: the constructs of structured programming, modular development, sequential and nonsequential access techniques. Exercises include data editing, reporting, file updating. An on-line program development mode is used. Credit cannot be received for both CS 014 and BSAD 142. Prerequisite: BSAD 141.
Credits: 3.

BSAD 143 - Struc Anyl & Dsgn Business Sys

In-depth study of business information system development cycle emphasizing analysis and design phases. Structured analysis and design techniques used to develop models of business information systems. Case studies such as payroll, inventory, accounts receivables, order entry, billing. Prerequisite: BSAD 141.
Credits: 3.

BSAD 144 - Data Base Development & Admin

Data base system development cycle from analysis to design, implementation, and administration. Central focus on complex data structure modeling, data base implementation and administration. A project involving analysis, design, and implementation required. Prerequisite: BSAD 141, BSAD 143, or Instructor permission.
Credits: 3.

BSAD 145 - Managing Info System Resource

Theory and practice of managing resources of an organization's information system. Responsibilities and interactions of upper level, function area, and information system managers emphasized. Topics include project selection and control, staffing, organizing, planning, and managing the information system function. Prerequisites: BSAD 120, BSAD 143, concurrent enrollment in BSAD 144, or instructor's permission. Variable 3-4 hours.
Credits: 3.

BSAD 146 - Loc Area Net/Wrk Grp & Sm Bus

Planning and installation of local area networks (LANs). Covers fundamental principles of telecommunications and networking with application to both peer to peer and client server networks. (Offered summer session only). Prerequisites: BSAD 141 and instructor permission. Corequisite: BSAD 147.
Credits: 3.

BSAD 147 - Local Area Networking Lab

Laboratory to accompany BSAD 146. Install, configure, and test two different network systems in a simulated small business setting; include basic network

services. (Offered summer session only). Prerequisite: BSAD 141 or instructor permission. Corequisite: BSAD 146.
Credits: 1.

BSAD 150 - Marketing Management
The place of marketing in our economy. Analysis of the market structure by function, institutions, and commodities. Consumer and organizational activities reviewed. Prerequisites: Statistics 141 or 111, Economics 11, 12; junior standing.
Credits: 3.

BSAD 152 - Business to Business Marketing
Exploration and analysis of the marketing of goods and services to organizations. Topics include organizational buying, market segmentation, positioning, pricing, communication, physical distribution and customer service, and sales management. Prerequisite: BSAD 150.
Credits: 3.

BSAD 153 - Consumer Behavior
Exploration and analysis of research evidence from marketing and behavioral science relevant to a theory of consumer behavior. Emphasis also given to research methodologies. Prerequisite: BSAD 150.
Credits: 3.

BSAD 155 - Marketing Communications
Emphasizes the coordination of advertising and sales promotion into cohesive, single-minded promotional programs. Stresses the need to integrate promotional activity into the overall marketing strategy. Prerequisite: BSAD 150.
Credits: 3.

BSAD 158 - Current Marketing Developments
Analysis of both present and future changes affecting marketing theory and practice. Topics include social changes, functional and institutional marketing system changes. Individual research projects required. Prerequisite: BSAD 150.
Credits: 3.

BSAD 159 - Mrktg Planning & Programming
The use of advanced cases to aid in the formulation of overall policies and planning strategies for marketing programs. Topics include product planning and channel selection. Prerequisite: BSAD 150 and one other marketing course.
Credits: 3.

BSAD 161 - Intermediate Accounting
Principles, concepts, techniques, and issues involved in accounting for the assets, liabilities, and owners equity and their related effect on income determination of an enterprise. Prerequisites: BSAD 60, junior standing.
Credits: 3.

BSAD 162 - Intermediate Accounting
Principles, concepts, techniques, and issues involved in accounting for the assets, liabilities, and owners equity and their related effect on income determination of an enterprise. Prerequisites: BSAD 161, junior standing.
Credits: 3.

BSAD 164 - Intro to Federal Taxation
Examination of the Internal Revenue Code primarily regarding individuals and

property transactions. Tax research methodology, and the taxation of corporate and partnership income, are introduced. Prerequisites: BSAD 060 or BSAD 065; Junior standing.
Credits: 3.

BSAD 168 - Cost Accounting
Accounting for inventory valuation and income determination, nonroutine decisions, policy making and long-range planning. Prerequisite: BSAD 061; Junior standing.
Credits: 3.

BSAD 170 - Business Forecasting Methods
Looks inside the crystal ball at major forecasting methods (Smoothing, Regression, Econometric, Box-Jenkins, Combined), and analyzes elements of good forecasting practice in an organization. Extensive use of PC forecasting packages. Prerequisites: STAT 141, EC 011, EC 012; Junior standing.
Credits: 3.

BSAD 173 - Production&Operations Analysis
Study of methods used in planning, analysis, and control of production and service processes. Topics include forecasting, scheduling, production and inventory control, sequencing, line balancing, learning curves, and networks. Prerequisites: Math 20 or 21, Statistics 141, junior standing.
Credits: 3.

BSAD 174 - Manufacturing Planning&Control
Study of systems to plan and control flows of materials through manufacturing. Topics include production, materials, and capacity planning; master scheduling; shop-floor control, and just-in-time production. Prerequisite: BSAD 173 or Senior standing in Engineering or Mathematics.
Credits: 3.

BSAD 175 - Management of Technology
Role of technology in industry, the nature of technological Prerequisite: Senior standing in Engineering or Business change, strategies, management, research and development, forecasting, product service/project selection, development, management, transition to market, and evaluation. Administration. Cross-Listed with: EMGT 175.
Credits: 3.

BSAD 177 - Decision Analysis
Thinking through difficult decisions. Course utilizes case studies and professional software to analyze decision making, design decision models and perform risk analyses. Prerequisite: STAT 141; Junior standing.
Credits: 3.

BSAD 178 - Quality Control
Prerequisite: MATH 020 or MATH 021, STAT 141 or Analysis and design of systems for obtaining quality in operations. Statistical process control (SPC) emphasized, along with current management philosophies and concepts. equivalent; Junior standing.
Credits: 3.

BSAD 180 - Managerial Finance

standing.
Credits: 3.

BSAD 181 - Intermediate Financial Mgmt
Examines key areas of financial decision making. With cases and problems, issues such as capital budgeting, leasing, mergers, and acquisitions examined. Prerequisite: BSAD 180.
Credits: 3.

BSAD 183 - International Finance Mgmt
Theories and practices of international financial management examined. Topics investigated include: systems of international exchange, spot and forward markets, and expropriation and exchange risk. Prerequisite: BSAD 180.
Credits: 3.

BSAD 184 - Financial Institutions&Markets
Study of level and structure of interest rates and characteristics of financial institutions and markets. Topics include market vs. natural rate of interest, interest rate structure, behavior of interest rates. Prerequisite: BSAD 180.
Credits: 3.

BSAD 191 - Business Policy
Processes of total enterprise strategy formation, implementation, and performance measurement. Uses and limits of techniques for strategy analysis. Strategic change and the job of the general manager. Prerequisite: Senior standing.
Credits: 3.

BSAD 192 - Business Process Improvement
Familiarizes students with the basic conceptual issues of continuously improving business processes to compete more effectively on quality, time, and cost. Prerequisite: Junior standing.
Credits: 3.

BSAD 194 - Internship
Independent research under faculty supervision, in connection with a preprofessional work experience. Written requirements include a substantive analysis of an aspect of the internship, linking it with the academic curriculum. Prerequisite: Completion of the Basic Business Core courses; at least one Business Field Course; cumulative GPA of at least a 3.0; permission of the School of Business Administration.
Credits: 3.

BSAD 195 - Special Topics
Specialized or experimental courses offered as resources permit.
Credits: 1-6.

BSAD 196 - Special Topics
Specialized or experimental courses offered as resources permit.
Credits: 1-4.

BSAD 197 - Independent Study
Independent investigation designed by the student as a means of applying prior course work to a specialized problem. Well suited for senior projects. Prerequisite: Permission of BSAD Undergraduate Studies Committee.
Credits: 1-6.

BSAD 198 - Independent Study

Independent investigation designed by the student as a means of applying prior course work to a specialized problem. Well suited for senior projects. Prerequisite: Permission of BSAD Undergraduate Studies Committee.
Credits: 1-6.

BSAD 222 - Human Resource Management

Critical examination of contemporary problems in human resource management; including job analysis, recruitment, training and employee development, health and safety, compensation, performance appraisal, and related topics. Prerequisite: BSAD 120; Senior standing.
Credits: 3.

BSAD 226 - Current Iss in Mgmt & Org Thry

Subjects may include training and development, selection and recruitment, and affirmative action. Prerequisite: BSAD 120.
Credits: 1-3.

BSAD 234 - Canadian-US Business Relations

Prerequisite: EC 011, EC 012. A study of the Canadian-U.S. bilateral relationship as it affects international business, emphasizing trade, investment, energy, and industrial deveopment policies.
Credits: 3.

BSAD 251 - Marketing Research

The role of research in a marketing information framework. Emphasis on survey research, data collection, and analysis. Experimental designs also examined. Prerequisite: BSAD 150.
Credits: 3.

BSAD 252 - Marketing Research Practicum

Market research field project. Students design survey instruments, collect and analyze data, and present results to clients in a business environment. Prerequisite: BSAD 251.
Credits: 3.

BSAD 258 - International Market Analysis

Examines the cultural, economic, historic, and political factors that affect the analysis of foreign markets. Specific attention is given to the processes by which market entry decisions are developed and implemented. Prerequisites: Senior or graduate standing; BSAD 150 or permission of instructor.
Credits: 3.

BSAD 260 - Financial Statement Analysis

A study of the concepts and techniques underlying corporate financial statement analysis, emphasizing business equity valuation. Prerequisites: BSAD 180 or 308.
Credits: 3.

BSAD 263 - Accounting & the Environment

An examination of the critical role of accounting in implementing and assessing the firm's environmental strategy. A variety of accounting issues are addressed through readings and case studies. Prerequisites: Junior standing, BSAD 61 or 65 or concurrent enrollment in BSAD 308.
Credits: 3.

BSAD 266 - Advanced Accounting

Accounting for partnerships, special sales contracts, parent-subsidiary relationships, fiduciary relationships, and governmental units. Prerequisite: BSAD 162.

Credits: 3.

BSAD 267 - Auditing

Independent and internal auditing. Topics include standards, ethics and legal responsibilities of the profession, financial statements, audit concepts, and techniques, and the audit option. Prerequisite: BSAD 162.

Credits: 3.

BSAD 270 - Quant Anyl for Managerial Dec

Application of management science methods to managerial decision making, emphasizing modeling and use of solution results. Topics include mathematical programming, waiting-line analysis, and computer simulation. Prerequisite: STAT141, MATH 020 or MATH 021.

Credits: 3.

BSAD 272 - Discrete Simulation

Discrete simulation using monte-carlo techniques and the GPSS simulation processor; mathematical modeling of systems; control systems; validation and sensitivity analysis. Prerequisites: Statistics 141 or 151, senior standing. UG only.

Credits: 3.

BSAD 282 - Security Val & Portfolio Mgmt

Examination of theories and evidence on the investment decision process including operations of equity securities markets, market efficiency, financial asset prices, and portfolio management. Prerequisites or Corequisites: BSAD 181 and 184 or BSAD 308.

Credits: 3.

BSAD 285 - Options and Futures

Topics include: structures of the markets for exchange

Credits: 3.

BSAD 293 - Integrated Product Development

(Cross-listed with Mechanical Engineering 265, Statistics 265.) Project-based course focusing on the entire product life cycle. Team dynamics, process and product design, quality, materials, management, and environmentally-conscious manufacturing. Prerequisite: Senior standing.

Credits: 3.

BSAD 295 - Special Topics

Advanced courses on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles and prerequisites. Prerequisite: Senior standing.

Credits: 1-3.

BSAD 302 - Business Economics

An introduction to the principles of economics as relevant to business decision-making. The use of various analytical tools are stressed through their application in solving a variety of managerial problems. Prerequisite: MBA standing or permission of MBA Program Director.

Credits: 3.

BSAD 304 - Managerial Economics

Application of economic, mathematical, and statistical models to managerial decision making. Emphasis given to optimization techniques, spreadsheet analyses, decision trees, and cost/benefit analysis. Prerequisite: MBA standing.
Credits: 3.

BSAD 305 - Fundamentals of Marketing Mgmt

Prerequisite: MBA standing.
Credits: 3.

BSAD 306 - Fundamentals of Accounting

Introduction to basic concepts, assumptions, conventions providing foundation for developing financial statements. Analysis, interpretation of the income statement, balance sheet, statement of changes in financial position. Prerequisite: MBA standing.
Credits: 3.

BSAD 307 - Organization & Mgmt Studies

A survey course of the principles of management and organization behavior. The fundamentals of planning, organizing, leading, staffing, and controlling are covered. Particular attention is given to organization theory and behavior, including topics such as motivation, group behavior and decision making. All areas are covered in an international context. Prerequisite: MBA standing.
Credits: 3.

BSAD 308 - Corporate Finance

An introduction to financial decision making in the firm. Decisions related to acquisition and allocation of funds are examined and practiced through cases and problems. Prerequisite: MBA standing; BSAD 306.
Credits: 3.

BSAD 309 - Fund Legal Environ of Business

General overview of areas of interaction between businesses and governments. Examination of governmental policy toward business and review of laws governing business-government interactions. Prerequisite: MBA standing.
Credits: 3.

BSAD 331 - Health Care Management

Addresses changing challenges confronted by managers in health services delivery organizations. Examines processes in the health care context. Prerequisite: MBA standing. Cross-listed with: PA 312.
Credits: 3.

BSAD 337 - Internatnl Trade&Invstmnt Pol

Examination of international trade rules of the GATT and the pending World Trade Organization; analysis of the impact on domestic and international firms. Prerequisite: MBA standing; BSAD 309.
Credits: 3.

BSAD 340 - Production & Operations Mgmt

Study of the operations function in manufacturing and service organizations. Design, planning, and control are examined, with emphasis on managerial analysis and decision making. Prerequisite: One course in STAT.

Credits: 3.

BSAD 341 - Forecasting

Modern forecasting methods and practices including smoothing, regression, econometric and Box-Jenkins models; combining forecasts and forecasting simulations. Professional software used for developing forecasts. Prerequisite: MBA standing; one course in Statistics or research methods.
Credits: 3.

BSAD 345 - Management Information Systems

An introduction to the design and implementation of management information systems. A theoretical framework is developed and applied by students to an information system. Prerequisite: MBA standing.
Credits: 3.

BSAD 346 - Decision Making Models

Application of decision-making models to administrative problems. Structuring decisions through decision trees, making choices, assessing risk, resolving conflicting objectives and overcoming organizational impediments. Prerequisite: One course in Statistics. Cross-listed with: PA 308.
Credits: 3.

BSAD 352 - Business to Business Marketing

Exploration and analysis of the marketing of goods and services to organizations. Topics include organizational buying, market segmentation, positioning, pricing, communication, physical distribution and customer services, and sales management. Prerequisite: MBA standing; BSAD 305.
Credits: 3.

BSAD 359 - Marketing Policy

Concepts from quantitative methods, economics, behavioral sciences applied to marketing management. Includes: marketing opportunities, organizing for marketing, planning marketing programs, control of marketing effort. Case book method. Prerequisite: MBA standing; BSAD 305.
Credits: 3.

BSAD 360 - Contemporary Financial Acctg

Current financial accounting, reporting practices; focus on contemporary issues, problems. Impact of pronouncements of Accounting Principles Board, Financial Accounting Standards Board, Securities and Exchange Commission, and other bodies. Prerequisites: MBA standing, BSAD 306.
Credits: 3.

BSAD 365 - Managerial Accounting

Study of development, utilization of accounting information for product costing and pricing purposes, for routine planning and control of organizational activities, for decision-making purposes. Prerequisites: MBA standing, BSAD 306.
Credits: 3.

BSAD 375 - Organization Theory

Organization theories examined for insights into behaviors of organizations and their members. Open systems perspective. Identification of contingencies in organization design based on human, structural, technological, environmental variables. Prerequisite: MBA standing; BSAD 307.

Credits: 3.

BSAD 376 - Mgmt of Change in Organization

accomplishment of planned changes in organizational

Credits: 3.

BSAD 379 - Strategic Management

Case studies of existing organizations are used to illustrate the intellectual, social processes of adaptation to a changing environment; strategy formulation, implementation. Not offered every year. Prerequisite: MBA standing; completion of First-Year courses.

Credits: 3.

BSAD 380 - Managerial Finance

Prerequisites: MBA standing, BSAD 308. Focus on key financial decisions that affect the value of the firms. Topics: capital structure, leasing, mergers and acquisitions, capital market theories and evidence.

Credits: 3.

BSAD 394 - Independent Readings&Research

Allows a student to pursue independent research under the direction of a faculty member. Normally, the course will include a research paper. Prerequisite: MBA standing; permission of the Graduate Studies Committee.

Credits: 1-3.

BSAD 395 - Special Topics

Topics and material that may develop later into a regular course offering; in addition, it may include topics and material offered only once. Prerequisite: MBA standing; permission of the Graduate Studies Committee.

Credits: 1-3.

BSAD 396 - Business Policy

A case course focusing on the resolution of complex cases involving simultaneous solutions of problems in two or more functional areas. Prerequisites: MBA standing; last semester of study.

Credits: 3.

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Departments and Programs

Cell and Molecular Biology Department

Colleges: Graduate College

Courses: Cell and Molecular Biology (CLBI)

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Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Cell and Molecular Biology
  - Doctor of Philosophy (Ph. D.)
    - Cell and Molecular Biology

Overview

Participating faculty are from the following departments: Agricultural Biochemistry; Anatomy and Neurobiology; Animal and Food Science; Biochemistry; Biology; Biomedical Technology; Botany; Genetics; Medicine; Microbiology and Molecular Genetics; Molecular Physiology and Biophysics; Obstetrics and Gynecology; Pathology;

Pediatrics; Pharmacology; Physics; and Surgery.

An interdisciplinary program leading to M. S. and Ph. D. degrees in Cell and Molecular Biology is offered under the direction of a committee composed of faculty members drawn from the participating departments. The program provides the flexibility necessary for students to gain competence in the area of their choice. The extensive research facilities of the participating departments are available to all graduate students enrolled in the program. Inquiries should be directed to the Cell and Molecular Biology Program Director, Anne Huot, Department of Biomedical Technology.

Research includes: (Albertini) human somatic-cell genetic mutations, histocompatibility genetics (Bateman) mechanism of eukaryotic transcription initiation; (Berger) protein structural dynamics during muscle contraction; (Bond) computational studies of protein structure and evolution; (Braas) molecular mechanisms regulating neuroendocrine hormone expression and function; (Budd) T-lymphocyte signal transduction and development in normal and Fas-lpr autoimmune mice; (Burke) structure, function and applications of ribozymes; (Chiu) regulation of gene expression in developing and neoplastic tissues; (Chu) structure and protein dynamics of heme proteins and hon-heme diiron proteins; (Conn) genetics of human plasmodium transmitting anopheline mosquitoes; (Cornbrooks) nervous system development and regeneration; (Currier) cell-cell interactions in plant-microbe symbiosis (Cutroneo) regulation of collagen gene expression; (Doublie) crystallographic and biochemical studies of proteins involved in mRNA processing and editing; (Everse) structure/function determination of proteins (especially blood coagulation) by x-ray crystallographic methods; (Finette) mechanisms and clinical importance of somatic mutations in children; (Fives-Taylor) cross signaling between bacterial cells and host cells; (Francklyn) protein-nucleic acid recognition; structure and function of RNA and RNA binding proteins especially aminoacyl-tRNA synthetases; (Gilmartin) regulation of mRNA processing in HIV-1, biochemistry of eukaryotic transcription termination; (Haeberle) molecular regulation of cell motility and muscle contraction; (Hart) metal toxicity in the lung, pulmonary tolerance to pollutants; (Heintz) protein - DNA interactions at eucaryotic origins of replication; eukaryotic cell cycle; (Huber) immune mechanisms of tissue damage in viral infections; (Huot) cellular interactions involved in regulation of growth; (Jaken) signal transduction through protein kinase C; (Janssen-Heininger) oxidant-induced signaling in lung epithelium relevant to asthma; (Johnson) control of cellular morphogenesis during the yeast cell cycle, role of low-molecular-weight GTP-binding proteins in cell polarity; (Koh) molecular mechanisms of tumor suppressor gene function, mammalian cell cycle regulatory mechanisms; (Krag) translational research (deliver from lab to patient) on developing targeted therapeutics for cancer patients; (Kurjan) cell-cell interactions involved in yeast mating; (Lidofsky) liver cell signaling membrane transport mechanisms of liver failure; (Lounsbury) molecular regulation of calcium and growth factor signaling pathways, nuclear transport, and gene transcription; (Maughan) molecular mechanisms of muscle contraction and metabolism in Dropsophila; (May) regulation of neuropeptide expression and neurotransmitter phenotype, molecular endocrinology; (Melamede) in vitro production of antibodies using phage display systems in E. coli; (Mitchell) cytoskeletal protein metabolism and smooth muscle cell differentiation; (Morrical) enzymology of DNA replication, recombination, and repair; (Mossman) carcinogenesis of tracheobronchial tree, pulmonary fibrosis;

(Murakami) regulation of protein kinase C and its role in neuronal plasticity, differentiation and survival; (Nicklas) molecular analysis of mutations occurring in vivo in humans exposed to genotoxicants; (Novotny) molecular genetics of development in fungi; (Osol) vascular smooth muscle and endothelial cells regulation of diameter of resistance arteries during pregnancy and chronic hypertension; (Parsons) synaptic physiology/pharmacology, transmitter actions, motor end plate, autonomic neurons; (Patlak) structure-function studies of single ion channels; (Pederson) assembly and function of transcription and replication initiation complexes in yeast; (Rinc  n) signal transduction and gene transcription regulation during thymic development and T cell activation; (Rould) x-ray crystallography to understand and control protein-DNA recognition; (Schneider) genetics of signal transduction in Drosophila development; (Sobel) dysregulation of fibrinolytic system protein expression and atherogenesis; (Stein) characterization of bacterial virulence factors that facilitate replication within host cells; (Stevens) cellular and molecular biology of tissue damage by toxic chemicals and its repair; (Sun) insulin signal transduction and the mechanism of insulin resistance; (Taatjes) glycosylation reactions in the Golgi apparatus; (Tierney) plant molecular biology, plant developmental biology, cell wall structure; (Tracy) molecular characterization of the cell-cell and cell-protein interactions regulating hemostasis and thrombosis; (Ullrich) molecular genetics of regulatory genes and development; (Van Houten) molecular genetics, biochemistry, physiology of chemoreceptors, calcium and other second messengers; (Vichi) signal transduction pathways involved in DNA repair; (Vigoreaux) functional studies of muscle proteins in Drosophila; (Wallace) biological processing of oxidative DNA lesions, molecular analysis of repair and mutagenesis of oxidative DNA lesions; (Ward) mechanisms of host cell invasion by Toxoplasma and Plasmodium; (Yandell) mechanisms of inherited cancer predisposition.

Courses in Cell Biology

CLBI 295 - Special Topics
Credit as arranged.
Credits: 1-6.

CLBI 301 - Cell Biology
Advanced survey of cell organelles, their composition, origin, and the relationship between their structure and function. Emphasis on recent literature and current controversies. Prerequisite: CHEM 142; Graduate standing in Biology or Instructor permission. Cross-listed with: BIOL 301.
Credits: 3.

CLBI 302 - Spec Cells & Cell Processes
Current issues and research in the field of plant, invertebrate, mammalian cell, and molecular biology. Prerequisite: CLBI 301. Cross-listed with: BIOL 302.
Credits: 3.

CLBI 381 - Seminar
One hour.
Credits: 1.

CLBI 391 - Master's Thesis Research
Credit as arranged.
Credits: 1-12.

CLBI 395 - Special Topics
Credit as arranged.
Credits: 0-3.

CLBI 491 - Doctoral Dissertation Research
Credit as arranged.
Credits: 1-12.

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Cell and Molecular Biology (M. S.)

College: Graduate College
Department(s): Cell and Molecular Biology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Biology (three semesters, including genetics), chemistry through organic, mathematics through calculus, physics (two semesters), physical chemistry. Satisfactory scores (60 percentile) on general (aptitude) Graduate Record Examination. Students who do not have all of the courses listed but who have a good academic record will be considered for admission to the program. Deficiencies may be made up after matriculation.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Completion of any deficient admission requirements.

Minimum Degree Requirements

Thirty hours of graduate level credit including Cell Biology 301-302 and one course in each of the following areas: genetics, biochemistry (one year); a techniques course approved by the Studies Committee; cell biology seminar once per year; thesis research.

The expected sequence for all first year students in the fall is CLBI 301, biochemistry, CLBI 381, and CLBI 391 or 491; in the spring is CLBI 302, biochemistry, CLBI 381 and CLBI 391 or 491. Additional courses or substitutions are offered with flexibility, but must have permission of the Program Director.

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Cell and Molecular Biology (Ph. D.)

College: Graduate College
Department(s): Cell and Molecular Biology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Biology (three semesters, including genetics), chemistry through organic, mathematics through calculus, physics (two semesters), physical chemistry. Satisfactory scores (60 percentile) on general (aptitude) Graduate Record Examination. Students who do not have all of the courses listed but who have a good academic record will be considered for admission to the program. Deficiencies may be made up after matriculation.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of any deficient admission requirements including one semester of physical chemistry equivalent to chemistry 160.

Minimum Degree Requirements

Cell Biology 301-302, one course in each of the three -following areas: genetics, biochemistry (one year), and techniques course approved by the Studies Committee; a minimum of 11 additional hours of course work. Studies Committee will advise course selection. Dissertation research, minimum 20 credits. All students must demonstrate satisfactory progress: finish minimum course work within three years; finish cumulative exam within prescribed time limits; participate in seminar program.

The expected sequence for all first year students in the fall is CLBI 301, biochemistry,

CLBI 381, and CLBI 391 or 491; in the spring is CLBI 302, biochemistry, CLBI 381 and CLBI 391 or 491. Additional courses or substitutions are offered with flexibility, but must have permission of the Program Director.

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Departments and Programs

Chemistry Department

Colleges: Arts and Sciences, Graduate College

Faculty: Chemistry

Courses: Chemistry (CHEM)

Contact Information:

University of Vermont
Chemistry Department
Cook Physical Sciences Building
82 University Place
Burlington, VT 05405-0125

Phone: (802) 656-0198
Fax: (802) 656-8705
Email: alucey@zoo.uvm.edu
Web Site: http://www.uvm.edu/~chem/

Academic Offerings

- Graduate Programs
  - Chemistry (M. A. T. , M. S., M. S. T. , Ph. D.)
  - Chemistry/Materials Science (B. S. / M. S.)

Courses in Chemistry

CHEM 020 - Principles & Contemporary Appl

Lecture plus lab. Designed for nonscience majors. An integrated approach to principles of chemistry within context of contemporary technological issues.
Credits: 4.

CHEM 023 - Outline of General Chemistry

One-semester survey of principles and concepts of general chemistry, designed primarily to meet needs of students in agricultural and health sciences. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 25, 31 or 35.
Credits: 4.

CHEM 025 - Outline of General Chemistry

One-semester survey of principles and concepts of general chemistry, designed primarily to meet the needs of students in agricultural and health sciences. NO LABORATORY. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 23, 31 or 35.
Credits: 3.

CHEM 026 - Outline of Organic & Biochem

Broad overview of most important facts and principles of organic and biochemistry and interrelationships between these branches of chemistry. Prerequisite: 31 or 23. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 28, 42 or 44.
Credits: 4.

CHEM 028 - Outline of Organic & Biochem

Broad overview of most important facts and principles of organic and biochemistry and of interrelationships between these branches of chemistry. NO LABORATORY. Prerequisite: 31 or 23 or 25. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 26, 42 or 44.
Credits: 3.

CHEM 031 - Introductory Chemistry

Basic course in principles and concepts of general chemistry. These courses, or Chemistry 35, 36 serve as suitable prerequisites for 100-level courses in Chemistry. Prerequisite: 31 or 35 for 32.

Credits: 4.

CHEM 032 - Introductory Chemistry

Basic course in principles and concepts of general chemistry. These courses, or Chemistry 35, 36 serve as suitable prerequisites for 100-level courses in Chemistry. Prerequisite: 31 or 35 for 32.

Credits: 4.

CHEM 035 - General Chemistry

General chemistry for students with a strong background in physical sciences. Recommended for students concentrating in physical sciences. Prerequisites: One year of high school chemistry, concurrent enrollment or background in calculus. High school physics recommended; 31 or 35 required for 36.

Credits: 4.

CHEM 036 - General Chemistry

General chemistry for students with a strong background in physical sciences. Recommended for students concentrating in physical sciences. Prerequisites: One year of high school chemistry, concurrent enrollment or background in calculus. High school physics recommended; 31 or 35 required for 36.

Credits: 4.

CHEM 039 - Introduction to Research

Overview of methods, areas, and instrumentation of modern chemical research, including hands-on laboratory experiences and written and oral presentations of a research project. Prerequisite: score of 4 or 5 on the AP Chemistry examination or Department permission.

Credits: 2.

CHEM 040 - Introduction to Research

Overview of methods, areas, and instrumentation of modern chemical research, including hands-on laboratory experiences and written and oral presentations of a research project. Prerequisite: score of 4 or 5 on the AP Chemistry examination or permission of department.

Credits: 2.

CHEM 042 - Intro Organic Chemistry

Concepts for understanding chemistry of structurally simple organic compounds of everyday importance. These principles applied to more complex molecules such as polymers and biologically important compounds such as proteins, lipids, and carbohydrates. (Does not satisfy medical school entrance requirements for undergraduate preparation in organic chemistry.) Prerequisite: 31 or 23. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 26, 28, 44, 141 or 143.

Credits: 4.

CHEM 044 - Intro Organic Chemistry

Concepts for understanding chemistry of structurally simple organic compounds of everyday importance. These principles applied to more complex molecules such as polymers and biologically important compounds such as proteins, lipids, and carbohydrates. (Does not satisfy medical school entrance requirements for undergraduate preparation in organic chemistry.) NO LABORATORY. Prerequisite: 31 or 23 or 25. May not be taken for credit concurrently with, or

following receipt of, credit for CHEM 26, 28, 42, 141 or 143.
Credits: 3.

CHEM 095 - Intro Special Topics
See Schedule of Courses for specific titles.
Credits: 1-4.

CHEM 096 - Intro Special Topics
See Schedule of Courses for specific titles.
Credits: 1-4.

CHEM 121 - Quantitative Analysis
Theory and practice of volumetric and gravimetric analysis. Theoretical discussion of indicators, buffers, pH, etc. Introduction to data analysis, spectrophotometry, and chromatography. Prerequisite: CHEM 032 or CHEM 036.
Credits: 4.

CHEM 131 - Inorganic Chemistry
Symmetry, group theory, molecular structure; valence shell; MO, crystal field, and ligand field bonding models; solid state, electron deficient, acid-base, and simple organo-metallic systems. Prerequisite: 142 or 144.
Credits: 3.

CHEM 141 - Organic Chemistry
Survey of properties and reactions of organic compounds with consideration of bonding, stereochemistry, mechanisms, principles of reactivity, spectroscopy, syntheses, and utilization. Designed for premedical, predental, and preveterinary students and for those majoring in biological and physical sciences. Prerequisites: 31, 32 or 35, 36; 141 for 142.
Credits: 4.

CHEM 142 - Organic Chemistry
Survey of properties and reactions of organic compounds with consideration of bonding, stereochemistry, mechanisms, principles of reactivity, spectroscopy, syntheses, and utilization. Designed for premedical, predental, and preveterinary students and for those majoring in biological and physical sciences. Prerequisites: 31, 32 or 35, 36; 141 for 142.
Credits: 4.

CHEM 143 - Organic Chemistry for Majors
Survey of principles and reactions of organic chemistry for chemistry majors. Prerequisites: 31, 32 or 35, 36; 143 for 144.
Credits: 4.

CHEM 144 - Organic Chemistry for Majors
Survey of principles and reactions of organic chemistry for chemistry majors. Prerequisites: 31, 32 or 35, 36; 143 for 144.
Credits: 4.

CHEM 146 - Adv Organic Laboratory
Laboratory practice in separation, purification, synthesis, identification, spectroscopy, and physical organic techniques as applied to organic compounds. For Chemistry majors. Prerequisite: 144.
Credits: 2.

CHEM 160 - Phys Chem for Bio Sci Students

Aspects of physical chemistry most pertinent to work in biological sciences: acid-base equilibrium, theory of solutions, thermodynamics and kinetics. Prerequisites: 32 or 36, Physics 42.
Credits: 3.

CHEM 161 - Physical Chemistry
Elementary quantum chemistry, bonding, spectroscopy, and statistical mechanics. Prerequisites: 32 or 36; Physics 42, Math. 121 or Chem. 167.
Credits: 3.

CHEM 162 - Physical Chemistry
Properties of gases and solutions; thermodynamics and kinetics. Prerequisites: 32 or 36; PHYS 42, MATH 121 or CHEM 167. Note: CHEM 162 may be taken before 161. May not be taken for credit concurrently with, or following receipt of, credit for CHEM 160.
Credits: 0-3.

CHEM 167 - Physical Chemistry Preparation
with: MATH 167.
Credits: 1.

CHEM 195 - Intermediate Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

CHEM 196 - Intermediate Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

CHEM 198 - Readings & Research
Credits: 1-6.

CHEM 201 - Advanced Chemistry Lab
Laboratory and discussion only. Laboratory problems requiring modern analytical, physical, and inorganic synthetic techniques. Prerequisites: 146, credit for or concurrent enrollment in 161 or 162 and 221.
Credits: 3.

CHEM 202 - Advanced Chemistry Lab
Laboratory only. Laboratory problems requiring modern analytical, physical, and inorganic synthetic techniques. Prerequisites: 201.
Credits: 2.

CHEM 205 - Biochemistry I
processes in biological systems including enzyme catalysis, biosynthesis, regulation, and information transfer. Prerequisite: CHEM 142 or CHEM 144. Cross-listed with: BIOC 205 and MMG 205.
Credits: 3.

CHEM 206 - Biochemistry II
acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. with: BIOC 206 and MMG 206.
Credits: 3.

CHEM 207 - Biochemistry Lab
Introduction to biochemical tools, including spectrometry, chromatography, and electrophoresis; natural and recombinant enzyme isolation; assays of DNA-

modifying enzymes; computer-based structure/function exercises. Co-requisite: CHEM 205 or CHEM 206. Cross-listed with: BIOC 207 and MMG 207.
Credits: 2.

CHEM 214 - Polymer Chemistry
Polymer size and weight distributions. Kinetic models for step polymerization, addition polymerization, copolymerization. Physical properties, characterization of polymers in the solid state and in solution. Prerequisites: 144, 162. Alternate years.
Credits: 3.

CHEM 221 - Instrumental Analysis
Systematic survey of modern methods of chemical analysis. Fundamental principles and applications of spectroscopy, electrochemistry, and separation techniques. Prerequisites: Credit for or concurrent enrollment in 161 or 162.
Credits: 3.

CHEM 222 - Advanced Analytical Chemistry
In-depth coverage of selected modern instrumental methods of chemical analysis, emphasizing most recent developments in spectroscopy, electrochemistry, and separation techniques. Prerequisite: CHEM 221.
Credits: 3.

CHEM 223 - Mass Spectrometry
students in the course. Prerequisites: 142 or 144 and 221 or instructor's permission.
Credits: 3.

CHEM 224 - Chemical Separations
Theory and practice of chromatographic separations. Emphasis on gas-liquid, liquid-liquid, and liquid-solid chromatography. Prerequisite: CHEM 221. Alternate years.
Credits: 3.

CHEM 225 - Electroanalytical Chemistry
Introductory to modern operational amplifier Principles of modern electrochemical analysis focusing mainly on finite current methods - voltammetry, polarography, chronoamperometry, cyclic voltammetry, etc. instrumentation. Double layer theory and electron transfer kinetics. Prerequisite: 161. Alternate years.
Credits: 3.

CHEM 226 - Analytical Spectroscopy
Principles of optical spectroscopic methods of analysis. Emphasis on theory and practice of atomic spectroscopy and new molecular spectroscopic methods. Prerequisite: CHEM 221. Alternate years.
Credits: 3.

CHEM 227 - Spec Topics in Analytical Chem
Selected topics of current interest in analytical chemistry. New techniques and methodologies, especially in chemical instrumentation. Credit as arranged.
Credits: 1-3.

CHEM 228 - Spec Topics in Analytical Chem
Selected topics of current interest in analytical chemistry. New techniques and methodologies, especially in chemical instrumentation. Credit as arranged.

Credits: 1-4.

CHEM 231 - Adv Inorganic Chemistry

Advanced group theory; electronic transitions in metal complexes and spectroscopic analysis; inorganic substitution and electron transfer mechanisms; homogeneous and heterogeneous catalytic processes; bioinorganic chemistry. Prerequisite: 131.

Credits: 3.

CHEM 234 - Organometallic Chemistry

Systematic survey of synthesis, properties, structures, bonding, and reactions of both main group and transition series organometallic compounds. Variation of structure and metal-carbon bond stability throughout periodic system. Prerequisite: 231. Alternate years.

Credits: 3.

CHEM 236 - Physical Inorganic Chemistry

magnetic resonance, Mossbauer spectroscopy, and optical activity. Prerequisites: 161, 231. Alternate years.

Credits: 3.

CHEM 237 - SpecTopic: Inorganic Chemistry

Areas of current interest involving inorganic systems such as bioinorganic, solid state and polymers with unusual properties. Credit as arranged.

Credits: 1-3.

CHEM 238 - SpecTopic: Inorganic Chemistry

Areas of current interest involving inorganic systems such as bioinorganic, solid state and polymers with unusual properties. Credit as arranged.

Credits: 1-3.

CHEM 241 - Advanced Organic Chemistry

Stereochemistry, reactivity criteria, reaction mechanisms, and synthetic methods stressed. Reactive intermediates such as carbanions, carbocations, carbenes, and free radicals used to systematize mechanistic discussions. Prerequisites: 142, 162.

Credits: 3.

CHEM 242 - Advanced Organic Chemistry

Detailed mechanistic descriptions of processes which may include enolate reactions and stereochemical considerations, addition processes such as halogenation, cycloadditions, hydroboration, hydride and metal-ammonia reductions, annelations such as biomimetic cyclizations, oxidation processes, rearrangements, eliminations, and examinations of approaches to multistep syntheses. Prerequisite: CHEM 241.

Credits: 3.

CHEM 251 - Physical Organic Chemistry

Structure-reactivity relationships, molecular properties and their interpretation. Methods and results of investigations of mechanisms of common organic reactions. Prerequisites: 142, 162. Alternate years.

Credits: 3.

CHEM 253 - Practical NMR Spectroscopy

Introduction to high resolution pulsed Fourier transform nuclear magnetic

resonance spectroscopy. Chemical shifts, scalar coupling, relaxation, molecular symmetry considerations, chemical exchange effects. Prerequisite: CHEM 142 or CHEM 144, CHEM 161. Undergraduate only.
Credits: 3.

CHEM 257 - Special Topics in Organic Chem
Advanced level discussion of specific topics in organic chemistry of current interest such as photochemistry, carbenes, bioorganic chemistry, magnetic resonance, etc. Credit as arranged.
Credits: 1-3.

CHEM 258 - Special Topics in Organic Chem
Advanced level discussion of specific topics in organic chemistry of current interest such as photochemistry, carbenes, bioorganic chemistry, magnetic resonance, etc. Credit as arranged.
Credits: 1-3.

CHEM 262 - Chemical Thermodynamics
Systematic study of application of thermodynamics to chemical problems. Concepts of statistical thermodynamics introduced. Prerequisites: 161, 162. Alternate years.
Credits: 3.

CHEM 263 - Intro to Quantum Mechanics
General considerations of quantum mechanics. Development of techniques pertinent to application of quantum mechanics to chemical problems. Prerequisite: CHEM 161, CHEM 162. Alternate years.
Credits: 3.

CHEM 264 - Fundamentals of Spectroscopy
In-depth discussion of the theory of molecular states and transitions between them, with applications to electronic spectroscopy. Explicit treatment of vibrations in molecules. Prerequisites: 161, Math.121. Alternate years.
Credits: 3.

CHEM 265 - Statistical Mechanics
CHEM 161, CHEM 162; CHEM 263
Credits: 3.

CHEM 266 - Molecular Orbital Theory
Introduction to Huckel molecular orbital method. Energy levels and orbitals, molecular properties and their interpretation. Effects of substituents on electronic structure. Extensions of Huckel method. Prerequisites: 142, 161. Alternate years. UG only.
Credits: 3.

CHEM 267 - Special Topics in Phys Chem
Advanced discussion of physical chemistry and chemical physics, group theory, solid state, molecular orbital theory, irreversible thermodynamics, kinetics and mechanisms, solution theory, calculations, spectroscopy. Credit as arranged.
Credits: 1-4.

CHEM 268 - Special Topics in Phys Chem
physics, group theory, solid state, molecular orbital theory, irreversible thermodynamics, kinetics and mechanisms, solution theory, calculations,

spectroscopy. Credit as arranged.
Credits: 1-4.

CHEM 282 - Senior Seminar
Oral and written presentation of a subject of current chemical interest.
Prerequisite: Audit of CHEM 381.
Credits: 1.

CHEM 285 - Special Topics
Credits: 1-3.

CHEM 286 - Special Topics
Credits: 1-3.

CHEM 291 - Undergrad Research
Special study in inorganic, analytical, physical, or organic chemistry with an assigned staff member. Findings submitted in written form. Prerequisite: Departmental permission. Credit as arranged with maximum of four hours per semester and 12 hours for the undergraduate program.
Credits: 1-4.

CHEM 295 - Advanced Special Topics
See Schedule of Courses for specific titles. UG only.
Credits: 1-3.

CHEM 296 - Advanced Special Topics
See Schedule of Courses for specific titles. UG only.
Credits: 1-3.

CHEM 342 - Natural Products: Alkaloids
The major classes of alkaloids surveyed from a biogenetic point of view. Classical and modern degradation methods, total syntheses and biosynthetic incorporation of labeled compounds. Prerequisite: Credit or concurrent enrollment in CHEM 242. Alternate years.
Credits: 3.

CHEM 344 - Natural Products: Terpenes
The chemistry of mono, sesqui, di and triterpenes, including degradations, structure proofs, total syntheses, rearrangement reactions, and biogenesis. Prerequisite: Credit or concurrent enrollment in CHEM 242. Alternate years.
Credits: 3.

CHEM 363 - Quantum Chemistry
Applications of quantum mechanical techniques to problems of chemical interest. Prerequisite: CHEM 263. Offered as occasion warrants.
Credits: 3.

CHEM 381 - Grad Seminar
Current problems and literature.
Credits: 1.

CHEM 382 - Grad Seminar
Current problems and literature.
Credits: 1.

CHEM 388 - Rsch Prob Conception&Solution
Independent origination of research problems and the methods of their solution. Required of all doctoral course shall be completed at least six months in advance

of the Ph.D. dissertation defense, and in no case later than the end of the seventh semester of Graduate studies at UVM.

Credits: 1.

CHEM 391 - Master's Thesis Research

Credits: 1-18.

CHEM 395 - Independent Lit Rsch Project

Reading and literature research culminating in the preparation of a comprehensive and critical review of a topic of current interest in chemistry.

Credits: 1-12.

CHEM 491 - Doctoral Dissertation Research

Credits: 1-18.

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Chemistry (M. A. T.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

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Chemistry (M. S.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate field. Satisfactory scores on the Graduate Record Examination general (aptitude) section for those requesting financial assistance.

Requirements for Advancement to Candidacy for the Degree of Master of Science

The requirements for admission to candidacy for the Master of Science degree are: (1) proficiency in three areas of chemistry evidenced by the biannual qualifying examinations or completion of designated courses at this university; (2) one semester of residence; (3) at least 15 hours of formal course work including (a) six hours of graduate-level courses in the chemical field of specialization, (b) three hours of graduate-level chemistry courses not in the area of concentration, and (c) Chemistry 381 (Seminar), and (4) maintenance of an overall point-hour ratio of 3.00. Students studying in the Master of Science degree program are advised to take the cumulative examinations in their specialty.

Minimum Degree Requirements

The above prerequisites for admission to candidacy must be supplemented in either of the following two ways:

Plan A: Completion of 12 hours of Masters Thesis Research (Chemistry 391) and submission of a satisfactory thesis; (2) completion of at least 30 hours of graduate credit (courses and Masters Thesis Research); and (3) one additional hour of Chemistry 381 (Seminar).

Plan B: Completion of six hours of Independent Literature Research Project (Chemistry 395); (2) completion of at least 30 hours of graduate credit (courses and Literature Research Project); and (3) one additional hour of Chemistry 381 (Seminar).

M. S. students should decide at the beginning of their -program whether they will pursue Option A or Option B and inform the Department and Graduate College of their decisions.

Chemistry (M. S. T.)

College: Graduate College
Department(s): Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic

spectrometry, the development and use of analytical methods using stable isotopically labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

An undergraduate major in an appropriate field. Satisfactory scores on the general (aptitude) Graduate Record Examination. Completion of at least one full year of teaching.

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Successful completion of Physics 128, Chemistry 141 and 162, and Mathematics 121, or their equivalents. (These courses may have been taken at the undergraduate level, as part of this graduate program, or credit may be obtained by transfer or examination.)

Minimum Degree Requirements for the Degree of Master of Science for Teachers

The above prerequisites for admission to candidacy must be supplemented by: (1) completion of 30 hours of credit, of which at least 18 must be in Physical Sciences Option (A) or (B) as described below. The remaining 12 credits may be chosen, with the consent of the Joint Advisory Committee, from appropriate courses above 100 in science, engineering, mathematics, and education (credit in education courses is limited to six semester hours); (2) successful completion of a comprehensive examination administered by the Joint Advisory Committee.

Physical Sciences Option (A): Nine semester hours of Physics numbered 128 and above, Chemistry 131 and six semester hours of Chemistry chosen from Chemistry 161, 231, 201, 264, and 241. This option is primarily for teachers of chemistry.

Physical Sciences Option (B): nine semester hours of Chemistry numbered 141 and above and nine hours of Physics in courses numbered above 200. This option is primarily for teachers of physics.

Academics

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Chemistry (Ph. D.)

College: Chemistry

Overview

Current research in organic chemistry includes design and synthesis of peptidemimics, applications of molecular diversity to catalyst design, syntheses ofmedicinally valuable natural products, biomimetic syntheses, preparation of benzomorphansand their analogues which have chemotherapeutic potential, synthesis and reactionsof hybrid organic-inorganic polymers, synthesis and properties of carbon-richorganic materials, mechanistic studies of organic chemical reactions, and developmentof novel synthetic methodologies.

Physical chemistry research projects include hydrogen absorption by metals,alloys, and intermetallic compounds with a view toward storage of hydrogen asa fuel, and the use of various types of molecular spectroscopy, such as fluorescence,magnetic resonance, and IR/Raman, to address questions of structure, bonding,and dynamics in chemical and biophysical systems.

Research in inorganic chemistry includes investigations of the syntheses, structure,and spectroscopic properties of main-group ring systems and polymers with anemphasis on phosphazenes and borazines, electrochemical control of the structureand reactivity of transition metal complexes, solid state structure by x-raydiffraction, complexes of polydentate ligands, physical inorganic and organotransitionmetal chemistry. Additional research areas include materials chemistry, solidstate chemistry, mesoporous materials, biomineralization, and chemical vapordeposition.

Research in analytical chemistry includes electrochemical studies of transitionmetal complexes and organometallic complexes, electron spin resonance studiesof materials in unusual oxidation states, novel reaction of reactive compoundsgenerated electrochemically under high vacuum, studies of factors influencingheterogeneous electron transfer process in nonaqueous media, studies of transient,imploding plasmas as solid sample atomizers for atomic spectroscopy, the developmentof instrumentation and techniques suitable for elemental analysis of nonconductingsolid samples via atomic spectrometry, the development and use of analyticalmethods using stable isotopically

labeled tracers and kinetic models to answer questions of human physiology and biochemistry, and the simultaneous physical and chemical analysis of individual aerosol particles, leading to the rapid, on-line and in situ determination of the physico-chemical makeup of the aerosol.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

An undergraduate major in an appropriate field. Satisfactory scores on the Graduate Record Examination general (aptitude) section for those requesting financial assistance.

Requirement for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is expected that a student will ordinarily complete the following requirements for admission to candidacy by the end of the second year of residence: (1) at least 15 hours of research (Chemistry 491); (2) satisfactory performance in the cumulative examinations in the specialty field; (3) demonstration of basic competence in four fields of chemistry (analytical, inorganic, organic, and physical) through the biannual qualifying examinations or completion of prescribed courses at The University of Vermont; (4) three hours of teaching; (5) one year of residence; (6) the following courses are required: Chemistry 381 (two credits), three semester hours of credit of advanced level work in three of the following five areas: analytical chemistry, inorganic chemistry, organic chemistry, physical chemistry, and related science. The remainder of each student's program will be determined by a departmental studies committee on the basis of qualifying examination performance, background, and research interests. In the normal course of events a student should expect to devote much of the first year to formal course work; (7) maintenance of an overall point-hour ratio of 3.25.

Minimum Degree Requirements

In addition to the above requirements a student must: (1) complete a doctoral research project, write an acceptable dissertation, and defend it; (2) present a total of 75 hours of credit in course work and dissertation research, and (3) make an oral and written presentation of an original research proposal, Chemistry 388 (at least six months prior to the submission of the dissertation).

Accelerated Masters Program in Materials Science

College: Graduate College
Department(s): Materials Science Program

Overview

The program offers an Accelerated Masters Program leading to both B. S. and M. S. degrees in five years. The program is open to undergraduate chemistry, physics, electrical engineering, and mechanical engineering majors. Interested students should contact the Materials Science Director by the beginning of their junior year.

Academics

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Departments and Programs

Civil and Environmental Engineering Department

Colleges: Engineering and Mathematics, Graduate College

Faculty: Civil and Environmental Engineering

Courses: Civil Engineering (CE)

Contact Information:

University of Vermont
Civil and Environmental Engineering Department
213 Votey Building
33 Colchester Avenue
Burlington, VT 05405-0156

Phone: (802) 656-3800
Fax: (802) 656-8446
Email:
Web Site: http://www.uvm.edu/civeneng/

Academic Offerings

- Graduate Majors
  - Master of Science (M. S.)
    - Civil Engineering
  - Doctor of Philosophy (Ph. D.)
    - Civil Engineering

Overview

Civil and environmental engineers plan, design, construct, and manage the built environment or infrastructure that serves people. They design and build dams, buildings, bridges, airports, ski resorts, space stations, irrigation systems, water treatment plants, harbors, and much more. They find ways to clean the atmosphere, treat contaminated environments, and design energy efficient structures, improving the quality of our daily lives now and for the future.

Please view the Departmental Mission Statement and Objectives at: http://www.uvm.edu/~civeneng/?Page=missionstatement.html

Courses in Civil & Environmental Engr

CE 001 - Statics

Fundamentals of statics; composition and resolution of forces; the analysis of force systems in two and three dimensions; and centroids and moments of inertia. Prerequisite: Math. 22.

Credits: 3.

CE 002 - CE Graphic Design

Computer-aided and hand generation of: geometric shapes, dimensioning, pipe drafting, foundations and structures, survey plots, graphs and charts, topography, and highway geometry.

Credits: 3.

CE 010 - Surveying

Plane surveying methods including distance and angle measurements, leveling, traverse surveys and adjustments, propagation of errors in surveying measurements, and topographical mapping. Prerequisites: Math. 21, Computer Science 16 or 21.

Credits: 3.

CE 011 - Computer-Based Tools for CE

An introduction to the basics and applications of advanced computer-based tools, including MATLAB, remote sensing, geographic information systems (GIS), and global positioning system (GPS). Prerequisites: Math 22, CS 21.

Credits: 4.

CE 012 - Surveying Laboratory

Laboratory exercises in surveying applications: distance, angle, elevation, traverse, and topography. Prerequisites: Taken concurrently with, or following, 10.

Credits: 1.

CE 015 - Pollution & Solutions

Introduction to environmental issues and potential solutions. Emphasis on problem solving: description, decomposition, research, analysis, and performance evaluation.

Credits: 3.

CE 100 - Mechanics of Materials

Stress, strain, temperature relationships, torsion, bending stresses, and

deflections. Columns, joints, thin-walled cylinders. Combined stresses and Mohr's circle. Prerequisites: CE 001, MATH 121, ME 012 or concurrent enrollment. Cross-listed with: ME 014.
Credits: 3.

CE 101 - Materials Testing
Experimental stress analysis methods; fundamental properties of metals, plastics, and wood; effects of size, shape, method, speed of loading, and strain history on these properties. Prerequisite: 100.
Credits: 2.

CE 125 - Eng Econ & Decision Analyses
Comparing engineering alternatives; economic evaluations including costs, returns, taxes, and depreciation; project optimization with linear/non-linear models; scheduling; risk and reliability analyses by simulation. Prerequisites: Math. 20 or 22, junior standing.
Credits: 3.

CE 140 - Transportation
Analysis of transportation systems; technological characteristics; the transportation planning process and techniques of travel modeling and forecasting for both urban and rural areas. Prerequisite: CE 010; Junior standing in CE, or Instructor permission.
Credits: 3.

CE 142 - Structural Roadway Design
Properties of construction materials; design of mixes; analyses of pavement performance; structural design of pavements; highway earthwork, drainage, and construction techniques. Prerequisites: 141, 180.
Credits: 3.

CE 150 - Environmental Engineering
Basic phenomena and theoretical principles underlying water supply, air and water pollution control, and industrial hygiene. Prerequisite: CHEM 031 or CHEM 025, MATH 022.
Credits: 3.

CE 151 - Water & Wastewater Engineering
Functional design of water supply systems and wastewater management facilities; population projections, estimation of water and waste quantities, sewers, distribution systems, treatment facilities; governmental regulations. Prerequisites: 150, 160.
Credits: 3.

CE 154 - Environmental Anyl Practice
Analytical procedures used in measuring environmental parameters (includes BOD, COD, Alkalinity, Coliform). Fundamental methods applied to actual waste samples and subsequent data analysis. Prerequisites: 150; Chemistry 31, 32.
Credits: 2.

CE 160 - Hydraulics
Mechanics of incompressible fluids; flow meters; flow in closed conduits and open channels; elements of hydraulic machinery; laboratory studies of flow and hydraulic machinery. Prerequisite: Mechanical Engineering 12.

Credits: 4.

CE 161 - Water Resource Engineer Design

Formulation of water resource projects; development of design methods for: surface water, risk, storage, and control structures, open channels, and drainage systems; design project. Prerequisite: CE 160.

Credits: 3.

CE 170 - Structural Analysis I

Analysis of statically determinate beams, frames, and trusses; expected loads, reactions; influence lines; moving loads; geometric methods for displacement calculations; introduction to matrix analysis for trusses. Prerequisites: 100, Computer Science 16.

Credits: 4.

CE 171 - Structural Analysis II

Prerequisite: CE 170.

Credits: 3.

CE 172 - Structural Steel Design

Theory and design of steel structures including flexural members, axially loaded members and combined stress members; design of composite members; and plastic analysis and design. Recommended Corequisite: 171.

Credits: 3.

CE 173 - Reinforced Concrete

Analysis of stresses in plain and reinforced concrete members; design of reinforced concrete structures; and theory of prestressed concrete. Prerequisite: 171.

Credits: 3.

CE 175 - Senior Design Project

Comprehensive design projects will integrate the multiple areas of specialization in civil engineering. Student teams will prepare and present designs to professional review panels. Prerequisite: Senior standing in CE.

Credits: 3.

CE 176 - Senior Design Seminar

Guest lecturers from private practice discussing professional issues; integration of multidiscipline teams from student design projects; and oral and written presentations. Co-requisite: One design elective; Senior standing.

Credits: 1.

CE 180 - Geotechnical Principles

Identification, description, and physical properties of soils; characteristics of natural deposits; stress distribution, permeability, consolidation, shear strength, and stability of soils; laboratory testing of particulate systems. Prerequisite: 100.

Credits: 4.

CE 181 - Geotechnical Design

Evaluation of subsoil conditions and earth pressures; design of retaining walls, substructures for buildings and bridges, and cofferdams. Prerequisite: CE 180.

Credits: 4.

CE 191 - Special Projects

Investigation of special topic under guidance of faculty member. Library

investigations, unique design problems, laboratory and field studies. Prerequisite: Senior standing; Department permission.
Credits: 3.

CE 192 - Special Projects
Investigation of special topic under guidance of faculty member. Library investigations, unique design problems, laboratory and field studies. Prerequisite: Senior standing; Department permission.
Credits: 3.

CE 193 - College Honors
Credits: 1-6.

CE 194 - College Honors
Credits: 1-6.

CE 195 - Special Topics
Prerequisite: Senior standing in Civil or Mechanical Engineering.
Credits: 1-6.

CE 210 - Airphoto Interpretation
Aerial photographic interpretation: principles of stereoscopic viewing, identification or airphoto features related to landform, vegetation, drainage, soils, topography use of airphoto interpretation in soil identification.
Credits: 3.

CE 220 - Intro to Finite Element Anyl
Introduction to finite element analysis: applications in or permission of instructor. solid mechanics, hydrodynamics, and transport: analysis of model behavior: Fourier analysis. Computer project required. Prerequisites: computer programming, linear algebra, and PD,
Credits: 3.

CE 226 - Civil Engineering Systems Anyl
Linear programming, dynamic programming, network analysis, simulation; applications to scheduling, resource allocation, routing, and a variety of civil engineering problems. Prerequisite: Senior or graduate standing in CEE or instructor permission.
Credits: 3.

CE 241 - Traffic Operations & Design
Advanced concepts of traffic engineering and capacity analysis; highway and intersection capacity; traffic analysis and simulation software; design and application of controls. Prerequisite: CE 140.
Credits: 3.

CE 248 - Hazardous Waste Mgmt Engr
Management of hazardous and industrial waste from generation to disposal; emphasis on pollution prevention within industry; waste minimization, recovery, reuse, treatment technologies; environmental regulations, risk assessment, costs and public policy; group projects. Prerequisite: Senior standing in Engineering or sciences.
Credits: 3.

CE 249 - Solid Wastes
Significance of solid wastes from municipal, industrial, agricultural, mining;

optimization and design of collection, disposal, recycle systems; sanitary landfills, incineration, composting, material recovery. Prerequisites:
Credits: 3.

CE 251 - Envr Facility Dsgn/Wastewater
Design of wastewater conveyance and treatment facilities; sewage treatment plant design; equipment selection. Prerequisite: CE 151.
Credits: 3.

CE 252 - Industrial Hygiene
Industrial hygiene problems; effects of pollutants on health; threshold limit values; emphasis on the engineering evaluation of hazard and control techniques. Prerequisites: Chemistry 25, Physics 25.
Credits: 3.

CE 253 - Air Pollution
Sources of air pollution, methods of measurement, standards, transport theory and control techniques used. Emphasis on source measurement and contaminant control design. Prerequisites: Chemistry 25, Math. 21.
Credits: 3.

CE 254 - Environmental Quantitive Anyl
indicator organisms; laboratories demonstrate standard Chemistry and microbiology of water quality management; diffusion, equilibria, reaction kinetics, acids and bases, colloids, enzymes, bacterial physiology, pollution techniques. Prerequisites: Chemistry 31 or 25, Math. 22.
Credits: 4.

CE 255 - Phys/Chem Proc Water/Wstwater
Theory of physical/chemical processes for treating waters and wastewaters; reactor dynamics, mass transfer, adsorption, ion exchange, precipitation/
Credits: 3.

CE 256 - Biol Proc Water/Wastewater Tr
Theory and application of biological processes for treating industrial and domestic wastewaters and contaminated ground water; microbiological considerations; aerobic and anaerobic processes; reactor design, in-situ bioremediation; bench-scale and pilot-scale experimentation. Prerequisites: 151 and 154 or equivalent or permission of instructor.
Credits: 3.

CE 259 - Msmt of Airborne Contaminants
Quantifying airborne contaminants from processes and ambient levels. Laboratories demonstrate calibration and measurement, stack sampling and ambient air monitoring, and specific contaminant generation and measurement. Prerequisite: CE 252 or CE 253.
Credits: 3.

CE 260 - Hydrology
Theory of precipitation, run-off, infiltration, and ground water; precipitation and run-off data; and application of data for use in development of water resources. Prerequisites: 160, Statistics 141.
Credits: 3.

CE 261 - Open Channel Flow

Application of the laws of fluid mechanics to flow in open channels; design of channels and transition structures including riprap and culverts; gradually-varied flow problems. Prerequisite: 160.
Credits: 3.

CE 265 - Ground Water Hydrology
Principles of ground water hydraulics, well characteristics, aquifers, and use of numerical methods to solve ground water flow problems. Prerequisites: Calculus III and programming experience or instructor's permission; graduate standing or senior Civil Engineering standing.
Credits: 0-3.

CE 272 - Structural Dynamics
Vibrations, matrices, earthquake engineering, stability and wave progagation. Prerequisites: Senior or graduate standing in Engineering or physical sciences, or instructor permission. (Same as ME 272).
Credits: 3.

CE 280 - Applied Soil Mechanics
Use of soil mechanics in evaluation of building foundations, braced excavations, earth structures; lateral earth pressures, pile foundations, caisson foundations, slope stability, and construction problems. Prerequisite: CE 180.
Credits: 3.

CE 282 - Engr Properties of Soils
Study of soil properties influencing engineering behavior of soils: soil mineralogy, physiochemical concepts, plasticity properties, permeability, and compaction: laboratory study of soil index properties, permeability, compaction tests. Prerequisite: CE 180 or equivalent.
Credits: 3.

CE 283 - Designing with Geosynthetics
Geotextiles, geogrids, geonets, geomembranes, geocomposites, geopipes. Design for separation, reinforcement, filtration, drainage, erosion, control, liners. Applications in transportation, drainage, solid waste containment. Material testing, behavior. Prerequisite: CE 180.
Credits: 3.

CE 290 - Engineering Investigation
Independent investigation of a special topic under the guidance of a staff member. Preparation of an engineering report is required.
Credits: 3.

CE 295 - Special Topics
Content is dictated by expanding professional interest in newly developing, or recently developed, technical areas in which there is particular need or opportunity. Prerequisite: Minimum Senior standing.
Credits: 0-6.

CE 304 - Adv Engineering Analysis I
See Mechanical Engineering 304, 305. Prerequisites: Math 271 or Math 230; CE 304 for CE 305. Cross-listings: ME 304, 305; Math 275, 276.
Credits: 3.

CE 305 - Adv Engineering Analysis II

See Mechanical Engineering 304, 305. Prerequisites: Math 271 or Math 230; CE 304 for CE 305. Cross-listings: ME 304, 305; Math 275, 276.
Credits: 3.

CE 321 - Engr Computations on Adv Arch
Engineering computations using multiprocessing computers, concurrent processing, algorithms for numerical approximation of differential equations, linear systems.
Credits: 3.

CE 360 - Advanced Hydrology
occasion warrants.
Credits: 3.

CE 365 - Contaminant Hydrogeol&Remediat
Practical, theoretical aspects of contaminant hydrogeology, advances in technologies, mass transport and transformation in saturated and vadose zones; movement, distribution, and remediation of nonaqueous-phase liquids. Prerequisite: CE 265 or with Instructor permission.
Credits: 3.

CE 366 - Numerical Method/Surface Water
Development of the governing equations for geophysical hydrodynamics/transport, shallow water equations, analysis and implementation of finite element/finite difference computational algorithms. Prerequisite: CE 220.
Credits: 3.

CE 390 - Adv Topics in Civil & Envr Eng
Special topics to intensify the programs of graduate students in civil and environmental engineering. Hours and credits to be arranged.
Credits: 1-6.

CE 391 - Master Thesis Rsch
Credits: 1-12.

CE 395 - Advanced Special Topics
Advanced topics in recently developed technical areas. Hours and credits as arranged.
Credits: 1-6.

CE 491 - Doctoral Dissertation Research
Credits: 1-18.

Civil and Environmental Engineering (M. S.)

College: Graduate College
Department(s): Civil and Environmental Engineering

Overview

Graduate programs in Civil and Environmental Engineering that lead to the Master of Science and Doctor of Philosophy degrees are offered. The curricular and research programs emphasize engineering related to environmental issues and intelligent transportation systems; in addition, geotechnical, and structural studies are also possible at the master's level.

Research includes: groundwater contamination, modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; indoor air pollution and related health effects; mathematical modeling of contaminant transport in the environment, chemical and mechanical processes in human tissues, and dynamic behavior of structures; intelligent transportation systems; and information technology applications in civil and environmental engineering.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree and the approval of this Department. Satisfactory scores on the Graduate Record Examination general (aptitude) section. International students whose native language is not English or who have not received their education in English are required to submit satisfactory results from the TOEFL examination. Completed applications are due February 1.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack a sufficiently strong engineering background.

Minimum Degree Requirements

The above requirements for advancement to candidacy must be supplemented in either of the two following ways:

Plan A: Completion of advanced courses in civil and environmental engineering, mathematics, and other approved disciplines and the completion of an acceptable master's thesis. At least 30 hours must be accumulated, six to nine of them in thesis research.

Plan B: Completion of 36 hours of advanced courses in civil and environmental engineering, mathematics, and other approved disciplines.

Students must declare which option they intend to pursue at the beginning of their program.

Civil and Environmental Engineering (Ph. D.)

College: Graduate College
Department(s): Civil and Environmental Engineering

Overview

Graduate programs in Civil and Environmental Engineering that lead to the Master of Science and Doctor of Philosophy degrees are offered. The curricular and research programs emphasize engineering related to environmental issues and intelligent transportation systems; in addition, geotechnical, and structural studies are also possible at the master's level.

Research includes: groundwater contamination, modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; indoor air pollution and related health effects; mathematical modeling of contaminant transport in the environment, chemical and mechanical processes in human tissues, and dynamic behavior of structures; intelligent transportation systems; and information technology applications in civil and environmental engineering.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

An undergraduate degree in an appropriate field of study and demonstrated academic performance as measured by grades and satisfactory scores on the Graduate Record Examination general (aptitude) section. Applicants whose native language is not English or who have not received their education in English must present satisfactory results from the TOEFL examination. Completed applications are due February 1.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is ordinarily expected that a student will complete the following requirements for advancement to candidacy prior to the end of the second year in the program: (1) one year of residency at UVM; (2) teaching experience in one course; (3) at least 12 credit hours of research; (4) at least 15 credit hours of course work at the graduate level acceptable to the student's Studies Committee; (5) satisfactory performance on a comprehensive examination that includes a written part and an oral part; and (6) satisfactory record of performance in courses and in teaching and research assignments.

Minimum Requirements for the Degree of Doctor of Philosophy

In addition to advancement to candidacy, the student must (1) present at least 75 credit hours in approved course work and research (including those required for advancement to candidacy), of which at least 35 credit hours are in research and six credit hours are in course work in disciplines ancillary to Civil and Environmental Engineering; and (2) write and successfully defend an acceptable dissertation

Departments and Programs

Classics Department

Colleges: Arts and Sciences, Graduate College

Faculty: Classics

Courses: Classics (CLAS), Greek (GRK), Greek & Latin (GKLT), Latin (LAT)

Contact Information:

University of Vermont
Classics Department
481 Main St
Burlington, VT 05405-0218

Phone: (802) 656-3210
Email: classics@zoo.uvm.edu
Web Site: http://www.uvm.edu/~classics/

Academic Offerings

- Graduate Degrees
  - Master of Arts (M. A.)
    - Greek and Latin
  - Master of Arts in Teaching (M. A. T.)
    - Greek and Latin

Courses in Classics

CLAS 015 - From Letters to Literature
Topics in script, literacy, books, libraries, cultural expression, preservation, and access from ancient Mesopotamia to the age of printing and the era of electronic information.
Credits: 3.

CLAS 021 - Classical Greek Civilization
Cross-listed with: HST 021.
Credits: 3.

CLAS 022 - Etymology
Derivation of English words from Greek and Latin bases. Training in analysis of unfamiliar words, special attention to scientific vocabulary.
Credits: 3.

CLAS 023 - Classical Roman Civilization
Cross-listed with: HST 022.
Credits: 3.

CLAS 024 - Myths/Legends Trojan War
Homeric epics, Virgil's Aeneid, selections from tragedy dealing with the Trojan War and Greco-Roman cultural identity. Examples from art and archaeology supplement the literary theme. Cross-listed with: WLIT 024.
Credits: 3.

CLAS 035 - The End of the Roman Republic
Participants describe the Republic's end: Caesar justifies conquest and civil war; Catullus and Sallust reveal a society in turmoil; Cicero documents first-century politics: political gangs, bribery, and violence. Cross-listed with: WLIT 035.
Credits: 3.

CLAS 037 - Early Roman Empire: Lit Trans
Poetry and prose in the first century C.E. (the age of Augustus, Nero, Trajan), emphasizing varieties and limitations of political and literary freedom. Cross-listed with: WLIT 037.
Credits: 3.

CLAS 042 - Mythology
Greek myth in literature, art, and music from antiquity to modern times. No

prerequisites. Spring semester. Cross-listed with: WLIT 042.
Credits: 3.

CLAS 095 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

CLAS 096 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

CLAS 121 - History of Greece
Cross-listed with: HST 121.
Credits: 3.

CLAS 122 - History of Rome
HST 122.
Credits: 3.

CLAS 145 - Comparative Epic
Cross-listed with: WLIT 145.
Credits: 3.

CLAS 149 - History of Ancient Near East
with: HST 149.
Credits: 3.

CLAS 153 - Greek Drama
Plays of Aeschylus, Sophocles, Euripides, and Aristophanes in their historical and cultural setting. Prerequisite: Sophomore standing. Cross-listed with: WLIT 153.
Credits: 3.

CLAS 154 - Stories and Histories
standing.
Credits: 3.

CLAS 155 - Ancient Epic
Homer, Apollonius, and Vergil, as well as readings selected from other Greek and Latin epic (including epyllia) and didactic poetry. Prerequisite: Sophomore standing. Cross-listed with: WLIT 155.
Credits: 3.

CLAS 156 - Satiric Spirit
Prerequisite: Sophomore standing.
Credits: 3.

CLAS 157 - Greek Feminism
Cross-listed with: HST 157, WLIT 157, WST 157.
Credits: 3.

CLAS 158 - Greco-Roman Political Thought
History of Greco-Roman political thought and political reality, as revealed by lawgivers, philosophers, politicians, and historians. Prerequisite: Sophomore standing.
Credits: 3.

CLAS 161 - Plato
A survey of Plato's works, including the "early," "middle," and parts of the "late" dialogues. Emphasis will be laid on reading the dialogues themselves.

Prerequisite: One course in Philosophy, or one course in Classics (Greek Culture or Greek). Cross-listed with: PHIL 108.
Credits: 3.

CLAS 195 - Special Topics
See Schedule of Courses for specific titles.
Credits: 3.

CLAS 196 - Intermediate Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

CLAS 197 - Readings & Research
Credits: 1-6.

CLAS 198 - Readings & Research
Credits: 1-6.

CLAS 221 - Seminar in Ancient History
Selected aspects of Near Eastern, Greek, or Roman History (e.g. trade and colonization, imperialism, social and political institutions, cultural and intellectual developments). Prerequisite: Minimum Junior standing; Twelve hours of History.
Credits: 3.

CLAS 222 - Seminar in Ancient History
Selected aspects of Near Eastern, Greek, or Roman History (e.g. trade and colonization, imperialism, social and political institutions, cultural and intellectual developments). Prerequisites: Junior, senior, or graduate standing, 12 hours of history. UG only.
Credits: 3.

CLAS 295 - Special Topics
See Schedule of Courses for specific titles.
Credits: 3.

CLAS 296 - Advanced Special Topics
See Schedule of Courses for specific titles.
Credits: 3.

Courses in Greek

GRK 001 - Elementary
Credits: 4.

GRK 002 - Elementary
Credits: 4.

GRK 003 - Self-Paced Greek
Fundamentals of Classical Greek through tutorial instruction, credit dependent on amount of material learned. May be repeated for credit. No credit with GRK 001 and GRK 002.
Credits: 1-8.

GRK 051 - Intermediate
Review of syntax. Fall semester: Readings from Plato, Herodotus, and Euripides. Spring semester: Readings from Homer.
Credits: 3.

GRK 052 - Intermediate
Review of syntax. Fall semester: Readings from Plato, Herodotus, and Euripides. Spring semester: Readings from Homer.
Credits: 3.

GRK 095 - Introductory Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-8.

GRK 096 - Introductory Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-9.

GRK 111 - Greek Prose Style
Readings in literary prose analyzed stylistically and imitated in composition. Required of Greek majors.
Credits: 3.

GRK 112 - Greek Prose Style
Readings in literary prose analyzed stylistically and imitated in composition. Required of Greek majors.

Credits: 3.

GRK 195 - Intermediate Special Topics

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

GRK 196 - Intermediate Special Topics

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

GRK 197 - Readings & Research

Credits: 1-3.

GRK 198 - Readings & Research

Credits: 1-6.

GRK 201 - Greek Orators

Selected speeches of Lysias and Demosthenes. B. Saylor Rodgers. Alternate years, as needed.
Credits: 3.

GRK 202 - Greek Comedy

Two plays of Aristophanes. Alternate years, as needed.
Credits: 3.

GRK 203 - Greek Historians

Thucydides, Books I and II; selections from Herodotus and Xenophon's Hellenica. Alternate years, as needed.
Credits: 3.

GRK 204 - Greek Tragedy

Sophocles' Antigone, and Euripides' Medea, or two equivalent plays. Alternate years, as needed.
Credits: 3.

GRK 205 - Greek Philosophers

Dialogues of Plato with attention to language and dialectical method; Aristotle, Xenophon or Presocratic philosophers may be read. Alternate years, as needed.
Credits: 3.

GRK 206 - Greek Epic

Reading in the Iliad and Odyssey. Problems of epic composition and language together with mythological and historical background. Alternate years, as needed.
Credits: 3.

GRK 227 - Greek Lyric Poetry

A study of early Greek personal, elegiac, and choral poetry from Archilochus to Pindar, including Sappho and Alcaeus, Simonides and Bacchylides. Prerequisites: Two years of college Greek or equivalent. Alternate years, as needed.
Credits: 3.

GRK 295 - Special Topics

Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

GRK 296 - Advanced Special Topics

Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. Credits: 1-3.

Courses in Greek & Latin

GKLT 295 - Special Topics
UG only.
Credits: 1-3.

GKLT 300 - Proseminar
Introduction to philology. Students will normally take this their first semester.
Credits: 3.

GKLT 381 - Seminar
Intensive study at the graduate level of Greek and Latin authors not read in the candidate's undergraduate program.
Credits: 3.

GKLT 391 - Master's Thesis Research
Credits: 1-6.

Courses in Latin

LAT 001 - Elementary
For students who present less than two years of high school Latin.
Credits: 4.

LAT 002 - Elementary Latin
For students who present less than two years of high school Latin.
Credits: 4.

LAT 003 - Self-Paced Latin
Fundamentals of Classical Latin through tutorial instruction, credit dependent on amount of material learned. May be repeated for credit. No credit with LAT 001 and LAT 002.
Credits: 1-8.

LAT 051 - Intermediate
Fall semester: Selections from Cicero and other prose authors. Spring semester: Selections from Vergil and Ovid.
Credits: 3.

LAT 052 - Intermediate Latin
Fall semester: Selections from Cicero and other prose authors. Spring semester: Selections from Vergil and Ovid.
Credits: 3.

LAT 095 - Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-8.

LAT 096 - Elementary Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

LAT 101 - Survey Latin Literature
Selections from principal Roman authors.
Credits: 3.

LAT 102 - Survey Latin Literature
Selections from principal Roman authors.

Credits: 3.

LAT 111 - Latin Prose Style

Readings in literary prose analyzed stylistically and imitated in composition. Required of B.A. and B.Ed. Latin majors.

Credits: 3.

LAT 112 - Latin Prose Style

Readings in literary prose analyzed stylistically and imitated in composition. Required of B.A. and B.Ed. Latin majors.

Credits: 3.

LAT 195 - Special Topics

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

Credits: 3.

LAT 196 - Intermediate Special Topics

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

Credits: 1-3.

LAT 197 - Readings & Research

Credits: 1-6.

LAT 198 - Readings & Research

Credits: 1-6.

LAT 203 - Republican Prose

Extensive reading in Caesar and Sallust, and in the speeches of Cicero. Alternate years, as needed.

Credits: 3.

LAT 204 - Epic Poets

Extensive reading in Lucretius, Vergil, Ovid, and others. Alternate years, as needed.

Credits: 3.

LAT 227 - Roman Lyric Poets

Selections from the works of Catullus, Horace, Propertius, and Tibullus. Alternate years, as needed.

Credits: 3.

LAT 251 - Roman Letters

Letters of Cicero, Horace, and Pliny. Alternate years, as needed.

Credits: 3.

LAT 252 - Comedy

Two plays of Plautus and Terence. Study of the precursors of this literary form. Alternate years, as needed.

Credits: 3.

LAT 253 - Roman Oratory

Selections from Cicero's De Oratore, Orator, Brutus, and from his speeches. Historical development of forensic and other rhetorical canons. Alternate years, as needed.

Credits: 3.

LAT 255 - Historians of the Empire

Historians of the Empire. Augustus, Res Gestae; Tacitus, Annals, I-IV; selections from Suetonius and Ammianus Marcellinus. Alternate years, as needed.
Credits: 3.

LAT 256 - Satire
Selections from Horace, Persius, Juvenal, Petronius. Study of the development of this literary form. Alternate years, as needed.
Credits: 3.

LAT 271 - Silver Latin
Extensive reading of post-Augustan authors not included in other advanced courses. Alternate years, as needed.
Credits: 3.

LAT 295 - Special Topics
Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

LAT 296 - Special Topics
Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

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Greek and Latin (M. A.)

College: Graduate College
Department(s): Department of Classics

Overview

Current research interests include Homer; Mycenaean and Homeric Greece; Greek and Latin lyric and elegiac poetry; Greek drama; the Attic orators; ancient literary criticism; Greek and Roman philosophy and intellectual History; Greek and Roman historiography; Greek and Latin Prose; Cicero; Virgil; Latin epic; Petronius, satire; Greek and Roman technological authors; Roman history; Roman Imperial Families; Mythology; Archaeology; Medieval studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies in Greek and Latin for the Degree of Master of Arts

An undergraduate major or minor or the equivalent; a reading knowledge of a modern foreign language, usually French, German, or Italian.

Minimum Degree Requirements

Eighteen hours of advanced courses in Greek and Latin, six hours of which must be 381; six additional hours in Greek and Latin, History, or Philosophy; thesis research (normally six hours). Comprehensive examinations in Greek and Latin translation, at least one modern foreign language, Greek and Roman history, and literature and philology are required. In addition to course work, students will have a reading list of authors in Greek and Latin.

Those who expect the department's recommendation to go on for a Ph. D. elsewhere

must show competence in both German and French by the end of their first year of graduate study.

Greek or Latin (M. A. T.)

College: Graduate College
Department(s): Department of Classics

Overview

Current research interests include Homer; Mycenaean and Homeric Greece; Greek and Latin lyric and elegiac poetry; Greek drama; the Attic orators; ancient literary criticism; Greek and Roman philosophy and intellectual History; Greek and Roman historiography; Greek and Latin Prose; Cicero; Virgil; Latin epic; Petronius, satire; Greek and Roman technological authors; Roman history; Roman Imperial Families; Mythology; Archaeology; Medieval studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies in Latin and/or Greek for the Degree of Master of Arts in Teaching

A program in teaching of Latin and/or Greek leading to the degree of Master of Arts in Teaching and to licensure, is also offered in conjunction with the College of Education and Social Services. Satisfactory scores on the general (aptitude) Graduate Record Examination are prerequisite for acceptance to candidacy for this degree.

Departments and Programs

Communication Sciences Department

Colleges: Arts and Sciences, Graduate College

Faculty: Communication Sciences

Courses: Communication Sciences (CMSI)

Contact Information:

University of Vermont
Communication Sciences Department
Pomeroy Hall
489 Main St
Burlington, VT 05405-0130

Phone: (802) 656-3861
Fax: (802) 656-2528
Email: communication.sciences@uvm.edu
Web Site: http://www.uvm.edu/~cmsi/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Communication Sciences

Courses in Communication Sciences

CMSI 001 - Elem American Sign Language 1
Sign Language, including grammar, facial markers, body classifiers, vocabulary, and fingerspelling. Elements of Deaf Culture are also explored.
Credits: 3.

CMSI 002 - Elem American Sign Language II
Continuation of fundamentals of expression and understanding of American Sign Language, including grammar, facial markers, body classifiers, vocabulary, and fingerspelling. Elements of Deaf Culture are also explored. Prerequisites: CMSI 1 or equivalent experience.
Credits: 3.

CMSI 020 - Intro to Disordered Comm
Survey of language, speech, and hearing disorders, emphasizing the importance of understanding such disorders as a part of the fuller understanding of human behavior.
Credits: 3.

CMSI 051 - Intermediate Sign Language
Continuation of 1, 2 designed to foster further development of proficiency in American Sign Language and appreciation of Deaf Culture. Prerequisites:CMSI 2, or equivalent experience.
Credits: 3.

CMSI 080 - Introduction to Linguistics
Introduction to biological, cognitive, and cultural bases of human communication through language, and to modern linguistic theory. Assignments provide opportunities for critical thinking and writing.
Credits: 3.

CMSI 090 - Phonetics
Linguistic, acoustic, and articulatory phonetics applied to the description of speech. Stresses use of the International Phonetic Alphabet with English, foreign languages, and disordered speech.
Credits: 3.

CMSI 094 - Dev of Spoken Language
Speech and language acquisition interpreted in light of current learning and

cognitive theory, linguistic theory, and methods of linguistic analysis.
Credits: 3.

CMSI 095 - Introductory Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

CMSI 096 - Introductory Special Topics
Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-3.

CMSI 101 - Speech Science
Structure and function of the respiratory, phonatory, and articulation systems of the vocal tract utilized for production of speech. Models of speech production emphasized.
Credits: 4.

CMSI 125 - Clinical Experience
A supervised exposure to clinical practice in speech-language pathology. Students gain experience as assistants in the University speech-language clinic.
Prerequisite: Six hours in Communication Sciences.
Credits: 3.

CMSI 126 - Clinical Experience
A supervised exposure to clinical practice in speech-language pathology. Students gain experience as assistants in the University speech-language clinic.
Prerequisite: Six hours in Communication Sciences.
Credits: 3.

CMSI 160 - Intercultural Communication
Exploration of communication between individuals of different races, socioeconomic status, ethnic groups, genders, and occupations. Emphasis on culturally-based misunderstanding, conflict, and resolution.
Credits: 3.

CMSI 162 - American English Dialects
Class will examine dialects of American English and the methodology of dialectology with focus on Vermont speech and the social meaning of dialect
Credits: 3.

CMSI 164 - Structure of English Language
Using descriptive linguistic theory, this course examines basics of English grammar with emphasis on hands-on examples. Also includes exploration of politicization of English grammar. Prerequisites: 3 hours English or CMSI.
Credits: 3.

CMSI 195 - Intermediate Special Topics
Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 0-3.

CMSI 196 - Intermediate Special Topics
Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

Credits: 1-3.

CMSI 197 - Readings & Research

Credits: 1-9.

CMSI 198 - Readings & Research

Credits: 1-6.

CMSI 208 - Cognition & Language

(Same as Psychology 208.) Study of cognition and language in terms of mental representation models; contemporary models of memory, as well as capacity theories of language comprehension and production. Prerequisite: Psychology 109 or 101 or Statistics 101 or 141.

Credits: 3.

CMSI 262 - Measurement of Comm Processes

Introduction to the scientific method and measurement principles used in group and single-case research on communication and as applied to persons with communication disorders. Prerequisites: CMS80, 101, 105; Statistics 111 or 141. UG only.

Credits: 4.

CMSI 271 - Introduction to Audiology

immittance audiometry. Prerequisites: CMSI 101 or Survey of the process of hearing and the nature and causes of hearing impairment. Examination of hearing assessment, including pure-tone, speech and instructor permission.

Credits: 4.

CMSI 272 - Hearing Rehabilitation

Examination of impact of hearing loss on communication and management. Survey of remediation strategies, including speechreading, auditory training, hearing aids, cochlear implants and assistive devices. Prerequisites: CMSI 271 or instructor permission.

Credits: 3.

CMSI 281 - Cognitive Neuroscience

The structure and organization of the human central nervous system as related to higher cognitive and linguistic behaviors. Pre/corequisites: a college level Human Biology course, such as BIOL 4. Not for graduate credit.

Credits: 3.

CMSI 283 - Swallowing Disorders

Introduction to normal and disordered swallowing function across the life span including etiologies, signs/symptoms of dysphagia, diagnostic procedures and treatment within an interdisciplinary model. Prerequisites: Nine hours in Communication Sciences or instructor's permission.

Credits: 3.

CMSI 284 - Augmentative Communication

An introduction to development and selection of augmentative/alternative communication strategies and systems for persons with severe communication challenges. Prerequisites: Nine hours in Communication Sciences or instructor's permission.

Credits: 3.

CMSI 285 - Collab Intervntn Schl Settings

Introduction to a transdisciplinary approach to collaborative, curriculum-based assessment and intervention for students with special needs in school settings. Prerequisites: Nine hours in Communication Sciences or instructor's permission.
Credits: 3.

CMSI 287 - Early Lang&Communicat'n Interv
Research in normal and disordered language, cognition, and social development is applied to interventions for children, birth to age 5, with language and communication problems. Prerequisite:CMSI 94.
Credits: 3.

CMSI 291 - Clinical Study
Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Prerequisite: Permission
Credits: 1-3.

CMSI 292 - Clinical Study
Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Prerequisite:Permission
Credits: 1-3.

CMSI 293 - Seminar
Prerequisite: Instructor's permission. Variable credit.
Credits: 1-3.

CMSI 294 - Seminar
Prerequisite: Instructor's permission. Variable credit.
Credits: 1-3.

CMSI 295 - Advanced Special Topics
Advanced Special Topics Advanced courses of seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. UG only.
Credits: 0-3.

CMSI 296 - Advanced Special Topics
UG only.
Credits: 0-3.

CMSI 298 - Senior Seminar
Credits: 3.

CMSI 299 - Autism Spect Dis:Assess&Interv
Assessment and intervention considerations in communication, social interaction and play, selection
Credits: 3.

CMSI 310 - Clinic Preparation&Management
Principles of behavioral observation, analysis and modification as they apply to the assessment and remediation of communication disorders. Prerequisite:permission
Credits: 3.

CMSI 311 - Interdis Ldrshp Tr:Rsrch Sem I
Seminar exploring interdisciplinary process and collaborative teaming, cultural competence, and family-centered care as they relate to neurodevelopmental and related disabilities. Prerequisites: Permission of instructor. Variable Prelock.
Cross-listings: ECHD 295, EDSP 295, NFS 295, GRNU 296, PA 395, PSY 380,

PT 381, SWSS 380.
Credits: 1-3.

CMSI 312 - Intrdis Ldrshp Tr:Rsrch Sem II
Seminar exploring interdisciplinary process and collaborative teaming, cultural competence, and family-centered care as they relate to neurodevelopmental and related disabilities. Prerequisites: Permission of instructor. Variable Prelock. Cross-listings: ECHD 295, EDSP 295, NFS 295, GRNU 296, PA 395, PSY 380, PT 381, SWSS 380.
Credits: 1-3.

CMSI 371 - Audiolog Assess:Spch-Lang Path
Examination of basic hearing parameters designed for SLPs. Orientation to nature and causes of hearing impairment; assessment procedures and rationales; hearing screening and counseling/management issues. Prerequisites: CMSI 101 or instructor permission.
Credits: 3.

CMSI 372 - Mgmt&Habil/Child w/Hearing Imp
Survey effects of hearing impairment on children's communication, academic and psychosocial development. permission. Orientation to amplification, assistive devices, managing listening environments, auditory training, and educational planning. Prerequisites: CMSI 271 or 371 or instructor
Credits: 3.

CMSI 380 - Rsch Methods in Comm Disorders
Empirical research methodology as applied to the study of normal and deficient speech, language, and hearing processes. Students analyze data statistically and write a research proposal.
Credits: 3.

CMSI 381 - Advanced Readings
Readings, with conferences, intended to contribute to the programs of graduate students in phases of communication science and disorders for which formal courses are not available. Credit as arranged, up to three hours each semester.
Credits: 1-3.

CMSI 382 - Advanced Readings
Readings, with conferences, intended to contribute to the programs of graduate students in phases of communication science and disorders for which formal courses are not available. Credit as arranged, up to three hours each semester.
Credits: 1-3.

CMSI 383 - Seminar Lang/Lrng Disabilities
Assessment and intervention issues for school-age children and adolescents with language learning disabilities are discussed emphasizing research to practice an oral language and literacy connections. Prerequisite: 387, permission of instructor or Graduate Standing.
Credits: 3.

CMSI 384 - Articulation-Phonological Dis
Etiology, diagnosis, pathology, and habilitation and rehabilitation of articulation of speech. Prerequisite: Permission.
Credits: 3.

CMSI 385 - Voice Disorders

Study of normal and abnormal laryngeal anatomy and physiology as they relate to diagnoses and treatment of a wide variety of vocal pathologies. Prerequisite: Permission.

Credits: 3.

CMSI 386 - Adult Neuropathologies

Etiology, pathology, diagnosis, and principles of rehabilitation of CNS pathologies affecting communication. Emphasis on motor speech disorders and cognitive consequences of traumatic brain injury. Prerequisites:CMSI

Credits: 3.

CMSI 387 - Language Disorders

94.

Credits: 3.

CMSI 388 - Stuttering

Stuttering Boot Camp (CMSI), admission to CMSI Graduate

Credits: 3.

CMSI 389 - Aphasia in Adults

Study of linguistic and cognitive impairments associated with stroke and other types of neuropathologies in the adult patient. Emphasis on rehabilitation strategies, principles, and procedures. Prerequisite:CMSI 281.

Credits: 3.

CMSI 391 - Master's Thesis Research

Credits: 1-6.

CMSI 392 - Non Thesis Research

Credits: 1-6.

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Communication Sciences (M. S.)

College: Graduate College
Department(s): Communication Sciences

Overview

The faculty does research in speech and language development and disorders, and sociolinguistics.

The Master of Science degree program in Communication Sciences and Disorders is accredited for speech-language pathology by the Council on Academic Accreditation of the American Speech-Language-Hearing Association (ASHA). The Eleanor M. Luse Center for Communication: Speech, Language, and Hearing, which shares quarters with the Department and is a primary practicum site, holds accreditation from the Professional Services Board of ASHA in both Speech Pathology and Audiology. Students are required to fulfill academic requirements for the Certificate of Clinical Competence-Speech Language Pathology of the American Speech-Language-Hearing Association. All students are supervised by clinically certified members of the faculty of the Eleanor M. Luse Center and affiliated practicum sites.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Baccalaureate degree from an accredited institution; satisfactory performance on the general (aptitude) Graduate Record Examination. Completion of courses equivalent to CMSI 80 (Introduction to Linguistics), CMSI 90 (Phonetics), CMSI 94 (Development of Spoken Language), CMSI 101 (Speech Science) or a course in speech anatomy or physiology, CMSI 164 (Structure of the English Language) or a course in syntax or

morphology, CMSI 281 (Cognitive Neuroscience) or an equivalent neuroscience course and a course in statistics. In order to be accepted into the program, applicants must have completed or be currently enrolled in a sufficient number of prerequisite courses so that they will have no more than one outstanding course at the time of their admission. Students are also required to complete 25 observation hours obtained according to guidelines provided by the American Speech-Language-Hearing Association before they arrive on campus in order to facilitate their clinical training.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of the written comprehensive examinations. Students will not be admitted to candidacy if practicum grades are incomplete. Students may write the comprehensive examination only in or following that semester in which they will have completed 30 semester credits of graduate study and 300 hours of supervised clinical practicum and four credits in clinical study.

Minimum Degree Requirements

All students are required to complete 48 credit hours. These hours will include eleven required CMSI courses: 283 Swallowing Disorders, 284 Augmentative Communication, 310 Preparation and Management of Speech and Language Evaluation and Therapy, 380 Research Methods, 383 Seminar in Language/Learning Disabilities, 384 Articulation/ phonologic Disorders, 385 Voice Disorders, 386 Adult Neuropathologies, 387 Language Disorders, 388 Stuttering, and 389 Aphasia. In addition, students are required to take a total of 6 credits of CMSI 291/292 Clinical Study.

Thesis Option: The student will complete 42 credit hours of graduate level courses and six additional credits for conducting the research leading to an M. S. thesis.

Nonthesis Option: All students choosing this option will complete the 48 credit hours required for the degree. Those students who choose a Research Presentation as their nonthesis option will complete at least 42 credit hours of graduate level courses and 6 additional credits (CMSI 392) for conducting research.

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Departments and Programs

Community Development and Applied Economics Department

Colleges: College of Agriculture and Life Sciences, Graduate College

Faculty: Community Development and Applied Economics

Courses: Community Development and Applied Economics (CDAE)

Contact Information:

University of Vermont
Community Development and Applied Economics Department
103 Morrill Hall
Burlington, VT 05405

Phone: (802) 656-2001
Fax: (802) 656-1423
Email: cdae@zoo.uvm.edu
Web Site: http://www.uvm.edu/~cdae/

Academic Offerings

Graduate Degrees

- Master of Science (M. S.)
  - Community Development and Applied Economics

Overview

The Department of Community Development and Applied Economics (CDAE) expands and promotes the use of economic, social, and environmental principles to develop sustainable communities locally and globally. Students in CDAE focus on the application of economic principles and their relationship to leadership and management, economic and business development, environmental sustainability, and social responsibility.

Courses in Cmty Dev & Apld Econ

CDAE 001 - Drafting and Design Drawing

Basic drafting methods and procedures of architectural, three-view, oblique, isometric, and perspective drawings. Creating freehand pictorial presentation drawings.

Credits: 3.

CDAE 002 - World Food,Population&Develop

Agricultural development emphasizing natural and economic phenomena and the effect of food supplies on population trends and policies.

Credits: 3.

CDAE 006 - Energy Alternatives

Concepts of energy, work, and power. Energy conversion, utilization, and conservation. Alternatives to fossil fuels including solar, wind, biomass, etc. Energy systems for rural areas.

Credits: 3.

CDAE 015 - Design Strategies

Introduction and analysis of aesthetics and function of design in the context of communications and marketing, the built environment, and community development.

Credits: 3.

CDAE 016 - Sketching and Illustration

Techniques of sketching, color rendering, and scale drawing in relation to nature forms, the human figure, and interior space. Preparation of portfolio. Prerequisite: 15. Spring.

Credits: 3.

CDAE 030 - Des Studio Skills:Woodworking

Common methods, processes, materials, and equipment employed in transforming wood into useful products.

Credits: 3.

CDAE 035 - Des Stdy Skls:Weldng/Metl Fab

Skills, tools, and processes to cut, shape, and join metallic materials intended for artisans, designers, and craftpersons. Emphasis on welding, machining, and metal fabrication.

Credits: 3.

CDAE 061 - Prin A&R&Community Develpmt Ec

Introduction to principles of microeconomics and their application to food and agricultural markets, resource management, and community development.
Credits: 3.

CDAE 091 - Introductory Special Topics

Credits: 1-3.

CDAE 101 - Computer Aided Drafting&Design

Using a computer to create, manipulate, and record drafting and design concepts, symbols, and conventions to prepare technical and/or presentation drawings. Prerequisite: CDAE 001 or Instructor permission.
Credits: 1-3.

CDAE 102 - Sustainable Community Dev

Introduction to perspectives and methods used to develop healthy communities that are economically, socially, and environmentally sustainable with rural and urban, U.S. and international examples. Prerequisites: CDAE 61 or equivalent, and by permission.
Credits: 3.

CDAE 110 - Entrepreneurial Indust Prodctn

Principles, concepts, methods employed in organizing capital, labor, tools, machines for producing products. Students function as labor source and mass produce and market a product. Prerequisite: CDAE 030 or CDAE 035, or CDAE 166, or Instructor permission.
Credits: 3.

CDAE 117 - History of Costume

(See Theatre 41.) Prerequisite: Art 6 or Theatre 1. Fall
Credits: 3.

CDAE 127 - Consumer,Markets&Public Policy

Analysis of consumer choices through the examination of consumer behavior theories, current marketplace issues and public policy. Prerequisites: Sophomore standing.
Credits: 3.

CDAE 128 - The Consumer & Advertising

Examination of advertising strategy and how it impacts consumers and the economy. Extensive application of critical analysis to actual advertising campaigns from development through evaluation. Prerequisite: Junior standing. Fall.
Credits: 3.

CDAE 131 - Light Frame Buildings

MATH 010.
Credits: 3.

CDAE 156 - Law, Ethics & Responsibility

The roles of law and ethics in guiding the actions of individuals and organizations, and the impact of those actions on others, including consumers, employees, communities, and developing countries. Prerequisite: Sophomore standing. Spring.
Credits: 3.

CDAE 157 - Consumer Law and Policy

Law as an expression of public policy to protect consumers in the marketplace. Emphasis on laws prohibiting deceptive advertising and marketing practices. Prerequisites: Sophomore standing.

Credits: 3.

CDAE 158 - Personal and Family Finance

An examination of personal and family financial management concepts and topics within various income levels and stages in the life cycle. Prerequisite: EC 011 or equivalent. Fall.

Credits: 3.

CDAE 159 - Consumer Assistance Program

Jointly sponsored by UVM and Vermont Attorney General. Under supervision of an attorney, students respond to phone and mail requests for consumer information and handle consumer complaints. Prerequisite: Sophmore standing. Three to six hours.

Credits: 3-6.

CDAE 166 - Intro A&R Entrepreneurship

operating an agricultural or resource-based

Credits: 3.

CDAE 167 - Fin Mgmt: A&R Entrepreneurship

Financial management concepts for agricultural and resource-based businesses, with emphasis on interactions between business and personal financial decisions faced by entrepreneurs. Prerequisites: BSAD 65, CDAE 166 or permission.

Credits: 3.

CDAE 168 - Marketing:A&R Entrepreneurship

Marketing concepts and methods and their applications in agricultural and resource businesses. Focus on development of marketing plan and its use in guiding business operations. Prerequisites: CDAE 61, 166.

Credits: 3.

CDAE 169 - Small Business Computer Appl

Using the microcomputer to accomplish tasks specific to small businesses. One credit modules may include spreadsheets, databases, presentations, mapping markets, WWW, project management and local area networks. Prerequisites: 85 or equivalent. One to six hours.

Credits: 1-6.

CDAE 170 - Solar Strategies Bldg Constrct

Passive, active, and hybrid heating; photovoltaic electric systems. Physical principles, site evaluation, component and system analysis, materials selection, and design of low-cost systems. Prerequisite: Math 10 or permission.

Credits: 3.

CDAE 171 - Community&Int'l Econ Transform

Models of economic development, including constraints to economic transformation and policy approaches and strategies for promoting social welfare and sustainable development. Prerequisites: 2,61 or equivalent.

Credits: 3.

CDAE 175 - Farm Credit Fellowshp Prac/Sem

Acquaints students who have a strong interest in farm management and farm finance with financial intermediaries serving agriculture. Prerequisite: CDAE 167.
Credits: 3.

CDAE 180 - Real Estate Appraisal

Basic concepts and methods of measuring real estate values. Prerequisite: CDAE 061 or equivalent, or Instructor permission.
Credits: 3.

CDAE 191 - Special Problems

Independent projects under direction of a faculty member. Includes undergraduate teaching assistance. 291 number for juniors and seniors only. Prerequisites: Permission. One to six hours (maximum).
Credits: 1-6.

CDAE 195 - Special Topics

Lectures or readings on contemporary issues in Community Development and Applied Economics. Enrollment may be more than once, up to twelve hours.
Credits: 0-12.

CDAE 196 - Field Experience/Practicum

Professionally-oriented field experience under joint supervision by faculty and business or community representative. Total credit toward graduation in 196 and 296 cannot exceed 15 hours. Prerequisites: Permission. One to 15 hours.
Credits: 1-15.

CDAE 205 - Rural Comm in Modern Society

Cross-listed with: SOC 205.
Credits: 3.

CDAE 207 - Markets, Food & Consumers

Learn how producers, processors, wholesalers, cooperatives, retailers, consumers, and governments affect the movement of food and fiber products through the production-marketing chain. Prerequisite: CDAE 061 or equivalent.
Credits: 3.

CDAE 208 - Agricultural Policy and Ethics

An examination of American agriculture and policies from various perspectives - historical, political, ecological, technological, social, economic, and ethical. Emphasis on contemporary issues, policy options, and future development. Prerequisites: 61 or equivalent, permission. Fall.
Credits: 3.

CDAE 210 - Small Bus Mktg & Entrepreneur

Students learn through participation in a series of guest lectures and field trips, the challenges, opportunities, and strategies faced and employed by small business entrepreneurs in the area of marketing. Prerequisite: 168 or 207. Spring. (Not offered for graduate credit.)
Credits: 3.

CDAE 218 - Community Ldrshp,Org&Inst Dev

Role of civic engagement, leadership, and social and political institutions in a community development context. Special attention given to problems of formulation and implementation of alternative change strategies. Prerequisites: Jr standing, CDAE 102, or permission.

Credits: 3.

CDAE 231 - Applied Computer Graphics

Directed research, planning, design, technical experimentation, production and evaluation for computer-generated design application. Prerequisite: 15 or permission.(Not offered for graduate credit.)

Credits: 3.

CDAE 237 - Economics of Sustainability

Economic analysis that integrates natural resource

Credits: 3.

CDAE 250 - Applied Research Methods

Methods used in the collection and analysis of qualitative and quantitative data. Critical review of literature, and data collection, analysis, and interpretation for descriptive, inferential, and evaluation research. Prerequisites: Statistics 141 or permission. UG only.

Credits: 4.

CDAE 251 - Contemp Policy Iss:Comm Devel

policy issues such as affordable housing, land use and sprawl, alternative energy, environmental sustainability, effective community planning, social and environmentally responsible business. Prerequisites: CDAE 102 or permission.

Credits: 3.

CDAE 253 - Macroeconomics for Appl Econ

Explore macroeconomic principles and concepts as they affect individuals and businesses in local, regional, national, and

Credits: 3.

CDAE 254 - Microeconomics for Appl Econ

Prerequisites: 61 or equivalent. Math 19, or permission. The study of economic choices of individuals and firms, and the analysis of competitive and noncompetitive markets. Emphasis on application of intermediate microeconomic theory

Credits: 3.

CDAE 255 - Applied Consumption Economics

Analysis and application of micro-economic principles as they relate to consumers, including consumption and saving, investments in human capital, market work, household production, and leisure choices. Prerequisites: ECON 172.

Credits: 3.

CDAE 258 - Consumer Policy:Iss & Analysis

Examination and analysis of contemporary issues underlying a variety of consumer policies such as health care, income inequality, and consumer protection. Prerequisites: 254 or permission, Political Science 21 or similar course. Spring. (Not offered for graduate credit.)

Credits: 3.

CDAE 264 - Risk Anyl&Forecast Procedures

Analytical concepts and skills and their applications in risk analysis related to agricultural and resource markets focusing on decision making processes. Prerequisite: STAT 141, CDAE 061, MATH 019, or Instructor permission.

Credits: 3.

CDAE 266 - Dec Making:A&R Entrepreneurshp

Major topics include linear programming, risk and uncertainty, inventory decisions, and e-commerce.

Credits: 3.

CDAE 267 - Strat Plan:A&R Entrepreneurshp

Applications of marketing, finance, and management strategies. Drafting a simulated business plan for rural entrepreneurs and economic development. Prerequisites: ARE majors or minors, or with instructor's permission; senior standing.

Credits: 4.

CDAE 272 - Int'l Economic Development

International trade, finance, investment and or instructor's permission. with 273.

Credits: 3.

CDAE 273 - Project Development & Planning

the economy as a whole. Prerequisite: 171 or

Credits: 3.

CDAE 287 - Spatial Analysis

Credits: 3.

CDAE 291 - Special Problems

Independent projects under the direction of a faculty member. Includes undergraduate teaching assistance. Prerequisite: Departmental permission. Students may enroll more than once for a maximum of 12 hours. One to six hours.

Credits: 1-6.

CDAE 292 - Seminar

Reports, discussions, and investigations in selected fields. May enroll more than once up to six hours. One to three hours.

Credits: 1-3.

CDAE 295 - Special Topics

Lectures or readings on contemporary issues in Community Development and Applied Economics. Enrollment may be more than once, up to twelve hours.

Credits: 0-12.

CDAE 296 - Field Experience/Practicum

Professionally-oriented field experience under joint supervision by faculty and business or community 296 cannot exceed 15 credits. UG only.

Credits: 1-18.

CDAE 297 - Undergraduate Research

Work on a research problem under direction of a staff member. Findings submitted in written form as prescribed by the department. Prerequisite: Senior standing.

Credits: 3.

CDAE 298 - Undergraduate Research

member. Findings submitted in written form as prescribed by the department. Prerequisite: Senior standing.

Credits: 3.

CDAE 351 - Research Methods

Prerequisite: Three hours of Statistics. Developing research projects with the scientific methods; evaluating alternative literature review, sampling, surveying,

and analytic methods; and reporting the results.
Credits: 3.

CDAE 354 - Advanced Microeconomics

Principles and applications of advanced microeconomics: consumer and market demand, firm and market supply, perfect and imperfect markets, partial and general equilibrium, and policy analysis. Prerequisite: CDAE 254 or equivalent.
Credits: 3.

CDAE 377 - Practicum in Extension Educ

Credits: 1-12.

CDAE 391 - Master's Thesis Research

Credits: 1-18.

CDAE 392 - Graduate Seminars

Report and discuss research projects and findings of graduate students and faculty, and offer workshops on selected topics in community development and applied economics. May enroll more than once for up to three credits. Prerequisite: Graduate standing.
Credits: 1.

CDAE 395 - Special Topics

Lectures or readings on contemporary issues in Community Development and Applied Economics at the graduate level. Prerequisite: Graduate standing.
Credits: 3.

Community Development and Applied Economics (M. S.)

College: Graduate College
Department(s): Community Development and Applied Economics

Overview

Vision: CDAE is an international leader in sustainable resource use for dynamic community development.

Mission: The Department of Community Development and Applied Economics (CDAE) expands and promotes the use of economic, social, and environmental principles to develop sustainable communities locally and globally.

The Department offers a Master of Science Degree in CDAE. Research includes sustainable development, both domestic and abroad; applied demand analysis; and consumer and public policy issues.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

- GPA = 3.0 or equivalent from Bachelor's Degree
- GRE Total > 1350, with a minimum of 400 in each of the three areas: Verbal, Quantitative, and Analytical.
- TOEFL score > 550 written test or 213 computer test for international students whose native language is not English or who have not received their education in English.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack calculus, statistics and/or economics background.

Minimum Degree Requirements

The degree requires a total of 30 credit hours, of which 24 are from advanced courses in CDAE and other related fields plus six hours of thesis research. A written comprehensive examination and an oral defense of the thesis are also required. A student's thesis research is often an integral part of the faculty-led, ongoing research projects in the Department.

Students in the graduate program must have a 3.00 grade point average to remain a degree candidate. A student may be dismissed from the Graduate College if two or more grades below a "B" are received.

Core Course Requirements

Four core courses and graduate research seminars are required for each graduate student:

- CDAE 354 - Advanced Microeconomics: Theory of the consumer, theory of the firm, perfect and imperfect competition, welfare economics, uncertainty and selected topics in economic policy.
- CDAE 351 - Research Methods: Procedures of developing a research project, applications of economic theory and analytical tool in empirical economic research.
- One additional course in quantitative or qualitatitive analysis to be approved by the Studies Committee (e.g., Statistics 225: Applied Regression Analysis; Statistics 223: Applied Multivariate Analysis; EDFS 347: Qualitative Research Methods).
- One course in community development to be approved by the Studies Committee (e.g., CDAE 205: Rural Communities in Modern Society; CDAE 218: Community Organization and Development)
- CDAE 392 - Graduate Seminars. Each student is required to complete three hours of this course. Students should enroll for one hour in each of three semesters.

Departments and Programs

Computer Science Department

Colleges: Engineering and Mathematics, Arts and Sciences, Graduate College, Continuing Education

Faculty: Computer Science

Courses: Computer Science (CS)

Contact Information:

University of Vermont
Computer Science Department
351 Votey Building
33 Colchester Avenue
Burlington, VT 05405-0156

Phone: (802) 656-3330
Fax: (802) 656-0696
Email: Computer.Science@uvm.edu
Web Site: http://www.cs.uvm.edu

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Computer Science
- Concurrent Degree Programs
  - Computer Science (B. S. / M. S.)

Overview

Computer Science is a multi-faceted discipline requiring the creativity of an artist, the problem-solving ability of a mathematician, the experimental method of a scientist, and the technical skills of an engineer. There are exciting opportunities in many industries, including: communications, health care, manufacturing, finance, entertainment, human services, education, and transportation.

Please view our mission statement and objectives at:
http://www.cs.uvm.edu/mission.shtml

Courses in Computer Science

CS 002 - Microcomputer Appl Software

Popular applications software packages: word processors, spreadsheets, databases. Emphasis on hands-on experience. Prerequisite: Two years high school algebra. May not be taken for credit after receipt of credit for any CS course numbered 11 or higher.

Credits: 3.

CS 003 - Concepts of Computer Systems

Introduction to computer systems, components, system software, editors, utilities and language processors, programming, problem solving, applications. May not be taken for credit concurrently with, or following receipt of credit for, any CS course numbered higher than CS 003. Prerequisite: Two years high school algebra.

Credits: 3.

CS 005 - Introductory Special Topics

Prerequisite: Instructor permission. Hours variable. May not be taken for credit after any Computer Science course numbered CS 016 or higher.

Credits: 0-3.

CS 008 - Introduction: WWW Design (2-2)

Provides a strong foundation in HTML, working with images, beginning JavaScript programming, and web design so that the student can create a functional web

Credits: 3.

CS 014 - Visual Basic Programming

Programming in the MS Windows environment using forms,

Credits: 3.

CS 016 - Prog MATLAB Engineers&Science

Problem solving, computer programming, and the use of standard numerical methods in the context of engineering and scientific applications using MATLAB. Prerequisite: Math. 21; or Math. 10 (or equivalent, with instructor permission) and concurrent enrollment in Math. 21.

Credits: 4.

CS 021 - Computer Programming I

Introduction to algorithmic problem solving. Designed to provide a foundation for

further studies in computer science. Credit not given for more than one in the pair CS 11, 21. Prerequisite: Math. 10 or a strong background in secondary school algebra and trigonometry.
Credits: 4.

CS 026 - Computer Programming II
Introduction to more advanced programming concepts that provide a foundation for further study in computer science. Topics include data structures and algorithms, concepts of style, design, documentation, testing and debugging techniques. Prerequisites: 21.
Credits: 3.

CS 031 - Computer Programming II: C
Credits: 3.

CS 095 - Special Topics
Prerequisite: Instructor's permission.
Credits: 1-4.

CS 100 - Object-Oriented Programming
Object-oriented software analysis, design, and programming using a modern object-oriented programming environment. Topics include encapsulation, information hiding, inheritance, and polymorphism. Prerequisite: 26.
Credits: 3.

CS 101 - Computer Organization
Introduction to computer system organization including performance, assembly language, machine-level data representation, arithmetic for computers, processor datapath control, memory, and input/output. Prerequisite: CS 026.
Credits: 3.

CS 103 - Programming Languages
Systematic treatment of principles underlying the features and implementation of programming languages. Contrast of traditional procedural languages and at least one nontraditional language. Prerequisite: CS 026.
Credits: 3.

CS 104 - Data Structures
MATH 052 or MATH 054.
Credits: 3.

CS 148 - Database-Driven Web Design
and CS 008(or equivalent knowledge of JavaScript pages using XML, SQL, ASP, and PHP. Typical project involves creation of e-commerce shopping site. Prerequisites: One semester of computer programming, and HTML).
Credits: 3.

CS 195 - Special Topics
Prerequisite: Instructor's permission.
Credits: 1-6.

CS 201 - Operating Systems
Supervisory and control software for multiprogrammed computer systems. Processes synchronization, interprocess communication, scheduling, memory management, resource allocation, performance evaluation, object-oriented systems, case studies. Prerequisites: 103, 104.

Credits: 3.

CS 202 - Compiler Construction

Practice in design and implementation of translators for ALGOL-like languages. Regular and context-free grammars, parsing, code generation for stack and register machines. Interpreters. Run-time storage administration for block-structured languages. Prerequisites: 103, 243.

Credits: 3.

CS 204 - Database Systems

Techniques for processing very large collections of data. Secondary storage. Database design and management. Query languages and optimization. Database recovery. Prerequisites: 101, 104; 201 recommended.

Credits: 3.

CS 205 - Software Engineering

Treatment of software engineering problems and principles, including documentation, information hiding, and module interface specification syntax and semantics. Requires participation in a team project. Students who receive credit for 205 may not receive credit for 208 or 209.

Credits: 3.

CS 208 - Software Requirements&Design

Project management, requirements for software products, design methodologies and formal and informal notations describing designs. Includes developing requirements and design for a substantial software product. Credit not awarded for more than one of 205 and 208. Prerequisites: CS 100, CS 104.

Credits: 3.

CS 209 - Software Implement&Verificat'n

Covers advanced program development methodologies, software performance measuring and tuning and the verification and validation of software. Includes a significant implementation and evaluation project. Credit not awarded for more than one of 205 and 209. Prerequisites: CS 100, CS 104.

Credits: 3.

CS 222 - Computer Architecture

Architecture of computing systems. Control unit logic, input/output processors and devices, asynchronous processing, concurrency, parallelism, and memory hierarchies. Prerequisite: 101.

Credits: 3.

CS 224 - Analysis of Algorithms

Introduction to both analytical and experimental techniques in algorithm analysis. Basic algorithm design strategies. Introduction to complexity theory. Prerequisites: 103, 104. Math. 173 recommended.

Credits: 3.

CS 231 - Bioinformatics

MMG 102 desirable. Crosslisting MMG 231. Introduction to current topics in bioinformatics. Applications may include sequence alignment, dynamic programming, hidden Markov models, phylogenetics trees, microarray data analysis, genomics, and proteomics. Prerequisites: STAT 151, CS 26, and

Credits: 3.

CS 243 - Theory of Computation

Introduction to theoretical foundations of computer science. Models of computation. Church's thesis and noncomputable problems. Formal languages and automata. Syntax and semantics. Prerequisite: 104. (Same as Math 243).
Credits: 3.

CS 251 - Artificial Intelligence

Introduction to methods for realizing intelligent behavior in computers. Knowledge representation, planning, and learning. Selected applications such as natural language understanding and vision. Prerequisites: 103, 104, STAT 151.
Credits: 3.

CS 256 - Neural Computation

Introduction to artificial neural networks, their computational capabilities and limitations, and the algorithms used to train them. Statistical capacity, convergence theorems, backpropagation, reinforcement learning, generalization. Prerequisites: Math. 124 (or 271), Statistics 151, programming skills, graduate standing or instructor's permission.
Credits: 3.

CS 260 - Parallel Algorithms&Prog Tech

Taxonomy of parallel computers, basic concepts for parallel computing, effectiveness and scalability, parallel algorithms for variety of problems, message-passing programming paradigm and data-parallel languages. Prerequisite: 103, 104. MATH 173 and MATH 124 recommended.
Credits: 3.

CS 265 - Computer Networks

Introduction to the theoretical and pragmatic principles of computer networking and client-server computing. Topics include: Local Area Networks; the Internet; ATM technology; TCP programming. Prerequisite: 101, 104. MATH 173 and STAT 151 recommended.
Credits: 3.

CS 266 - Network Security&Cryptography

Security and secrecy in a networked environment. Cryptography: public and private key. Authentication: trusted agents, tickets. Electronic mail and digital signatures. Privacy and national security. Prerequisites: 104, Math. 124 or 271.
Credits: 3.

CS 274 - Computer Graphics

removal, rendering techniques. Prerequisite: 104, Math. Graphical representation of two- and three-dimensional objects on color raster displays. Line generation, region filling, geometric transformations, hidden line and surface 121, Math. 124 or 271.
Credits: 3.

CS 283 - Undergraduate Honors Thesis

See description of Honors Thesis Program in the College of EM section of this catalog.
Credits: 3.

CS 284 - Undergraduate Honors Thesis

See description of Honors Thesis Program in the College of EM section of this

catalog.
Credits: 3.

CS 292 - Senior Seminar
Oral presentations that pertain to the ethical practice of computer science in government, industry, and academia. Topics may include computer security, copyright, and patent law. Prerequisite: Senior standing in Computer Science.
Credits: 1.

CS 294 - Independent Readings&Research
Independent readings and investigation under the direction of faculty member. Prerequisite: Department permission.
Credits: 1-6.

CS 295 - Special Topic:Computer Science
Subject will vary from year to year. May be repeated for credit.
Credits: 1-6.

CS 296 - Special Topics:Computer Sci
Credits: 1-6.

CS 303 - Adv Top:Prog Environ&Language
Object-oriented, functional, or procedural programming languages, language design, parsing, translation, compilation, interpretation, programming and runtime environments. May be repeated for credit with instructor permission. Prerequisites: 103, 202.
Credits: 3.

CS 316 - Adv Topi:Computational Science
Topics chosen from engineering and scientific applications, visualization, large-scale data analysis. May be repeated for credit with instructor permission. Prerequisite: Varies by semester. Instructor permission required.
Credits: 3.

CS 321 - Adv Top:Computer Architecture
Prerequisite: CS 222.
Credits: 3.

CS 331 - Adv Tpcs Database&Knwldg Sys
Prerequisite: CS 204, CS 224.
Credits: 3.

CS 346 - Adv Top:Theory of Computation
Topics from complexity theory, analysis of algorithms, formal languages, combinatorial and geometric algorithms, and theory of databases, networks, distributed algorithms. May be repeated with Instructor permission. Prerequisite: CS 224, CS 243.
Credits: 3.

CS 351 - Pattern Anyl&Artificial Intell
Topics chosen from pattern analysis, clustering, neural networks, planning, natural language understanding. May be repeated for credit with instructor permission. Prerequisites: CS 224, CS 351.
Credits: 3.

CS 361 - Adv Topics:Systems Software
Topics chosen from operating systems, distributed or parallel software systems,

real-time systems, experimental systems, software engineering. May be repeated for credit with Instructor permission. Prerequisite: CS 201, CS 222.
Credits: 3.

CS 363 - Computer System Performance
Topics chosen from models of computer and operating system performance and queuing systems. May be repeated for credit with Instructor permission. Prerequisite: CS 201, STAT 151.
Credits: 3.

CS 365 - Adv Top:Network Design&Anyl
Topics chosen from network design, network protocols, network algorithms, and network performance. May be repeated for credit with Instructor permission. Prerequisite: CS 224, CS 265.
Credits: 3.

CS 374 - Computer Graphic&Visualization
Topics chosen from computer graphics and visualization, such as rendering, hidden surface removal, animation, data visualization. May be repeated for credit with Instructor permission. Prerequisite: CS 224, CS 274.
Credits: 3.

CS 381 - Seminar
Presentations by students, faculty, and guest speakers on advanced topics in Computer Science. May be repeated up to three times for credit.
Credits: 1.

CS 391 - Master's Thesis Research
Credits: 1-18.

CS 394 - Independent Study
Independent readings and investigation under the direction of a faculty member. Prerequisite: Instructor permission.
Credits: 1-6.

CS 395 - Special Topics
Subject will vary from year to year. May be repeated for credit. Prerequisite: Instructor permission.
Credits: 1-6.

CS 491 - Doctoral Dissertation Research
Credits: 1-18.

Computer Science (M. S.)

College: Graduate College
Department(s): Computer Science

Overview

Research areas include algorithm design and analysis, combinatorial design, computational biology, database design and management, data mining and knowledge discovery, discrete modeling, knowledge-based systems, neural networks, numerical methods, parallel and scientific computing, pattern recognition, programming languages, and software engineering.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree in computer science or a related discipline, and satisfactory scores on the Graduate Record Examination general (aptitude) section are required for admission. Students should also demonstrate that they have taken the following courses: two courses that treat systematic program development in a high level language (CS 21 and 26, or equivalent), one course in computer system organization and assembly language programming (CS 101, or equivalent); one course in either programming languages (e.g., CS 103) or data structures (e.g., CS 104), two courses in differential, integral, and multivariate calculus (Math 21, 22, or equivalent), one course in linear algebra (Math 124, or equivalent), and one course in applied probability (Stat 151, or equivalent).

International students whose native language is not English or who have not received their education in English are required to submit satisfactory results from the TOEFL

examination.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Specific course work may be required of those who lack a sufficiently strong computer science background.

Minimum Degree Requirements

Thesis Option: Thirty hours of which six to nine hours are thesis research, the remainder being course work to include at least one credit of CS 381.

Nonthesis Option: Thirty-three hours of course work, to include at least three credits of CS 381.

Students in both options must take or have completed the equivalent of the core sequence: Computer Science 201, 202, 222, 224, and 243; and must take additional graduate level courses in Computer Science, or related areas (not more than three credits of which may be independent study) with departmental permission, to fulfill the credit hour requirements. Students in both options must also pass a comprehensive exam.

Accelerated Master's Program in Computer Science (B. S./M. S.)

College: GraduateCollege
Department(s): ComputerScience

Overview

The Accelerated Master's Program (AMP) in Computer Science allows students with strong ability and motivation to complete a bachelor and a master's degree in computer science within five years. It is expected that students enrolled in this program will pursue a master's thesis on original research commencing in the summer following their senior year.

The first four years of the AMP consist of a complete undergraduate program in Computer Science, satisfying the curricular requirements for either the Bachelor of Science in Computer Science (BS/CS), the Bachelor of Science in Computer Science and Information Systems (BS/CSIS), or the Bachelor of Arts in Computer Science (BA/CS). During the fourth year, a student in the AMP has dual status, being an undergraduate student in Computer Science, and simultaneously a first-year graduate student in Computer Science. Up to six credit hours of courses taken during an AMP student's senior year can be applied simultaneously towards the bachelor's and master's degree requirements. These courses must be approved in advance by the Director of Graduate Studies in Computer Science.

Undergraduates interested in the AMP should discuss this option with the Director of Graduate Studies in Computer Science during their junior year.

Departments and Programs

Education Department

Colleges: Education and Social Services, Graduate College

Faculty: Education

Courses: ArtEducation (EDAR), Elementary Education (EDEL), Foundations (EDFS), Health Education (EDHE), Library Science (EDLI), Leadership and Policy Studies (EDLP), Middle Level Education (EDML), Music Education (EDMU), Physical Education (EDPE), Secondary Education (EDSC),Special Education (EDSP), Education (EDSS)

Contact Information:

University of Vermont
Education Department
533 Waterman Building
85 S. Prospect St.
Burlington, VT 05405-0160

Phone: (802) 656-3356
Fax: (802) 656-0004
Email: James.Mosenthal@uvm.edu
Web Site: http://www.uvm.edu/~cess/?Page=education.html&MM=departmentsmenu.html

Academic Offerings

- Certificates
  - Fifth-Year Certificate (Postbaccalaureate)
    - Art Education (K-12)
    - Elementary Education (K-6)
    - Middle-Level Education (5-8)
    - Music Education (K-12)
    - Physical Education (K-12)
    - Secondary Education (7-12)
  - Sixth-Year Certificate (Post-Master's)
    - Educational Leadership
    - Integrated Studies
    - Special Education
      - Post-Master's Concentrations:
        - Consulting Teacher/Learning Specialist
        - Intensive Special Education
        - Literacy and Special Education

- Graduate Majors
  - Master of Education (M. Ed.)
    - Curriculum and Instruction
      - Middle-Level Education (5-8)
      - Secondary Education Option (7-12)
    - Educational Leadership
    - Educational Studies
    - Reading and Language Arts
    - Special Education
      - M. Ed. Concentrations:
        - Consulting Teacher/Learning Specialist
        - Intensive Special Education
        - Literacy and Special Education
  - Doctor of Education (Ed. D.)
    - Educational Leadership and Policy Studies

Courses in Art Education

EDAR 140 - Foundation Studio El Ed Majors

Students select a foundation studio course, ART 002, ART 003 or ART 004 from those sections designated each semester on the course schedule. See course descriptions listed under ART.

Credits: 3.

EDAR 177 - Curriculum & Pract in Elem Art

Study and implementation of curriculum in elementary school. Students work directly in an elementary classroom. Lectures and discussions. Prerequisite: Eighteen hours Studio Art; Junior standing.

Credits: 4.

EDAR 178 - Curriculum&Pract Middle/HS Art

Study and implementation of curriculum in middle and high school. Students work directly in a middle or high school. Lectures and discussions. Prerequisite: Eighteen hours Studio Art; Junior standing.

Credits: 4.

EDAR 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisites: Twelve hours in education and related areas. One to six hours.

Credits: 1-6.

EDAR 283 - Current Issues in Art & Ed

Research and discussion of issues relevant to contemporary art and the teaching of art. Prerequisite: Senior standing or permission.

Credits: 3.

EDAR 284 - Current Issues in Art & Ed

Research, discussions, and field work relevant to contemporary art and the teaching of art. Prerequisite: Junior standing or permission.

Credits: 3.

EDAR 295 - Laboratory Experience in Educ

Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences; One to six hours.

Credits: 1-15.

Courses in Elementary Education

EDEL 010 - Intro to Teaching & Learning

Orientation to professional program. Introduction to research base for meaningful teaching and learning. Analysis of teaching autobiographies by successful teachers. One credit each semester for two consecutive semesters.

Credits: 1-2.

EDEL 011 - Computers in El Ed Classroom

Students use the University's network and internet, exchange e-mail, construct electronic portfolios, and examine software to help them in their studies and future classrooms.

Credits: 3.

EDEL 024 - Learners and Learning Process

Distinctions among dominant theories of learning and development. Learning theories applied to selected issues derived from context of schools. Students work with individual learner in appropriate setting.

Credits: 3.

EDEL 055 - Special Topics

Credits: 2-6.

EDEL 056 - Teachers&the Teaching Process

Students examine lives of teachers, demands of the profession, and selected models of teaching. Student observation of teachers in appropriate settings and knowledge of learning and development. Prerequisite: EDEL 010, EDEL 024; concurrent with EDEL 177, EDSP 005.

Credits: 3.

EDEL 155 - Lab Experience in Inquiry

Supervised practicum in field sites. Implementation of teaching methods from Inquiry Block. Documentation of classroom work, child study, and development of portfolio. Prerequisite: Admission to Elementary Teacher Education Program; concurrent with EDEL 157, EDEL 158, EDEL 159.

Credits: 3.

EDEL 156 - Teaching Math for Meaning

Methods of teaching mathematics in elementary school. Research base for how children learn mathematics and how math curriculum is organized. Special focus

on teaching diverse groupings of learners. Prerequisite: Admission to Elementary Teacher Education Program; concurrent with EDEL 175, EDEL 176, EDEL 178.
Credits: 3.

EDEL 157 - Social Ed and Social Studies
Methods of social education for elementary-aged school children. Promoting children's efficacy by nurturing personal interests. Development of folio of developmentally-sound examples of social studies learning. Prerequisites: Admission to Elementary Teacher Education Program; concurrent with EDEL 155, 158, 159.
Credits: 2.

EDEL 158 - Teaching Science for Meaning
Methods of science education for elementary-aged school children. Translate science content into meaningful science inquiry. Preparation of demonstration teaching lessons. Prerequisites: Admission to the Elementary Teacher Education Program; concurrent with EDEL 155, 157, 159.
Credits: 2.

EDEL 159 - Visual & Performing Arts, K-6
Incorporation of the visual and performing arts in elementary school curriculum. Focus on artistic expression as a way of learning. Emphasis on cross-cultural art, music, drama. Prerequisites: Admission to Elementary Teacher Education Program; concurrent with 155, 157, 158.
Credits: 2.

EDEL 175 - Lab Experience in Literacy
Supervised practicum in a field site. Implementation of teaching methods from Literacy Block. Documentation of classroom work, child study, and development of portfolio. Prerequisite: Admission to Elementary Teacher Education Program; concurrent with EDEL 156, EDEL 176, EDEL 178.
Credits: 3.

EDEL 176 - Language Arts&Literacy Skills
Cognitive research base for the social context of children's learning. Methods of language arts as literate activity. Emphasis on emergence of literacy in the child of special need. Prerequisites: Admission to Elementary Teacher Education Program; concurrent with EDEL 156, EDEL 175, EDEL 178.
Credits: 2.

EDEL 177 - Children's Lit & Literacy
Learning about the breadth of literature available for use in elementary school. Developing the ability to evaluate and use literature in reading and writing activities. Emphasis on bias-free methods. Prerequisites: Admission to Elementary Teacher Education Program; concurrent with EDEL 56, EDSP 5.
Credits: 2.

EDEL 178 - Mtg Indiv Needs:Assmt&Instruct
Methods of responding to individual differences within a heterogeneous classroom. Sources of student variability, developing settings of least restriction, and appropriate assessment strategies. Prerequisites: Admission to Elementary Teacher Education Program; concurrent with EDEL 156, 175, 176.
Credits: 2.

EDEL 181 - Student Teaching

Credits: 3-12.

EDEL 185 - Student Teaching Internship

Supervised student teaching internship in field site. Fifteen-week total immersion as a beginning teacher. Responsibilities specified in internship handbook. Documentation of activities for professional portfolio. Concurrent with EDEL 187 and EDEL 188. Prerequisite: Method Blocks in Inquiry and Literacy. Variable credit.

Credits: 3-12.

EDEL 186 - Seminar in Student Teaching

Credits: 3.

EDEL 187 - Plan,Adapt,Deliv Rdg Instruct

Methods of diagnostic teaching in reading and writing. Identifying components of effective programs and use of research findings to deliver instruction in meaningful contexts. Documentation of personal model of literacy for professional portfolio. Prerequisite: Method Block in Literacy; EDEL 156, EDEL 176, EDEL 177.

Credits: 3.

EDEL 188 - Principles of Classroom Mgmt

Method Blocks in Inquiry and Literacy.

Credits: 2.

EDEL 189 - Portfolio Dev&Reflective Pract

This course develops candidates' critical reflectivity on their knowledge and expertise of classroom teaching through the construction of a professional portfolio. Prerequisite: Concurrent with EDEL 185 and EDEL 188.

Credits: 1.

EDEL 197 - Readings & Research

Credits: 1-4.

EDEL 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in Education and related areas.

Credits: 0-3.

EDEL 222 - Cultivate Children's Literacy

Contemporary research and practice related to the development of strategic, motivated, and independent readers and writers. Emphasis on integrating reading and writing within collaborative environments. Prerequisite: Twelve hours in education and/or related areas including an introductory course in reading or Instructor permission.

Credits: 3.

EDEL 234 - Lit & Lang for Children&Youth

Characteristics, interests, reading habits of children and youth; selection, evaluation of literature. Organizing book units for teaching literature, for content areas. Emphasis on development of oral, written expression. Prerequisite: Twelve hours in education and related areas or Instructor permission.

Credits: 3.

EDEL 236 - Multicultural Children's Lit

Current research in multicultural education and literacy informs examination of representation and perspective in literature for children and youth. Perspectives include religion, race, gender, SES.
Credits: 3.

EDEL 241 - Science for Elem Schools
Examination of elementary school science programs. Emphasis on methods and materials relating to construction, use of science units for children in grades K-6. Prerequisite: Twelve hours in education and related areas or Instructor permission.
Credits: 3.

EDEL 244 - Social Studies in Elem Schls
Study of literature, research, and problems in teaching social studies in the elementary school. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDEL 256 - Methods & Materials in Math
Evolution of mathematical concepts, notations. Meaning of numbers, number-systems. Theory underlying fundamental operations, metric measurements, analysis of modern approach to mathematics. Manipulative approach to teaching mathematics. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDEL 270 - Kindergarten Methods & Org
Objectives, organization, curriculum, methods and materials, and relationships of kindergarten preschool experiences. Prerequisite: Twelve hours in Education and related areas.
Credits: 3.

EDEL 271 - Kindergarten Educ W/Lab
working with children of kindergarten age. Prerequisite: Designed to acquaint the prospective kindergarten teacher with educational research conducted by Piaget, Bruner, Montessori, and others with experiences provided for Twelve hours in Education and related areas.
Credits: 3.

EDEL 295 - Lab Experience in Education
Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 1-12.

EDEL 319 - Internshp Specialzd Personnel
Prerequisite: Instructor permission.
Credits: 1-6.

EDEL 375 - Lit Assmt:Understand Indiv Dif
Prerequisite: EDEL 222 or Instructor permission.
Credits: 3.

EDEL 376 - Lab Exp Rdg&Related Lang Instr
Approaches for prevention, correction of reading and written language difficulties. Supervised teaching of individuals and/or small groups experiencing reading and language problems. Apprenticeships in reading instructional programs.
Prerequisite: EDEL 375.

Credits: 3.

EDEL 378 - Advanced Study & Research

Survey of research, comparison and evaluation of emerging programs design and development of projects in reading. Prerequisite: Fifteen hours in education including nine hours in the field of reading and language education or Instructor permission.

Credits: 3.

EDEL 379 - Seminar in Reading Instruction

Study of reading relative to total curriculum. Significant trends, concepts related to specific problems, programs in reading and language arts instruction; role of supervisor education including nine hours in the field of reading and language education or Instructor permission.

Credits: 3.

EDEL 380 - Professional Problems in Ed

Designed to cover selected educational problems in depth. The major emphasis will be on intensive and critical analysis of the literature and practice in a given area.

Credits: 3.

EDEL 382 - Teaching Internship

Supervised teaching experiences on a full-time basis, with related seminars in teaching subject. Prerequisite: Permission of coordinator of Professional Laboratory Experiences.

Credits: 3-8.

EDEL 391 - Master's Thesis Research

Thesis topic must be approved by a faculty committee.

Credits: 1-18.

EDEL 397 - Problems in Education

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.

Credits: 1-6.

Courses in Foundations

EDFS 197 - Readings and Research
Credits: 1-4.

EDFS 200 - Contemporary Issues
Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in Education and related areas.
Credits: 3.

EDFS 203 - Soc, Hst & Phil Found of Educ
Critical examination of central educational/social issues and values with special emphasis on the struggle for justice and equality. Themes include schooling and social class, race, and gender; the purposes of education; and the responsibilities of teachers. Prerequisite: Enrollment in teacher licensing program.
Credits: 3.

EDFS 204 - Sem in Educational History
Selected topics in history of education. Education in democratic and authoritarian social orders. Topics: education of women, black heritage, American higher education in transition. Prerequisite: Twelve hours in Education and related areas or Instructor permission.
Credits: 3.

EDFS 205 - History of American Education
Instructor permission.
Credits: 3.

EDFS 206 - Comparative Education
Examines educational challenges confronting countries around the world. Explores issues related to sustainable development, diversity, citizenship, and justice in formal and nonformal educational contexts. Prerequisite: Twelve hours in Education and related areas.
Credits: 3.

EDFS 209 - Intro to Research Methods
Seminars and research projects. Methods of historical, descriptive, experimental, quasi-experimental, field studies, and survey research.
Credits: 3.

EDFS 255 - School as Social Institution

Examination of the school and related social institutions, focus on themes, including: social class, race, ethnicity, socialization, role of the family, social change. Prerequisite: Twelve hours of Education and related areas.
Credits: 3.

EDFS 295 - Lab Experience in Education

in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 1-6.

EDFS 302 - Philosophy of Education

Critical examination of key beliefs and values in current philosophies of helping, e.g. phenomenological, behavioral, holistic, as practiced in a variety of educational and social service institutions. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 303 - Ethics Helping Relationships

Clarification of ethical dimensions of professional rights and obligations for educators, counselors, administrators, other helping professionals. Examination of selected ethical controversies currently facing the helping professionals. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 304 - Religion,Spirituality & Ed

and educational leadership. A narrative approach to thinking about religion and spirituality and theoretical and practical implications for policy making, pedagogy, curriculum development,
Credits: 3.

EDFS 309 - Schol Pers Narr Writing:ED&SS

A workshop for educational writers of theses, dissertations, and scholarly articles. Students will be introduced to critical theory, postmodern, feminist, and narrativist conceptions of educational writing.
Credits: 3.

EDFS 314 - Modes of Inquiry

A critical analysis of the various conceptual and methodological foundations of theory and practice in education and the human services. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 322 - Chall Multicultrsm/Ed&Soc Inst

Critical analysis of social, historical, and philosophical dimensions of multiculturalism. Examination of identity, empowerment, and justice and their relationships to educational/social policies and practices. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 347 - Qualitative Research Methods

Introduces students to qualitative methods as a research paradigm and develops skills in ethnographic techniques of field observation, interviewing, and data analysis. Out-of-class fieldwork required. Prerequisite: Master's or doctoral level

standing or Instructor permission.
Credits: 3.

EDFS 348 - Analyze&Write Qualitative Rsch
the course. This course extends students' knowledge of and experience with qualitative research analysis and writing. Students must come with data collected previous to the start of Prerequisite: EDFS 347 or Instructor Permission.
Credits: 3.

EDFS 352 - Aesthetic Ed & Social Justice
Exploration of art that deepens understanding of educational and social problems. Focus on artists who challenge dominant powers. Incorporates democratic perspectives on art and aesthetics. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 354 - Anth Persp on Ed & Soc Serv
Examination of formal and non-formal education as means to produce and alleviate cultural conflict. Incorporates an autobiographical approach to studying socio-cultural implications of schooling and social services. Emphasis on Third World situations. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 369 - Ethics in Ed & Soc Serv Admin
Critical examination of theories of ethical decision making. Implications for leadership in educational, social service settings. Ethical investigation utilizing research, scholarship, actual incidents, case studies, role playing. Prerequisite: Ed.D. students have priority.
Credits: 3.

EDFS 377 - Seminar Educational Psychology
Personal values, attitudes, beliefs related to learning. Psychological research of the teaching-learning process. Research use in analysis of educational processes. Applications for educational settings. Prerequisite: Twelve hours in education and related areas.
Credits: 3.

EDFS 380 - Professional Problems in Educ
Designed to cover selected educational problems in depth. The major emphasis will be on intensive and critical analysis of the literature and practice in a given area.
Credits: 3.

EDFS 391 - Master's Thesis Research
Thesis topic must be approved by a faculty committee.
Credits: 1-18.

EDFS 397 - Problems in Education
Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

EDFS 455 - Soc Process & Institutionl Chg
Critical analysis of theory and research related to justice, caring, and change in

education and other social institutions. Focus: ideology, diversity, and management of knowledge. Prerequisite: Doctoral level standing. Credits: 3.

Courses in Health Education

EDHE 046 - Personal Health

Concepts of personal health related to problems of daily living. Mental health, sex education, nutrition and weight control, fatigue and relaxation, chronic and communicable disease, stimulants and depressants.

Credits: 3.

EDHE 150 - Sem: Health Educ

Research, discussion, and critical examination of selected topics and special issues in health not currently covered in existing courses. Prerequisite: Six hours in health education or Instructor permission. Variable credit, one to four hours.

Credits: 1-4.

EDHE 173 - Practicum in Field Experience

Individually prescribed teaching experience involving work with health agencies, both public and private. Responsibilities approximate those commonly associated with student teaching. Prerequisite: Permission. Variable credit.

Credits: 1-4.

EDHE 182 - Health Methods and Materials

Fundamental methods of teaching health as applied to school and public health education. Consideration of materials applicable to health education, evaluation techniques, preparation of teaching units and bibliographies. Prerequisite: EDHE 046.

Credits: 3.

EDHE 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in Education and related areas.

Credits: 1-6.

EDHE 208 - School Health Programs

Organization of the total school health program. Problems and administration in the area of school environment, health services, health education, and school-community relationship. Prerequisite: EDHE 046 or equivalent.

Credits: 3.

EDHE 211 - Community Health Ed

Government and voluntary agencies' sociological, historical, educational, environmental, and medical influences. Role of community health educator in these influences and major American health concerns. Prerequisite: EDHE 046 or equivalent.
Credits: 3.

EDHE 220 - Stress Mgmt Hlth Professionals
Physiological, psychological, and sociological aspects of stress. Theory, practices, teaching techniques, and application relevant to teaching students and/or clients. Prerequisite: EDHE 046 or equivalent.
Credits: 3.

EDHE 295 - Lab Experience in Educ
Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 1-6.

EDHE 319 - Internshp Specializd Personnel
Prerequisite: Instructor permission.
Credits: 1-12.

EDHE 380 - Prof Problems in Education
Designed to cover selected educational problems in depth. The major emphasis will be on intensive and critical analysis of the literature and practice in a given area.
Credits: 3.

EDHE 382 - Teaching Internship
Supervised teaching experiences on a full-time basis, with related seminars in teaching subject. Prerequisite: Permission of coordinator of Professional Laboratory Experiences.
Credits: 3-8.

EDHE 391 - Master's Thesis Research
Thesis topic must be approved by a faculty committee.
Credits: 1-12.

EDHE 397 - Problems in Education
Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

Courses in Library Science

EDLI 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in education and related areas.

Credits: 1-6.

EDLI 272 - Manage Schl Library Media Ctrs

Overview of administrative issues, including development of policies and procedures, budget preparation, personnel administration, and public relations. Focus on information technology and literacy. Prerequisites: Twelve hours in education and related areas, or Instructor permission.

Credits: 3.

EDLI 273 - Organizing Schl Libr Media Ctr

Introduction to cataloging of print and non-print materials, Dewey Decimal Classification, application of microcomputers to catalog and circulation services. Prerequisite: EDLI 272 or equivalent.

Credits: 3.

EDLI 274 - Design Instr Sch Lbr Media Ctr

Designing library instruction for integration with curricula and collaborating to create effective lessons. Issues surrounding active learning, critical thinking, learning styles, and assessment are examined. Prerequisite: EDLI 272 or equivalent.

Credits: 3.

EDLI 275 - Dev Sch Libr Media Ctr Collect

Evaluating and selecting books, periodicals, audiovisuals, software, and other materials for full range of student ages and ability levels. Maintaining collection, weeding, using interlibrary loan, and dealing with censorship. Prerequisite: EDLI 272 or equivalent.

Credits: 3.

EDLI 276 - Information Sources & Services

Helping students and teachers find information using print, online, CD-ROM and other resources. Developing interview skills and selecting materials for elementary and secondary core collections. Prerequisite: EDLI 272 or equivalent.

Credits: 3.

EDLI 277 - Info Tech Schl Libr Media Ctrs

Selecting, using, and maintaining full range of media equipment, including audiovisual and computer based systems. Designing and improving presentation facilities for media. Prerequisite: EDLI 272 or equivalent.

Credits: 3.

EDLI 295 - Lab Experience in Educ

Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.

Credits: 1-6.

Courses in Leadership and Policy Studies

EDLP 200 - Contemporary Issues

boundaries of an existing course. Prerequisite: Twelve hours in education and related areas.

Credits: 0-6.

EDLP 264 - Evaluation in Ed & Soc Srvcs

For educational and social service personnel. Overview of the state-of-the-art of evaluation, emerging concepts, related models. Potential applications to settings; systematic data analysis. Prerequisite: Twelve hours in education or Instructor permission.

Credits: 3.

EDLP 266 - Educational Finance

National, state, and local practices in educational financing and taxation; educational policies and incentives in funding; other revenue sources; financial expenditure procedures. Prerequisite: Twelve hours in education or Instructor permission.

Credits: 2-3.

EDLP 268 - Educational Law

Legal basis for education. State and Federal statutes; related court cases; Attorney General opinions; Special Education procedures; Vermont State Board and State Education Department policies; regulations. Prerequisite: Twelve hours in education or Instructor permission.

Credits: 2-3.

EDLP 280 - Schl Business Mgmt

Analysis of basic management concepts applied to administering schools. Topics include leadership/management trends, types of budgets, risk management, planning, and other personnel and business operations issues. Prerequisite: Twelve hours in education.

Credits: 3.

EDLP 291 - Spec Tpcs in Org&Hum Res Dev

Special issues in counseling, administration and planning, social work, or higher education not appropriate to content of existing courses. Courses will reflect the social services orientation of the Department of Education.

Credits: 1-6.

EDLP 295 - Lab Experience

Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.

Credits: 1-6.

EDLP 319 - Internship

Prerequisite: Instructor permission.

Credits: 1-6.

EDLP 332 - Seminar in Admin & Planning

Opportunity for students to experience, apply selected administration and planning concepts, skills through seminar and selected simulations of public school and social service organizational settings.

Credits: 3.

EDLP 334 - Effecting & Managing Change

Change processes and models, the dynamics of change within the organization, and external factors affecting change. Managerial, leadership, and organizational factors and conditions impacting on innovations; change phases of initiation, implementation, and institutionalization. Prerequisite: Twelve hours of Graduate study.

Credits: 3.

EDLP 335 - Staff Evaluation & Development

Supervisory roles, behavior, responsibilities, and relationships in educational and social service organizations; processes for evaluating the performance, promoting the development of staff, and increasing organization effectiveness.

Credits: 3.

EDLP 336 - Curr Mgmt in Ed & Soc Srv Org

Prerequisite: Eighteen hours of education and related

Credits: 3.

EDLP 337 - Political Proc in Ed & Soc Srv

Political and operational relationships between schools, agencies, and other organizations at all governmental levels. Policy development, working with policy boards, and coordinating organizational and community activities.

Credits: 3.

EDLP 352 - Analysis of Educ & Soc Srv Org

Organizations as open or closed systems; examinations of goals, power, conflict, leadership, decision-making roles, communication; diagnosing causes of organizational problems; factors aiding, impeding organizational change.

Credits: 3.

EDLP 353 - Sem:Organizational Leadership

Roles, functions, relationships and responsibilities in maintaining and changing organizations; leadership styles and behavior; trends and issues impacting on organizations.

Credits: 3.

EDLP 354 - General & Soc Systems Theory

General Systems Theory is analyzed in terms of its utility for examining social

systems, macrosystems analysis of research, planning, and interdisciplinary dialogue.
Credits: 3.

EDLP 355 - System Analysis & Planning
An analysis of and experience with planning theories and techniques that derive from General Systems Theory.
Credits: 3.

EDLP 356 - Sem in Futurism & Planning
Knowledge, values, attitudes relating to concepts about the future; alternative futures, trend analysis, goal setting; planning processes applied to educational and social service organizations.
Credits: 3-6.

EDLP 357 - Sem in Futurism & Planning
Knowledge, values, attitudes relating to concepts about the future; alternative futures, trend analysis, goal setting; planning processes applied to educational and social service organizations.
Credits: 3-6.

EDLP 358 - Sem in Community Education
The seminar participants will analyze the Community Education process, relate the process to community development, and develop strategies for the planning and implementation of Communication Education.
Credits: 3.

EDLP 367 - Human Behavior in Educ Systms
This course will enable students in the Doctorate in Education program to understand and assess human behavior as it affects and is affected by education systems. Prerequisite: Ed.D. students have priority.
Credits: 3.

EDLP 372 - Leadership&Creative Imaginatn
Leadership in societal organizations as presented in literature, other media. Students will demonstrate abilities to integrate leadership theory, principles, personal beliefs, practices with literary and other media models. Prerequisite: Ed.D. students have priority.
Credits: 3.

EDLP 380 - Professional Problems in Educ
analysis of the literature and practice in a given area.
Credits: 0-3.

EDLP 386 - Org & Human Resource Dev
The concept and practice of organization development, analysis of and laboratory experience in the utilization of intervention methodologies. Prerequisite: One course relating to human relations; one course relating to organizations or equivalent, or Instructor permission.
Credits: 3.

EDLP 387 - Collaborative Consultation
Cross-listed with: EDSP 387.
Credits: 3.

EDLP 391 - Master's Thesis Research

Thesis topic must be approved by a faculty committee.
Credits: 1-12.

EDLP 397 - Problems in Education
Individual work on a research problem selected by the student in consultation with a staff member. Prerequisites: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

EDLP 409 - Applied Educational Research
readers and synthesizers of research studies. Prerequisite: Doctoral level standing.
Credits: 3.

EDLP 431 - Adv Sem Organizational Ldrshp
Students inquire into new theories on leadership and the cognitive processes that define the intentions, values,
Credits: 3.

EDLP 432 - Adv Sem:Org Chng&Hum Res Dev
Students inquire into new theories, themes, and multicultural dimensions of organizations. Strategies for managing human resources, structural issues, and future trends in organizations are analyzed. Prerequisite:Doctoral level standing.
Credits: 3.

EDLP 437 - Sem on Educational Policy
education policy formulation and implementation. Prerequisite: Doctoral level standing.
Credits: 3.

EDLP 491 - Doctoral Dissertation Research
Credits: 1-12.

Courses in Middle Level Teacher Education

EDML 010 - Introduction to Teaching
young adolescent students, teachers' roles, middle schooling and the middle school concept. Prerequisites: Admission to Pre-professional teaching education.
Credits: 1.

EDML 024 - Learners, Development&Learning
Students learn about the interrelated processes of development and learning throughout childhood but with special emphasis on the approximate ages of ten to
Credits: 3.

EDML 055 - Special Topics I
Credits: 2-6.

EDML 056 - Teachers & Teaching Process
Students examine professional responsibilities of middle level teachers as defined by Vermont and national standards via classroom observations. Prerequisite: EDML 010, EDML 024.
Credits: 3.

EDML 171 - Teaching Practicum II
Second teaching practicum on a middle level team to learn policy, curriculum, exemplary pedagogy, assessment in second of two academic concentrations defined by student's IDIMC plan. Prerequisite: Admission to Middle Level Professional Program.
Credits: 3.

EDML 197 - Readings & Research
Credits: 1-4.

EDML 200 - Contemporary Issues
Credits: 1-6.

EDML 207 - Adoles Lrng&Beh&Cog Perspect
Indepth examination of cognitive learning theory and its background in behavioral and other learning theories, with application to teaching in a middle or secondary setting. Pre/co-requisites: Acceptance to licensing program. (Crosslisted with EDSC 207).
Credits: 3.

EDML 260 - Teaching Young Adolescents

Focus on understanding and reflecting on an integrative developmental approach to the design of middle level curriculum, with an emphasis on literacy and numeracy.
Credits: 3-6.

EDML 261 - Middle Level Teaching Pract
Teaching practicum on middle level team in two areas of academic concentration, acquiring knowledge of and skills in curriculum, pedagogy, and assessment. Pre/co-requisite: Admission to Middle Level Professional Program.
Credits: 3.

EDML 270 - Middle School Org & Pedagogy
Focuses on exploring theory and practice in responsive school organization for young adolescents, including interdisciplinary/partner teaming, block scheduling, and teacher advisories, as well as teaching lessons in one area of specialization. Pre/co-requisite: EDML 260, EDML 261.
Credits: 3-6.

EDML 285 - Middle Level Student Teaching
Full-time supervised student teaching internship as a member of a middle school team. Development of a professional portfolio as stipulated in the Middle Level Program Handbook. Pre/co-requisite: EDML 260, EDML 261, EDML 270, and Instructor permission.
Credits: 9-12.

EDML 286 - Internship Support Seminar
Seminar addresses and responds to internship experiences including planning, classroom management, team work, and assessment of learning. Guidance in development of Professional Teaching Portfolio. Pre/co-requisites: EDML 260, 261, 270.
Credits: 1.

EDML 287 - Literacy & Mathematics
All middle level teachers are expected to teach reading, writing, literature and mathematics. This course is the capstone for work previously done in these pedagogies. Pre/co-requisite: Successful completion of EDML 260, EDML 261, and EDML 270.
Credits: 3.

EDML 295 - Laboratory Experience
Credits: 1-6.

Courses in Music Education

EDMU 055 - Special Topics I

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Open to first-year students.

Credits: 2-6.

EDMU 181 - Music for Elementary Teachers

Development of musical skills, understandings, and attitudes pertinent to the teaching of music in elementary classroom. Prerequisite: Elementary majors; acceptance into teacher education program.

Credits: 3.

EDMU 197 - Readings and Research

Individual research problem or directed reading in an area of special interest to the student. Prerequisite: Instructor permission.

Credits: 1-4.

EDMU 240 - Mus Creativity in Gen Music

Designing a course of study for the general music class. Developing musical concepts and perception through individual differences. Prerequisites: Undergraduate major in Music Education or Instructor permission.

Credits: 3.

EDMU 243 - Recent Trends in Music Ed

Study of recent thought and practices in music education. Examination of current trends. Prerequisites: Undergraduate major in Music Education or Instructor permission.

Credits: 1-4.

EDMU 253 - Practicum in Music Education

Current methodology in music education for music specialist and classroom teacher. Each year emphasis in a different area of concentration. Prerequisite:Teaching experience, or Instructor permission. Credit variable. Course may be taken for four hours each semester and may be repeated for a maximum of eight hours.

Credits: 1-8.

EDMU 281 - Elementary Music Ed Methods

Methods and materials for teaching music in elementary schools. Five hours classroom observation per week required. Prerequisite: Junior standing in Music Ed. UG only.
Credits: 3.

EDMU 282 - Secondary Music Ed Methods

Methods and materials in the teaching of vocal and instrumental music in secondary schools. Five hours classroom observation per week required. Prerequisite: Junior standing in Music Education. UG only.
Credits: 3.

EDMU 290 - Basic Concepts in Music Ed

Disciplinary backgrounds; historical and philosophical foundations; fundamental considerations of the functions of music in the schools; development of a personal philosophy.
Credits: 3.

EDMU 295 - Special Topics

Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences. Undergraduate only.
Credits: 1-6.

EDMU 390 - Org & Admin of Music Ed

Study of the organization and administration of vocal and instrumental music in the public schools. Prerequisite: Teaching experience or Instructor permission.
Credits: 3.

Courses in Physical Education-Prof

EDPE 021 - Foundations of Phys Educ
as an academic discipline and profession, its foundations, current trends, issues and career opportunities. Prerequisite: Physical Education
Credits: 3.

EDPE 023 - Amer Red Cross Emergency Resp
To meet the needs of individuals who are in a position to provide first aid and emergency care frequently. Red Cross certification for successful performance in Advanced First Aid Emergency Care. Prerequisite: PE, HDS, and Health majors; others by Instructor permission.
Credits: 3.

EDPE 024 - Life Skills: Student Athletes
This course provides students with skills training for academic and athletic success, alcohol education and prevention, and moral reasoning and decision-making.
Credits: 1.

EDPE 026 - Water Safety Instructor
Advanced performance skills in swimming, diving, survival, and rescue techniques. Theory and practice in techniques of teaching aquatic skills. Red Cross certification as Water Safety Instructor or Instructor for Beginning Swimming. Prerequisite: Current Red Cross Lifesaving Certificate.
Credits: 2.

EDPE 032 - Recreational Sport Officiating
Basic techniques and skills of rule interpretation for officiating recreational sport competition.
Credits: 2.

EDPE 054 - Hist, Phil, and Trends in Rec
Review of chronological history of evolution of recreation movement; examination of past and emerging theories and philosophies of recreation and leisure; exploration of trends in recreation and leisure and probable impact on our life styles.
Credits: 3.

EDPE 055 - Special Topics I

Credits: 1-6.

EDPE 100 - Integ Movement/Elem School Cur

Planning and implementing movement-based lessons and integrating movement across the curriculum for children aged 5-12.

Credits: 2.

EDPE 104 - Phys Educ Teaching Experience

Experience-based course sequence emphasizing relationship of motor development to learning. Includes age level needs and appropriate physical education activity sequences. First semester: grades K-3; second semester (EDPE 105); grades 4-6. Prerequisites: EDPE 023 or EDPE 157; Junior standing.

Credits: 5.

EDPE 105 - Phys Educ Teaching Experience

Junior standing.

Credits: 5.

EDPE 121 - Coaching Baseball

Theory and technique of coaching interscholastic baseball. Includes practice, game, and schedule organizations. Prerequisite: Skill competency in baseball; Sophomore standing, or Instructor permission.

Credits: 0-2.

EDPE 123 - Coaching Softball

Theory and technique of coaching interscholastic softball. Includes practice, game, and schedule organizations. Prerequisite: Skill competency in softball; Sophomore standing, or Instructor permission.

Credits: 2.

EDPE 145 - Seminar in Athletics

Contemporary issues, strategy, analysis, and problems areas related to selected comparative sports.

Credits: 3.

EDPE 155 - Phys Educ in Secondary Schl

Theories of teaching which include unit plan development, classification and grouping of students for instruction, and a variety of teaching methods. Laboratory experience in teaching activity skills to youth aged 12-18. Prerequisites: Junior standing; PE majors only.

Credits: 3.

EDPE 157 - Care & Prevent Athletic Injury

Prevention, recognition, and care of injuries related to school physical education and athletic programs.

Credits: 3.

EDPE 158 - Dir Observ Exp Athletic Trng I

A laboratory sequence offered for those students seeking admission into the Athletic Training Education Program. Includes training room procedures and basic injury assessment skills. 158, emergency protocols; 159, basic injury assessment. Must be taken with EDPE 157.

Credits: 1.

EDPE 159 - Dir Obser Exp Athl Training II

A laboratory sequence offered for those students seeking admission into the

Athletic Training Education Program. Includes training room procedures and basic injury assessment skills. 158, emergency protocols; 159, basic injury assessment. Must be taken with EDPE 157.
Credits: 1.

EDPE 166 - Kinesiology
Designed for the teacher/coach to analyze factors of peak physical performance. Muscle actions, mechanical principles, related factors enhancing movement are emphasized. Prerequisite: One year of biological science; PE majors, coaching minors, students enrolled in Athletic Training Concentration, Sports Nutrition; others by instructor's permission.
Credits: 3.

EDPE 167 - Exercise Physiology
of bodily responses during exercise. Content includes energy metabolism, muscular, cardiovascular, Prerequistes: PE majors, coaching minors, sports nutrition, Athletic Training; others by instructor's permission.
Credits: 4.

EDPE 168 - Measurement&Data Analysis
Introductory statistics and research design class. Covers basic statistics--t-tests, measurement scales, discussed. Prerequisites: EXSS majors only; others by instructor's permission. Anova,correlations, etc. Application in physical education and exercise science are specifically
Credits: 1 or 3.

EDPE 173 - Practicum in Field Experience
Individually prescribed teaching experience involving work with youth groups in activities related to physical education, health, or recreation. Responsibilities approximate those commonly associated with student teaching. Prerequisites: EDPE 104, EDPE 105, or EDPE 155; Instructor permission.
Credits: 1-4.

EDPE 181 - Student Teaching
Teaching in elementary or secondary schools under guidance of cooperating teachers, principals and college supervisors. A full-time, full semester, 12-credit experience. Prerequisites: Acceptance into the teacher education program; must meet criteria for student teaching. Variable credit, three to twelve hours.
Credits: 3-12.

EDPE 182 - Student Teaching Seminar
Prerequisite: Concurrent with EDPE 181.
Credits: 2.

EDPE 185 - Injury Eval&Rec:Athl Training
Course is integrative and clinical in nature, consisting of injury evaluation and recognition skills. Injury mechanisms, etiology, pathology, clinical signs and symptoms. Prerequisites: EDPE 157, EDPE 158.
Credits: 4.

EDPE 186 - Therapeutic Modal Athletic Trn
Prac-tical use of therapeutic modalities in treatment and rehabilitation of musculoskeletal injuries. Physiological effects, indications, and contraindications of treatment are addressed. Prerequisites: EDPE 157, EDPE 158, EDPE 185.

Credits: 3.

EDPE 187 - Rehab Techniques Athletic Trng

Post-injury and post-operative rehabilitation and conditioning techniques involved in returning an active individual to normal and athletic activity. Prerequisites: EDPE 157, EDPE 158, EDPE 185, EDPE 187.

Credits: 3.

EDPE 188 - Admin in Athletic Training

An examination of topics related to administration, budget management, health insurance issues, and policies/procedures in the profession of athletic training. Prerequisites: EDPE 157, EDPE 158.

Credits: 2.

EDPE 195 - Hlth/Fitness Ldrshp&Programmng

Practical approach to significance, theories, and characteristics of leadership content, and methods of program planning. Field work practice in planning and leadership techniques. Prerequisite: EDPE 021.

Credits: 3.

EDPE 197 - Readings & Research

Credits: 1-4.

EDPE 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in education and related areas.

Credits: 1-6.

EDPE 201 - Admin of Athletic Programs

Background for effective administration of the athletic program of schools. Include scheduling, budgeting, management, equipment, policy, public relations, and education justification. Prerequisite: Twelve hours of education and Psychology.

Credits: 3.

EDPE 203 - Principles of Physical Ed

Principles basic to sound philosophy of physical education for appraisal of historical development; relationship to health education, recreation, and other areas; foundation and functions of physical education. Prerequisite: Admission to the program and Instructor permission.

Credits: 3.

EDPE 220 - Sport in Society

Examines sport as a social institution, emphasizing interrelationships between sport and the social context in which it exists; analyzes functions and dysfunctions of sport in contemporary society. Prerequisite: SOC 001, SOC 019, or equivalent.

Credits: 3.

EDPE 240 - Motor Skill Learning & Control

Nature of motor learning; factors affecting motor learning (motivation, emotion, stress); concepts of transfer, retention; alternatives in teaching, coaching methodologies based upon applied principles in motor learning. Prerequisites: 166, ECHD 62 or 63, or equivalent.

Credits: 3.

EDPE 241 - Sem in Phys Educ & Athletics

Examination and analysis of contemporary issues and trends in physical education and athletics not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in physical education and related areas.
Credits: 2-4.

EDPE 260 - Adapted Physical Activity

Recognition, prevention, correction of functional, structural deviations from normal body mechanics. Organization of programs adapted to needs of handicapped individuals in both special class and mainstreamed settings. Prerequisite: 155, 104, 105 or equivalent teaching experience.
Credits: 3.

EDPE 265 - Exercise & Sport Science

Discussion and integration of topics related to exercise physiology, kinesiology, motor learning, and sociocultural aspects of sport. Prerequisites: 166, 167, 220, 240; senior standing, or permission. UG only.
Credits: 3.

EDPE 295 - Lab Experience in Education

Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 1-12.

EDPE 391 - Master's Thesis Research

Thesis topic must be approved by a faculty committee.
Credits: 1-12.

EDPE 397 - Problems in Education

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

Courses in Secondary Education

EDSC 011 - Ed Tech in Sec Ed Classroom

Students are introduced to a variety of uses for information technology in education with particular applications to stimulate and manage a student-centered classroom.

Credits: 3.

EDSC 050 - Exploring Education

field of education. Introduction to philosophical, psychological, sociological questions basic to teaching and learning. Exploration of beliefs and understandings about personal learning and the

Credits: 3.

EDSC 055 - Special Topics

Credits: 1-6.

EDSC 197 - Readings & Research

Credits: 1-4.

EDSC 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in education and related areas.

Credits: 3.

EDSC 207 - Adoles Lrng/Beh&Cog Perspect

Prerequisites: Acceptance to licensing program. Indepth examination of cognitive learning theory and its background in behavioral and other learning theories, with application to teaching in a secondary setting. (Crosslisted with EDML 207).

Credits: 3.

EDSC 209 - Practicum in Teaching

Working with teachers and students in a secondary school, licensing candidates will assess the needs of students, document effects of direct service and the need for new curriculum. Prerequisites: 203, 207 or concurrent enrollment.

Credits: 3.

EDSC 215 - Reading in Secondary Schools

Design of methods and materials for integrating reading and learning skills in content instruction. Focus on learning support for at risk learners. Prerequisites:

203, 207, 209 or concurrent enrollment.
Credits: 3.

EDSC 216 - General Methods for Sec Tchrs
Development of teaching methods for secondary instruction, adaptation to learning styles, models of teaching with design, lesson planning and assessment, with focus on cross-disciplinary collaboration. Prerequisites: 203, 207, 209 or concurrent enrollment.
Credits: 3.

EDSC 225 - Tchg Soc Studies in Sec Schls
Includes multiple teaching modes, questioning techniques, micro-teaching laboratory, analysis of historical content to determine students' prerequisite cognitive skills and processes for construction of historical scenarios. Prerequisite: Twelve hours of education and related areas.
Credits: 3.

EDSC 226 - Teaching Internship
EDSC 215, EDSC 216, and Special Methods.
Credits: 8-12.

EDSC 227 - Tchng Science in Sec Schls
Consideration of science curricula and instructional strategies for grades 7-12. Topics may include: teaching science as problem solving, research in science teaching, affective education through science. Prerequisite: Twelve hours in education and related areas or Instructor permission.
Credits: 3.

EDSC 230 - Teaching for Results
Analysis of planning, curriculum, design, teaching, evaluation and classroom management from the perspective of research and practice. Special focus on the student with special needs. Prerequisites: Concurrent enrollment in 226.
Credits: 3.

EDSC 240 - Teach English:Secondary School
Approaches to teaching composition, literature, and the English language in secondary school. Prerequisite: Acceptance into licensure program.
Credits: 3.

EDSC 257 - Tchg Math in Secondary Schools
Contemporary secondary school mathematics curricula and instructional strategies for grades 7-12. Topics may include problem solving, research in mathematics education, use of calculators and computers, manipulatives, and evaluation. Prerequisite: Twelve hours in education and related areas or permission.
Credits: 3.

EDSC 259 - Tchg Foreign Lang in Sec Schls
An overview of language teaching methodology. The learning/ teaching process as it relates to language learning; techniques used in the teaching and testing of second language skills and culture. Prerequisite: Acceptance into
Credits: 3.

EDSC 295 - Lab Experience
Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of

Professional Laboratory Experiences.
Credits: 1-6.

EDSC 397 - Problems in Education

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

Courses in Special Education

EDSP 005 - Iss Aff Persons W/Disabilities

Students explore the effects of severe disabilities. Best service practices, current legislation, advocacy, and family issues for children and adults are emphasized. Credits: 3.

EDSP 197 - Independent Study

Credits: 1-3.

EDSP 200 - Contemporary Issues

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in education and related areas.
Credits: 1-3.

EDSP 201 - Foundations of Special Ed

Examination of historical, current trends in the treatment of individuals with disabilities, including the effects of litigation, legislation, and economic considerations on educational and residential service delivery systems. Prerequisite: Twelve hours in education and related areas, or permission.
Credits: 3.

EDSP 202 - Stdnt w/Signif Dis:Char&Ed Int

Normal development - birth through six years, developmental disorders, disabilities, medical/health considerations. Management of significant disabilities through the employment of such procedures as handling, positioning, and feeding. Prerequisites: Permission
Credits: 3.

EDSP 207 - Cooperative Learning

Theoretical and experiential instruction in procedures to increase social acceptance and settings through cooperative learning. Prerequisites: Permission. Three hours.
Credits: 3.

EDSP 216 - Curr&Instr Needs/All Students

Introduction to curriculum and instruction for all students with a focus on individuals who present academic and behavioral challenges. Emphasis on assessment, evaluation, curriculum, instruction, theories of learning and social

development. Prerequisite: Permission.
Credits: 3.

EDSP 217 - Instr Indiv/Significant Disab
Individualized instruction for learners with significant disabilities emphasizing objectives, assessment, task analysis, and behavior analysis. Prerequisite: Permission.
Credits: 3.

EDSP 221 - Family Centered Services
An in-depth study of families of children with special needs; family ecology; interaction and life cycle. Development and implementation of family/professional collaboration strategies. Practicum required. Prerequisite: Instructor permission.
Credits: 3.

EDSP 224 - Meeting Inst Needs/All Stdnts
Students apply principles of learning and social development to improve academic and social skills of all individuals with a focus on those who present academic and behavioral challenges. Prerequisite: Instructor permission.
Credits: 3.

EDSP 228 - Instr for Severely Handicapped
Students apply advanced principles of behavior analysis in the development and implementation of instructional programs for learners with moderate and severe disabilities. Prerequisite: Instructor permission and introductory behavior analysis course.
Credits: 3.

EDSP 275 - Voc Instr Students W/Spec Need
Development of instructional strategies for including students with disabilities in vocational education. Procedures for developing, implementing, and evaluating individualized vocational plans. Prerequisite: Admission to an approved teacher certification program or Instructor permission.
Credits: 3.

EDSP 280 - Assessment in Special Ed
Course covers assessment knowledge and skills essential for special educators, including test selection, administration and scoring, and legal issues related to special education assessment. Prerequisite: Admission to Graduate Program in Special Education or permission of the Instructor.
Credits: 3.

EDSP 290 - Meeting Curr Needs of Students
Study of curriculum and technology areas related to the development, adaptation, and assessment of all students focusing on students with academic and behavioral challenges. Prerequisite: Permission.
Credits: 3.

EDSP 295 - Laboratory Exp in Education
Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 0-6.

EDSP 296 - Laboratory Exp in Education

Credit as arranged.
Credits: 1-6.

EDSP 297 - Curr for Indvdls W/Handicaps
Students develop and implement an objectives-based curriculum for learners with learning disabilities, mental retardation, behavior disorders, and/or multidisabilities. Prerequisite: Permission.
Credits: 3.

EDSP 298 - Special Educ Practicum
Students provide direct instruction for six learners with learning disabilities, mental retardation, behavior disorders, and/or multidisabilities. Prerequisite: Instructor permission.
Credits: 1-6.

EDSP 301 - Hst of Serv/Hndicapped Individ
Historical and current trends in treatment of individuals with disabilities, including effects of litigation, legislation, economic consideration in education, vocational, residential service delivery systems. Prerequisite: Acceptance as candidate for M.Ed. degree in special education, or permission.
Credits: 3.

EDSP 302 - Phys&Dev Char of Indiv w/Disab
Normal development - birth through six years, developmental disorders, disabilities, medical/health considerations. Management of significant disabilities through the employment of such procedures as handling, positioning, and feeding. Prerequisite: Instructor permission.
Credits: 3.

EDSP 305 - Res Dev&Coll:Fam/Sch/Com/Agncy
An overview of collaborative teaming, function assessment and Vermont's System of Care for students with emotional and behavioral disabilities. A practicum experience is included. Prerequisite: BA.
Credits: 3.

EDSP 306 - Emot&Behav Dis/Child&Adolesc
This course provides an overview of emotional disorders (e.g., depression, anxiety, ADHD, conduct disorder) experienced by youth and relevant assessment tools for an educational setting. Prerequisite: BA.
Credits: 3.

EDSP 307 - Prev&Interv Strategy:Students
classroom management, social skills training, anger This course covers effective prevention and intervention strategies with, or at-risk, for emotional and behavioral disorders. It covers such topics as management, internalizing disorders. Prerequisite: BA in Education/related field.
Credits: 3.

EDSP 310 - Curr & Tech in Spec Education
Curricular and assessment areas essential to education of students with disabilities. Development, adaptation of curricula and assessment in early education, elementary and secondary and adult levels for mild, moderate, and severe disabilities. Prerequisite: Instructor permission.
Credits: 3.

EDSP 311 - Curr & Tech in Spec Education

Curricular and assessment areas essential to education of students with disabilities. Development, adaptation of curricula and assessment in early education, elementary and secondary and adult levels for mild, moderate, and severe disabilities. Prerequisite: Instructor permission.
Credits: 3.

EDSP 312 - Adv Behavior Prin in Spec Ed

A survey on behavior theory and research applications for learners with learning disabilities, mental retardation, behavior disorders, and multidisabilities. Prerequisite: Acceptance to M.Ed. program or Instructor permission.
Credits: 3.

EDSP 313 - Adv Behavior Prin in Spec Ed

A survey on behavior theory and research applications for learners with learning disabilities, mental retardation, behavior disorders, and multidisabilities. Prerequisite: Acceptance to M.Ed. program or Instructor permission.
Credits: 3.

EDSP 316 - Research Sem in Spec Educ

Research which addresses key issues in special education is reviewed and evaluated. Students write and present a research review with attention to practitioner needs. Prerequisite: EDSP 301, EDSP 310, EDSP 312; a course in quantitative research design.
Credits: 3.

EDSP 317 - Dsgn & Eval of Ed/Sev Handcpd

Students analyze, adapt curricula for severely disabled, utilizing knowledge of normal, abnormal motor development, feeding techniques, adaptive, prosthetic devices, medial aspects, parent professional partnership, socialization, normalization, legal aspects. Prerequisite: Instructor permission.
Credits: 3.

EDSP 319 - Intern Sp Personnel in Spec Ed

Students will undertake an approved internship in an Prerequisite: Instructor permission.
Credits: 1-6.

EDSP 320 - Lab Exp:Ed Prgmng/Sev Handcppd

Students identify, evaluate severely disabled learners, demonstrate competency in handling, positioning, feeding. Current skill levels assessed, educational programs designed, including objectives, teaching/learning procedures, evaluation, measurement. Prerequisite: Master's degree or equivalent; Instructor permission.
Credits: 3.

EDSP 322 - Intern: Triadic Model Consult

Competency-based instruction in oral and written communication, consultation, and workshop level training is provided. Students apply the consultation model in an educational setting. Prerequisite: EDSP 310, EDSP 312, or Instructor permission.
Credits: 1-6.

EDSP 323 - Intern: Systems Development

Competency-based instruction in planning for system level development and

change. Students apply systems theory in an educational setting. Prerequisite: EDSP 310, EDSP 312, or Instructor permission.
Credits: 1-6.

EDSP 380 - Professional Problems in Educ
analysis of the literature and practice in a given area.
Credits: 3.

EDSP 382 - Teaching Internship
Experiences.
Credits: 3-8.

EDSP 384 - Intern: Course Dev & Implement
Instruction in developing competency-based courses in special education for inservice teacher training. Practicum involves team teaching with University special education faculty. Prerequisite: Certification as a Consulting Teacher/Learning Specialist and Instructor permission.
Credits: 6.

EDSP 385 - Intern: Adv Syst Dev & Mgmt
Competency-based instruction in developing and adapting technological programs for advanced system-level change. Prerequisite: EDSP 319 for six hours; Instructor permission.
Credits: 3-6.

EDSP 386 - Intern:Mgmt Lrng Env for Hdcpd
Implementation of data-based individualized education in one-to-one, small group, and large group instruction for severely disabled student(s) in special or regular classrooms. Prerequisite: EDSP 217, EDSP 290, EDSP 228 or Instructor permission.
Credits: 1-6.

EDSP 387 - Collaborative Consultation
Adult development and group dynamics theory provide the knowledge base for collaborating with parents and teachers to meet the diverse needs of students with disabilities. Cross-listed with: EDLP 387, EDSS 387.
Credits: 3.

EDSP 391 - Master's Thesis Research
Thesis topic must be approved by a faculty committee.
Credits: 1-6.

EDSP 397 - Problems in Education
Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 1-6.

Courses in Education

EDSS 001 - Schooling, Learning & Society
Introduction to issues and problems in American education: schools and learning, professional careers, individuals in systems, characteristics of learners. Required readings and papers.
Credits: 3.

EDSS 010 - Conquering College
Transition course for students with disabilities. Students study disability issues, law, self-advocacy, and learn skills to compensate for their specific disability.
Prerequisite: Permission of instructor.
Credits: 1.

EDSS 011 - Race and Culture
Introduction to issues of diversity, multiculturalism and in our country as a whole. and cultural pluralism in our different communities
Credits: 1.

EDSS 012 - Race&Culture Contemp Issues
Gives an expanded introduction to US social justice issues. Forms of discrimination that shape US culture explored and skills in self-reflection and critical analysis developed.
Credits: 1.

EDSS 055 - Special Topics
Credits: 1-6.

EDSS 195 - Intermediate Special Topics
Topics vary. See Schedule of Courses for specific titles.
Credits: 1-6.

EDSS 196 - Intermediate Special Topics
Topics vary. See Schedule of Courses for specific titles.
Credits: 1-6.

EDSS 197 - Readings & Research
Credits: 1-4.

EDSS 200 - Contemporary Issues
Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite:

Twelve hours in Education and related areas.
Credits: 0-6.

EDSS 211 - Educational Measurements
Topics include validity, reliability, principles of test construction, item analysis, and analysis of standardized tests as they apply to the classroom. Prerequisite: Twelve hours in education and related areas. The essential principles of measurement in education.
Credits: 3.

EDSS 215 - The Gifted Child
Credits: 3.

EDSS 238 - Teaching W/Global Perspective
Approaches to teaching global and multicultural issues:
Credits: 3.

EDSS 239 - S.L.I.P. Seminar
Professional education course designed to facilitate student's integration of academic, social, personal, and career objectives through seminar or project syllabus method of support for internship experience in the standing. UG only.
Credits: 1-12.

EDSS 245 - Microcomp Appl in Education
For elementary, secondary educators with experience in simple programming. Design of instructional procedures, integrating computers into school curriculum. Use of computer software to teach basic skills, reasoning, thinking skills. Prerequisite: CS 003 or equivalent; Instructor permission.
Credits: 3.

EDSS 248 - Educational Media
Modern instructional aids, theory and practice, educational media related to psychology of teaching and learning. Prerequisite: Twelve hours in Education and related areas.
Credits: 3.

EDSS 261 - Current Dir:Curric&Instruction
Current trends, issues, literature, programs, and organizational activities in fields of curriculum and instruction emphasizing areas of individual concern. Focus on elementary and secondary school levels. Prerequisite: Twelve credits in education or equivalent.
Credits: 3.

EDSS 295 - Laboratory Exp in Education
Supervised field work designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.
Credits: 0-6.

EDSS 309 - Interdisciplinary Seminar
Introduction to interdisciplinary study; the field of policy analysis and social change. Core academic experience for Interdisciplinary Majors. Prerequisite: Interdisciplinary majors; others by Instructor permission.
Credits: 3.

EDSS 313 - Stat Meth Ed & Social Services

Basic concepts of descriptive and inferential statistics. Topics: frequency distributions; measures of central tendency, dispersion; correlation, hypothesis testing. Application of concepts to educational situations.
Credits: 3.

EDSS 319 - Internship

Students will undertake an approved internship in an institution which reflects the particular area of interest and needs of the student. Prerequisite: Instructor permission.
Credits: 1-6.

EDSS 321 - School Improvement:Thry & Prac

Analysis of research and practices pertinent to improvement of American schools. Student assignments include synthesis papers and site-specific research projects derived from course studies. Prerequisite: Twelve hours of Graduate study in education.
Credits: 4-6.

EDSS 333 - Curr Concepts, Planning & Dev

Overview of conceptions of curriculum for elementary and secondary education; examination of contemporary curriculum trends, issues; processes for initiating, planning, developing curriculum activities and programs. Prerequisite: Twelve hours of education or Instructor permission.
Credits: 3.

EDSS 336 - Professional Writing

Problems in writing faced by professionals in educational and human service settings. Students write reports, critiques, reviews; analyze examples of published work; receive detailed critiques of their work.
Credits: 3.

EDSS 343 - The Study of Teaching

Study of the art and science with emphasis on students' own teaching. Current research on teaching and self-study are major foci. Prerequisite: Twelve hours of education; teaching experience.
Credits: 3.

EDSS 349 - Quasi-Experiment in Ed & SS

Quasi-experimental designs are analyzed, compared, and contrasted with "true experiments." Strategies for addressing threats to the validity of quasi-experiments are studied. Design exemplars are evaluated. Prerequisite: EDSS 313, PSYC 340, STAT 211, or equivalent.
Credits: 3.

EDSS 363 - Sem:Anyl of Curr & Instruction

A case study analysis of the design, implementation, and evaluation of selected curricular and instructional improvements. Prerequisite: Ed.D. students have priority.
Credits: 3.

EDSS 380 - Professional Problems in Ed

Designed to cover selected educational problems in depth. analysis of the literature and practice in a given area. The major emphasis will be on intensive and critical

Credits: 3.

EDSS 382 - Teaching Internship

Supervised teaching experiences on a full-time basis, with related seminars in teaching subject. Prerequisite: Permission of coordinator of Professional Laboratory Experiences.

Credits: 3-12.

EDSS 387 - Collaborative Consultation

Adult development and group dynamics theory provide the knowledge base for collaborating with parents and teachers to meet the diverse needs of students with disabilities. Cross-listed with: EDSP 387.

Credits: 3.

EDSS 391 - Master's Thesis Research

Thesis topic must be approved by a faculty committee.

Credits: 1-6.

EDSS 397 - Problems in Education

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.

Credits: 1-6.

Postbaccalaureate Teacher Preparation Program

College: Education and Social Services

Overview

The Postbaccalaureate Teacher Preparation Program is designed for individuals who have a bachelor's degree from an accredited four-year institution and who want to become licensed to teach in Vermont. The basic program fulfills the professional education requirements for state licensure. Areas and levels of licensure include:

- PreK-Grade 3: Early Childhood
- Grades K-12: Art, Music, Physical Education
- Grades K-6: Elementary
- Grades 5-8: Middle-Level
- Grades 7-12: Secondary [English, Foreign Language (French, German, Latin, and Spanish), Mathematics, Science (Animal Sciences*, Biological Science, Chemistry, Earth Science, and Physics), Social Studies (Anthropology, Economics, Geography, History, Political Science, and Sociology]
- Grades 7-12: Family and Consumer Sciences

* Animal Sciences is an alternate route for Biology Endorsement.

Admissions Requirements

Applicants to the Postbaccalaureate (Postbac) Teacher Preparation Program must meet the following entrance criteria:

1. Hold a bachelor's degree from an accredited institution of higher education.
2. Possess a general education background based on those studies known as liberal arts which embrace the broad areas of social and behavioral sciences, mathematics, biological and physical sciences, the humanities, and the arts.
3. Demonstrate a commitment to the teaching profession.
4. Have a minimum overall GPA of 2.5 in undergraduate course work.
5. For elementary candidates: Previous course work must include 30 semester hours in a single liberal arts discipline.

6. For middle-level candidates: Previous course work must include two approved areas of concentration, with 18 credits in each.
7. For secondary candidates: Previous course work must include a minimum of 30 semester hours with a minimum GPA of 2.75 in one of the academic areas to meet Vermont state licensure requirements for the major academic concentration.

Middle Level and Secondary Education also have a master's degree option offered jointly by the College of Education and Social Services and the Graduate College:

Secondary Majors: Biological Science, Chemistry, Earth Science, English, French, Geography, German, History, Latin, Mathematics, Physics, Spanish.
Secondary Broad Field Majors: Anthropology, Biological Science, Economics, Geography, History, Physical Science, Political Science, and Sociology.
Middle Level students are required to have at least 18 credit hours in each of two disciplines.

The Post-Baccalaureate curriculum includes both undergraduate and graduate courses. Nine graduate credits may apply toward the M. Ed. degree at UVM, contingent on acceptance into the Graduate College.

The deadline for applications to the graduate licensure program in Secondary Education is April 1 for the next academic year. Course work begins during the summer or fall, depending upon the area of licensure. Applications are accepted and considered only once each year with updated informational materials and application forms available in January. Requests for further information about the Secondary Education PBTP Program and application forms may be obtained by contacting the PBTP Coordinator, Secondary Education Program, 405 Waterman Building.

Applications for qualified applicants for the Elementary Education Postbaccalaureate Program are reviewed on an ongoing basis. Acceptance to begin in a given semester is based on availability of courses and placements at field sites. Requests for further information about the PBTP Elementary Education Certification Program and application forms may be obtained by contacting the Elementary Education PBTP Coordinator, Elementary Education Program, 533 Waterman Building, (802) 656-3356.

Certificate of Advanced Study in Educational Leadership (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Department(s): Education

Overview

A Certificate of Advanced Study (sixth-year certificate), a 30- to 36-graduate-credit hour program beyond the master's degree, is offered in Educational Leadership.

The program is designed to prepare administrators and planners for public schools, educational and social agencies, and middle management positions in higher education.

Certificate of Advanced Study in Special Education (Sixth-Year, Post-Master's Certificate)

College: Education and Social Services
Departments: Education, Integrated Professional Studies

Overview

The Program in Special Education offers the Certificate of Advanced Study to students with appropriate master's degrees in the following areas: consulting teacher/learning specialist, intensive special education and literacy and special education. A minimum of 30 credit hours of course work is required.

Curriculum and Instruction (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Curriculum and Instruction master's program is designed to develop leadership in such educational settings as teaching, curriculum theory, curriculum development, and related areas of research for elementary and secondary public and private school settings. Areas of focus within the M. Ed., in addition to those described in detail below, include elementary or secondary education, information technology, and health/physical education. The program is also appropriate for those with instructional roles in human services agencies.

Programs are developed to provide a comprehensive background in fields basic to instruction and curriculum development as well as the application of that knowledge to a specialized field. They include courses aimed at the examination and improvement of instructional practices in elementary and secondary schools, and understanding of curriculum theory and the application of curriculum development. Opportunities for independent study and research are encouraged in all specializations.

Inquiries regarding these programs should be addressed to Barbara Kleptz.

Within Curriculum and Instruction, the Licensure Master of Education program for secondary teachers is designed for those students who aspire to earn both a master's degree and a license to teach in public secondary schools. The program particularly welcomes students from UVM and northeastern colleges and universities majoring in arts and sciences, agriculture and natural resources who have completed majors in humanities, the arts, social sciences, science and mathematics. Students will become licensed to teach in grades seven through twelve in one academic year and two summers. With additional study, an endorsement for the middle grades may be earned.

UVM students who have completed their third year of study for a bachelor's degree may apply to the Accelerated Licensure Master of Education program. These students, when accepted, may complete nine semester hours, six of which may be counted towards the

minimum requirements for the master's degree. Application forms and further information may be obtained from the Department of Education. Inquiries regarding this program should be addressed to Fran Keppler.

General Requirements

- Graduate (Master's)
- Education Department (Master of Education Degree)

Specific Requirements

Work at the graduate level draws upon other divisions of the University, thus enabling the College to develop strong programs of professional education which include academic offerings in the various teaching fields in elementary and secondary education. Degree concentrations, in addition to those listed below, can be developed on an interdisciplinary basis responding to student strengths and needs.

Courses in professional education include: 207, 209, 211, 217, 218, 225, 226, 227, 228, 241, 244, 245, 248, 256, 257, 259, 261, 270, 271, 321, 333, and 343.

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Curriculum and Instruction: Licensure Master of Education Program for Secondary Education (M. Ed.) Accelerated Master's Degree Option (B. S. / M. Ed.)

College: Graduate College
Department(s): Education

Within Curriculum and Instruction, the **Licensure Master of Education program for secondary teachers** is designed for those students who aspire to earn both a master's degree and a license to teach in public secondary schools. The program particularly welcomes students from UVM and northeastern colleges and universities majoring in arts and sciences, agriculture and natural resources who have completed majors in social sciences, science, mathematics, etc. Students will prepare for licensure to teach in grades seven through twelve in one academic year and two summers. With additional study, an **endorsement for the middle grades** may be earned.

Accelerated Licensure Master of Education

UVM students who are in their third year of study for a Bachelor's degree may apply to the Accelerated Licensure Master of Education program. These students, when accepted, may complete nine semester hours, six of which may be counted towards the minimum requirements for the Master's degree. Requests for further information and application forms may be obtained by contacting the Secondary Education Program Coordinator, 405A Waterman Building, (802) 656-1411. Qualified candidates would be studying in a major in an approved licensing area.

Inquiries regarding these programs should be addressed to the Secondary Education support person at (802) 656-1411.

General Requirements

- Graduate (Master's)
- Education Department (Master of Education)

Specific Requirements

- Curriculum and Instruction (Master of Education)

Educational Leadership (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Educational Leadership program is designed to prepare leaders for public schools, educational and social agencies, and middle management positions in higher education.

Inquiries regarding this program should be addressed to Professor Judith A. Aiken.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

The M. Ed. program for licensure usually requires 30 to 36 credit hours of courses including seminars, internships, and research experiences.

The Certificate of Advanced Study (C.A.S.) Program requires 30 credit hours of study beyond the M. Ed. requirements.

Courses with an administration/planning focus include: 264, 266, 268, 280, 332, 333, 334, 335, 336, 337, 353, 354, 355, 356, and 358.

Educational Studies (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The Foundations of Education faculty offer graduate courses in foundations of education and a master's degree in Educational Studies. The degree program is a research and scholarship based program for students from a diversity of educational fields including instruction, administration, policymaking and analysis, social services, state departments of education, allied educational professions (counselors, health care personnel, journalists), school boards, and international education. Students study past, present, and future educational problems and practices from the perspectives of the several disciplines; and they make cross disciplinary connections to discover the themes common to all the disciplines as well as to the theory and practice of education. Students study the process of making professional judgments about educational practice that include ethical, political, historical, literary, cultural, and social considerations. They strive to understand more profoundly not only the "what" and the "how" of the education professions, but the "why" as well.

Students in this program learn how to become competent scholars and researchers in the field of education by knowing the pertinent literature, staying abreast of the latest policy developments in the field, and communicating this information effectively to various audiences through competent, discipline-based research, publication, and teaching. Students also strive to acquire the values, understandings, and skills necessary to advance a conception of the good society which includes respect for human dignity, a belief in human rights, and an ethic of service to others.

Inquiries regarding this program should be addressed to Professor David Shiman.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

The master's degree in Educational Studies is tailored to the intellectual and professional interests of the student. Students plan their course of study with a faculty advisor in the program. Students are urged to elect courses and organize their research around problems of interest to them.

Courses applicable to the Educational Studies Program include: 204, 205, 206, 209, 255, 302, 303, 314, 322, 347, 352, and 354.

Reading and Language Arts (M. Ed.)

College: Graduate College
Department(s): Education

Overview

The purpose of this program area is to prepare teachers and specialists in the field of reading. Classroom teachers, reading specialists or consultants, supervisors, administrators are responsible for developing programs which will enable every student to attain their maximum proficiency in the use of reading and language. To meet this end, several courses have been devised which focus on classroom reading instruction and reading difficulties. Through the Reading Clinic, students also have opportunities for laboratory experiences as well as for research and study in reading, literature, and language arts.

Inquiries regarding this program should be addressed to Professor Marjorie Lipson.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

Courses in reading and language arts include: 222, 223, 234, 246, 375, 376, 378, and 379. Various independent study and special topic courses are also available.

Special Education (M. Ed.)

College: Graduate College
Departments: Education, Integrated Professional Studies

Overview

This master's program is designed to prepare students to collaborate with families, educators, and other professionals and service agencies in the development, implementation and evaluation of instructional programs and supports for learners with disabilities in integrated school and community settings. The program requires that students have appropriate professional experience.

Three primary areas of emphasis within the program are Consulting Teacher/Learning Specialist, Essential Early Education and Intensive Special Education. All three areas have State of Vermont approved licensure endorsement tracks, and successful completion leads to a licensure endorsement for special education in Vermont.

- **Consulting Teacher/Learning Specialist:** Students are prepared to collaborate with families, educators and other professionals in the design, implementation and evaluation of instruction for learners with mild to moderate disabilities in integrated regular elementary, middle or high school classrooms.
- **Literacy and Special Education:** The purpose of this concentration is to prepare elementary and middle level educators in the field of reading and special education. These educators help promote student success both through their specific knowledge of assessment, planning and remediation, as well as their ability to work efficiently with teams of students, parents and teachers to collaboratively plan and deliver an integrated system of services. Graduates of the program earn the Master's of Education Degree or a Certificate of Advanced Study and are recommended for professional licensure and endorsement as either a reading teacher/coordinator or a consulting teacher/learning specialist in the State of Vermont. Inquiries regarding this concentration should be addressed to Professors Marjorie Lipson or George Salembier.

In addition, a Certificate of Advanced Study (sixth-year certificate) with a usual total of 36 credit hour program may be arranged for applicants who have already earned a Master's

degree.

Additional information on the above should be requested from the Program Coordinator.

General Requirements

- Graduate (Master's)
- Education (Master of Education)

Specific Requirements

Specific courses are required for each area (Consulting Teacher/Learning Specialist, Essential Early Education or Intensive Special Education), as well as a full year internship. Students seeking admission to a licensure endorsement track must meet additional requirements. Contact the Special Education Program for assistance with questions on admissions requirements.
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Educational Leadership and Policy Studies (Ed. D.)

College: Graduate College
Department(s): Education

Overview

A Doctor of Education (Ed. D.) degree is offered in Educational Leadership and Policy Studies. This is an applied research based program for professionals serving in educational management positions in schools and school-related organizations, e.g. state departments of education, professional associations, higher education, and human service agencies.
Program emphases include: the design and implementation of educational research; policy studies; adaptation of theoretical constructs and models related to leadership and change in educational and social service settings; knowledge and skills in interorganizational relationships; budget and strategic planning and program evaluation.

This program has been designed to respond to the expanding demands placed on leaders in educational and human service organizations where they are increasingly expected to design and supervise local research and varied evaluative studies interpret and apply recent national research findings; analyze and apply governmental regulations and court decisions; develop organizational responses to emerging social expectations; organize and lead staff development programs; understand and apply broad-based economic principles and social and fiscal policy; develop and manage budgets; assess and respond to the psychological needs of educational consumers; employ effective interpersonal management and decision-making skills.

Specific Requirements

Prerequisites for Admission to Graduate Studies

Applicants must possess a master's degree or equivalent, from an accredited institution and a cumulative grade-point average of 3.00 for previous graduate study. Other requirements include a representative scholarly writing sample and a resume. Students applying for graduate fellowships and/or assistantships are required to demonstrate satisfactory scores on the Graduate Record Examination (GRE).

Students admitted to graduate studies must complete successfully a core of study consisting of courses in research, foundational, and policy studies, and organizational change and leadership. Upon such completion and submission of a qualifying paper, students will be considered for candidacy for the degree. Students must also pass a written comprehensive examination prior to the award of the degree of Doctor of Education.

Prerequisites for Acceptance to Candidacy for the Degree of Doctor of Education

Satisfactory completion of all core requirements and the qualifying paper will satisfy the prerequisites for acceptance to candidacy.

Requirements for the degree of Doctor of Education include a minimum of 56 semester credit hours of doctoral studies completed at UVM following formal admission to the program with the following distribution:

- 15 semester hours in the core courses (minimum)
- 21 semester hours general distribution (minimum)
- Dissertation Research - 20 semester hours (minimum).

All course credit hours beyond the core are distributed in educational leadership, research, critical perspectives, organizational change and selected specialty content areas.

Transfer of Credit

A maximum of nine (9) semester hours may be accepted in transfer from an accredited graduate program. Transfer credit may be completed prior to admission to the Doctor of Education Program provided that the credit is approved by the student's Studies Committee and that the credit conforms to all other Graduate College requirements.

Residency Requirement

The residency requirement for the Doctor of Education (Ed. D.) degree consists of the following:

1. Completion of the five core courses (15 semester hours), and
2. Completion of 12 semester credit hours of coursework during two contiguous semesters beyond the core.

For further requirements concerning Studies Committees, Research and Dissertation, and the Dissertation Defense Examination Committee, refer to General Requirements for the Degree of Doctor of Philosophy.

Application deadline is May 1.

Detailed information on the course of study is available from Program Director, Susan

Hasazi, Professor, The University of Vermont, Office of the Dean, College of Education and Social Services, 311 Waterman Bldg., Burlington, VT 05405-0160.

Academics

Catalogue 2003-04

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Departments and Programs

Electrical and Computer Engineering Department

Colleges: Engineering and Mathematics, Graduate College

Faculty: Electrical and Computer Engineering

Courses: Electrical Engineering (EE)

Contact Information:

University of Vermont
Electrical and Computer Engineering Department
301 Votey Building
33 Colchester Avenue
Burlington, VT 05405-0156

Phone: (802) 656-3331
Fax: (802) 656-3358
Email: eeinfo@emba.uvm.edu
Web Site: http://www.emba.uvm.edu/ece/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Biomedical Engineering
    - Electrical Engineering
  - Doctor of Philosophy (Ph. D.)
    - Electrical Engineering
- Concurrent Degree Programs
  - Electrical Engineering/Materials Science (B. S. / M. S.)

Overview

Electrical and computer engineers create all the technological wonders that use electricity for their operation. They design the latest silicon chips used in computers, stereos, and cellular telephones. They create electronic circuits that control fuel flow in an electronic ignition or that keep wheels from skidding in an antilock braking system. Some electrical engineers are involved with the generation and distribution of electrical power, others concentrate on testing new electronic designs and products, such as communication networks. Some focus on programming computers to perform complex tasks, such as developing solutions to problems facing other engineers.

Please view our mission statement and objectives at:
http://www.emba.uvm.edu/ece/mission.htm

Courses in Electrical Engineering

EE 003 - Linear Circuit Analysis I

Circuit elements, laws, and analysis. Network principles and theorems. Energy-storage elements. Magnetically coupled circuits. Transient analysis and time constants. Prerequisite: MATH 022.

Credits: 3.

EE 004 - Linear Circuit Analysis II

Sinusoids and phasors. Sinusoidal steady-state response and power. Complex frequency and network functions. Resonance. Laplace transform techniques. Fourier series and Fourier transforms. Prerequisite: EE 003. Co-requisite: MATH 271.

Credits: 3.

EE 081 - Linear Circuits Laboratory I

Electrical instruments; oscilloscope measurements; resistive, capacitive, and inductive components; applications of operational amplifiers; digital-to-analog converters; transient response of RL and RC circuits. Co-requisite: EE 003.

Credits: 2.

EE 082 - Linear Circuits Laboratory II

Transients in RLC circuits; steady state sinusoidal response in RLC circuits; real and reactive power in RLC circuits; operational amplifier active filters. Prerequisite: EE 081. Co-requisite: EE 004.

Credits: 2.

EE 094 - Bioengr Appl Phys Prin II

Application of principles of electromagnetism and electrical engineering to understanding the structure and function of the human body and to diagnostic and therapeutic instrumentation. Not offered 2001-2002.

Credits: 4.

EE 095 - Special Topics

Prerequisite: Departmental permission.

Credits: 0-3.

EE 100 - Electrical Engr Concepts

Introduction to analog and digital electrical measurements and circuits; introduction to microprocessors. No credit for EE majors. Prerequisite: Physics 42

with 22 or 125.
Credits: 4.

EE 101 - Digital Control w/Embedded Sys
Applications of single-chip microcomputers as embedded systems for data acquisition/real time control. Assembly language; parallel and serial ports; timers; counters; A/D and D/A. Laboratory. Prerequisite: EE 100.
Credits: 4.

EE 113 - Electromech Energy Gen & Dist
Principles basic to electromechanical energy conversion devices and systems. Energy interchange among magnetic and mechanical circuit elements. Continuous energy conversion in ideal and practical rotating machines. Prerequisite: 141. Alternate years.
Credits: 3.

EE 120 - Electronics I
Theory of operation of diodes and MOS transistors. DC and transient analysis using diodes and transistors. NMOS and CMOS logic circuits and memory cells. Circuit simulation software. Prerequisite: EE 004.
Credits: 3.

EE 121 - Electronics II
Bipolar transistor circuits. DC and high frequency amplifier design using MOS and bipolar transistors. Feedback, oscillators, and stability criteria. Operational amplifiers and switched capacitor filters. Prerequisite: EE 120.
Credits: 3.

EE 131 - Fundamentals of Digital Design
Combinational logic simplification and design, MSI and PLD components, synchronous and asynchronous sequential design, algorithmic state machines, registers, counters, memory units, introduction to hardware design languages. Prerequisite: Sophomore standing.
Credits: 3.

EE 134 - Fund of Microcomp Based Syst
In-depth study and applications of a modern microprocessor in embedded digital systems for real-time control and data acquisition. Assembly language and the design of interfaces. Prerequisites: 3 or 100, and Computer Science 16 or 21; EE 131 and Computer Science 101 desirable.
Credits: 4.

EE 141 - Electromagnetic Field Theory I
Basic laws and elementary applications of electromagnetic fields; vector analysis, steady-state electric and magnetic fields, boundary value problems, transmission lines. No credit may be received for both EE 140 (offered in prior years) and the current EE 141. Prerequisites: EE 4, Math. 271, Physics 42.
Credits: 3.

EE 142 - Electromagnetic Field Thry II
fields, waves and radiation; Maxwell's equations, Poynting's theorem, plane wave propagation, wave guides, antennas. Prerequisite: EE 141.
Credits: 3.

EE 146 - Wave and Diffusion Analogies

Not offered 2001-02.
Credits: 3.

EE 163 - Solid State Phys Electronics I
PHYS 022; MATH 271.
Credits: 4.

EE 164 - Solid St Phys Electronics II
Theory of operation of bipolar junction transistors. Heterojunction transistors. Compound and alloy semiconductor materials and devices. Dielectric and magnetic materials and devices. Prerequisite: EE 163.
Credits: 3.

EE 171 - Signals & Systems
Discrete and continuous-time signals and systems. Input/output descriptions and analysis. Convolution, Fourier analysis and Laplace transforms, Sampling and z-transforms. Application to electrical engineering design problems. Prerequisite: EE 004.
Credits: 4.

EE 174 - Intro to Communication Systems
Signal analysis. Wireless communication including modulation and link budget analysis. Fundamentals of digital communications including PCM, channel coding, pulse shaping and multiplexing. Modern systems survey. Prerequisite: EE 171.
Credits: 3.

EE 183 - Electronics Laboratory I
Characteristics and applications of diodes and MOSFETs; CMOS inverters and logic characterization; applications of operational amplifiers. Co-requisite: EE 120.
Credits: 2.

EE 184 - Electronics Laboratory II
Characteristics and applications of bipolar junction transistors; medium frequency and differential amplifiers; operational amplifier output stages; analog and digital
Credits: 2.

EE 185 - Systems and Applications Lab
AC and DC machines; power transformers; electromagnetic waves on transmission lines; digital logic design; design project. Pre/co-requisites: Senior standing in Electrical Engineering.
Credits: 1.

EE 186 - Telecommunications Lab
Telecommunication system measurement techniques. Spectral analysis, distortion, analog and digital modulation, eye patterns, signal constellations and bit error rate. Team project. Prerequisite: Senior standing in Electrical Engineering. Co-requisite: EE 174.
Credits: 1.

EE 187 - Senior Project
Experimental or theoretical design project conducted under faculty supervision.
Credits: 1-4.

EE 189 - Digital Signal Processing Lab
PC-based evaluation model and associated development tools. High-level graphical and interactive design tools. Application in real-time implementation of

signal processing algorithms. Same lab as in EE 275. May not be taken after EE 275. Prerequisite: EE 171.
Credits: 1.

EE 193 - College Honors
Credits: 3-6.

EE 194 - College Honors
Credits: 3-6.

EE 195 - Special Topics
Prerequisite: Departmental permission.
Credits: 1-18.

EE 201 - Linear System Theory
Basic concepts in system theory; linear algebra; state space representation; stability; controllability and observability. Applications of these concepts. Prerequisites: EE 171 or Graduate standing.
Credits: 3.

EE 209 - Transient Phenomena
criterion and two-dimensional field problems. Prerequisite: Study of complex variable basis of Laplace and Fourier Transforms; applications to transient behavior of lumped and distributed parameter systems, root locus. Nyquist 4. Not offered 2001-02.
Credits: 3.

EE 210 - Introduction Control Systems
Analysis and design of continuous and discrete-time control systems; stability, signal flow, performance criteria, classical and state variable methods, simulation design tools, computer-based realizations. Prerequisite: 171.
Credits: 3.

EE 221 - Prin VLSI Digital Circuit Des
Design of VLSI circuits using a modular approach with industrial grade software: schematic capture; circuit design languages (HDL); full-custom layouts; mixed signals; synthesis. Laboratory. Pre/corequisites: EE 131, 163,121.
Credits: 3.

EE 222 - Prin VLSI Analog Cir Design
The design, layout, and simulation of VLSI analog circuits. Emphasis on small signal models and circuits used in operational amplifiers. Prerequisites: EE 163, EE 121, Instructor permission.
Credits: 3.

EE 224 - Principles VLSI System Design
Survey of VLSI design. Architecture and partitioning of functions. Design for testability. Simulation including timing. Synthesis. Design verification; manufacturing interface. Required team project and report. Prerequisites: EE 221 or Instructor permission.
Credits: 3.

EE 227 - Biomed Measmnts Instrum & Sys
Biomedical and clinical engineering in research, industry, and health care institutions. Measurement techniques and instrumentation. Integrated biomedical monitoring, diagnostic, and therapeutic systems. Co-requisites: EE 121, ANPS

020; Instructor permission. Alternate years.
Credits: 3.

EE 228 - Sensors
Sensor design, interrogation, and implementation. A wide variety of electrical, electronic, optical, mechanic, and cross-disciplinary devices. System designs, measurement techniques, and methodologies. Prerequisites: Senior standing in Engineering or Physics.
Credits: 3.

EE 231 - Digital Computer Design
Hardware organization and realization, hard-wired and microprogrammed control units, interrupt and I/O systems. Hardware design language introduced and used for computer design. Prerequisites: EE 131, either EE 134 or CS 101.
Credits: 3.

EE 232 - Digital Computer Design II
Memory designs, error control, high-speed addition, multiplication, and division, floating-point arithmetic, cpu enhancements, testing and design for testability. Prerequisites: EE 231.
Credits: 3.

EE 233 - Microprocessor Systems & Appl
Basic principles of mini/microcomputers; A/D; D/A; channels, magnetic devices, display devices, mechanical devices; interface designs of analog systems to mini/microcomputers; principles of microprogramming; bit-slice-based microcomputers. Prerequisites: Department permission; CS 101 desirable.
Credits: 4.

EE 241 - Electromagnetic Theory I
Maxwell-Lorentz theory emphasizing uniqueness and conservation laws. Potential theory with applications to boundary value problems, Green's function techniques, multipole expansions, and numerical methods. Prerequisites: 141; Math. 272 recommended.
Credits: 3.

EE 242 - Electromagnetic Theory II
Macroscopic Maxwell theory, boundary conditions and dispersion relations for spatio-temporal fields. Electromagnetic wave propagation, reflection and transmission, guided waves, radiation, scattering and diffraction phenomena. Prerequisites: EE 241 or Instructor permission.
Credits: 3.

EE 245 - Lasers&Electro-Optical Devices
A theoretical description of light-matter interactions in photon emitting resonant cavities. A practical understanding of laser design and operation. Prerequisite: 142.
Credits: 3.

EE 246 - Engineering Optics
Applications of optics to the solution of engineering problems. Optical signal processing, fiber optic sensors, integrated optics. Prerequisites: EE 245 or Instructor permission.
Credits: 3.

EE 247 - Physical Optics I

Fundamental properties of the optical field. Molecular optics and the Ewald-Oseen extinction theorem. Foundations of geometrical optics. Diffraction and aberration theory. Prerequisites: 142, or Physics 214.

Credits: 3.

EE 248 - Physical Optics II

Partially coherent light and the Van-Cittert Zernike theorem. Rigorous diffraction theory, the optics of metals and crystal optics. Prerequisite: EE 247.

Credits: 3.

EE 250 - Test Engineering

Parametric, structural, functional, characterization and stress testing of components and subsystems. Test methods, strategies, planning, and economics. Test equipment hardware and software. Prerequisites: 121, 131. Alternate years.

Credits: 3.

EE 251 - Digital Syst Testing & Design

Circuit failures, fault models, testing and test pattern generation, logic and fault simulation, design for testability, scan design, test interfaces, design for built-in self-test. Prerequisite: 131. Alternate years.

Credits: 3.

EE 261 - Solid State Mat & Devices I

Energy band theory, effective mass, band structure and electronic properties of semiconductors. Transport of electrons and holes in bulk materials and across interfaces. Homojunctions, heterojunctions, and Schottky barriers. Prerequisite: EE 163.

Credits: 3.

EE 262 - Solid State Mats & Devices II

Multijunction and interface devices. Heterostructure and optical devices. Dielectric and optical properties solids. High-frequency and high-speed devices. Prerequisite: EE 261.

Credits: 3.

EE 266 - Science & Tech Integrated Cir

Science and technology of integrated circuit fabrication. Interaction of processing with material properties, electrical performance, economy, and manufacturability. Prerequisites: EE 163 or EE 261; concurrent registration in EE 164 or EE 262.

Credits: 3.

EE 270 - Prob Thry & Stochastic Process

(Same as Statistics 270.) Probability theory, random variables, and stochastic processes. Response of linear systems to random inputs. Applications in electrical engineering. Prerequisite: 171 or equivalent.

Credits: 3.

EE 271 - Sig Proc:Det & Est

(Same as Statistics 271.) Foundations of linear and nonlinear least squares estimation, smoothing and prediction, computational aspects, Kalman filtering, nonlinear filtering, parameter identification, and adaptive filtering. Prerequisites: 201, 270.

Credits: 3.

EE 272 - Information Theory

Introduction to probability concepts of information theory; entropy of probability models; theoretical derivations of channel capacity; coding methods and theorems, sampling theorems. Prerequisite: Statistics 151. Not offered 2001-02.
Credits: 3.

EE 273 - Digital Communications

Digital modulation/demodulation methods and BER performance; source entropy and channel capacity; optimal detection; convolutional codes and decoding algorithms. Pre/corequisites: EE 174 and EE 270 or STAT 151.
Credits: 3.

EE 274 - Intro Wavelets & Filter Banks

and biorthogonal filter banks. Wavelets from filters. Continuous and discrete-time signal processing. Continuous wavelet transform. Series expansion of continuous and discrete-time signals. Perfect reconstruction, orthogonal Prerequisites: 171, or instructor's permission.
Credits: 3.

EE 275 - Digital Signal Processing&Filt

Sampling, aliasing, and windowing. Decimation and Interpolation. FIR and IIR filters. DFT and FFT. Digital simulation and implementation using real-time processors. Prerequisites: 171. Lab same as 189. *Students who have previously taken 189 may enroll in the lecture portion for three credits.
Credits: 4.

EE 276 - Image Processing & Coding

Image enhancement techniques by point and spatial operations. Data compression techniques to include scalar quantization, entropy coding, transform and sub-band coding. Labs on PC hardware; PC and Unix-based software. Prerequisites: 275; 270 recommended.
Credits: 4.

EE 277 - Image Anyl&Pattern Recognition

Image, shape, and texture analysis. Statistical pattern recognition methods. Pattern recognition and computer vision techniques for machine parts recognition and automatic visual inspection. Prerequisite: EE 276.
Credits: 3.

EE 281 - Materials Science Seminar

Presentation and discussion of advanced electrical engineering problems and current developments. Prerequisite: Senior or Graduate Engineering enrollment.
Credits: 1.

EE 282 - Seminar

Credits: 1.

EE 283 - Seminar

Credits: 1.

EE 284 - Seminar

Credits: 1.

EE 285 - Engr Design Anyl & Synthesis

Advanced engineering problem solving, analytical techniques and simulations involving control systems, digital electronics, computer hardware and software;

technical writing and documentation emphasized. Prerequisites: Graduate standing in EE or department permission.
Credits: 3.

EE 295 - Special Topics
Formulation and solution of theoretical and practical problems dealing with electrical circuits, apparatus,
Credits: 3.

EE 310 - Digital Control Systems
Digital control system analysis and design using transform, algebraic, and state space methods. Sampled data systems, stability, quantization effects, sample rate selection, computer-based realization. Prerequisite: EE 210 or Instructor permission.
Credits: 3.

EE 312 - Intro Optimum Control Systems
Optimal control problem formulation and solution; including the calculus of variations, Pontryagin's maximum principle, Hamilton-Jacob theory, dynamic programming, and computational methods. Prerequisite: EE 210.
Credits: 3.

EE 314 - Nonlinear System Theory
Basic nonlinear methods including computational and geometrical techniques for analysis of nonlinear systems. Describing function methods and bifurcation and catastrophe theory. Sensitivity and stability considerations. Prerequisite: EE 201 or MATH 230.
Credits: 3.

EE 315 - Nonlinear System Theory
Basic nonlinear methods including computational and geometrical techniques for analysis of nonlinear systems. Describing function methods and bifurcation and catastrophe theory. Sensitivity and stability considerations. Prerequisite: EE 201 or MATH 230.
Credits: 3.

EE 338 - Semiconductor Dev Model&Simul
Analysis and application of computer models for semiconductor process and device simulation. Strategies for development of device models for circuit simulation. Prerequisite: EE 262; Instructor permission.
Credits: 3.

EE 340 - ST:Electromagnetic Field Thry
For advanced students in the field of electromagnetism. Topics selected from special interests of staff with lectures and readings from current literature.
Credits: 3.

EE 341 - ST:Electromagnetic Field Thry
For advanced students in the field of electromagnetism. Topics selected from special interests of staff with lectures and readings from current literature.
Credits: 3.

EE 352 - Adv Semicond Device Phys & Des
MOSFET, bipolar, and CMOS device parameters, their characterization, and their relation to process technology. Description and use of computer-aided process

and device models. Prerequisite: EE 262. Alternate years. Spring semester.
Credits: 3.

EE 354 - MOS Analog Intergrtd Circ Dsgn

Analysis and design of MOS analog integrated circuits. Each student will design, layout, test, and document an analog integrated circuit using computer-aided-design techniques. Prerequisite: EE 338, EE 339.
Credits: 3.

EE 365 - Optical Properties of Solids

Optical and optoelectronic properties of semiconductors. Applications to photodetectors, solar cells, light emitting diodes and lasers. Prerequisites: 242, 262, Physics 273.
Credits: 3.

EE 366 - Solid State & Semicond Thry I

Energy band theory for electrons and phonons in crystalline solids. Brillouin zones. Conservation laws. Elements of statistical mechanics. Transport properties. Applications to semiconductor electronics. Prerequisite: EE 261, PHYS 273 or CHEM 263.
Credits: 3.

EE 373 - Digital Communication

Source entropy and channel capacity; signal representation; optimal detector for Gaussian channels; digital block/convolutional codes; Viterbi algorithm; real channels. Prerequisites: 174, 270, 373 for 374.
Credits: 3.

EE 378 - St:Stat Comm & Related Fields

Coding for communication or computer systems, pattern recognition and learning machines, artificial intelligence, etc., selected from special interests of staff with lectures and readings from current literature. Prerequisite: Instructor permission.
Credits: 3.

EE 391 - Master's Thesis Research

Credits: 1-18.

EE 395 - Advanced Special Topics

Advanced topics of current interest in electrical engineering. Prerequisite: Instructor permission.
Credits: 1-6.

EE 491 - Doctoral Dissertation Research

Credits: 1-18.

Biomedical Engineering (M. S.)

College: Graduate College
Department(s): Mechanical Engineering, Electrical and Computer Engineering

Overview

The program in Biomedical Engineering is interdisciplinary and offers the Master of Science degree. Graduate students obtain the M. S. degree through a program administered cooperatively by the Mechanical Engineering and Electrical and Computer Engineering departments. The program is directed jointly by Tony S. Keller (Mechanical Engineering), Dryver R. Huston (Mechanical Engineering), and Bruce D. Beynnon (Orthopaedics and Rehabilitation).

Participating faculty with strong commitments to biomedical engineering research and education are from the departments of Civil and Environmental Engineering, Electrical and Computer Engineering, Mathematics and Statistics, Mechanical Engineering, Molecular Physiology and Biophysics, Orthopaedics and Rehabilitation, Physical Therapy, and Physics. The extensive research facilities of the participating faculty and departments are available to all graduate students enrolled in the program, and the program provides the flexibility necessary for students to gain competence in the area of their choice. Research includes: Bioinstrumentation, Biomechanics, Biomedical Imaging, Biomedical Systems and Signal Analysis, Clinical Engineering, Implant Design, Rehabilitation Engineering, Simulation, and Biomathematics.

Students in the program are generally supported by sponsored research projects, participating departments and training grants. Inquiries about current research and funding opportunities should be directed to Laurel Zeno, Vermont Space Grant Consortium, 332B Votey Bldg., Burlington, VT 05405; Phone: (802) 656-1429; Fax: (802) 656-8802.

Research includes: (Absher) speech signal processing, adaptive control systems; (Bates) biomedical signal processing and mathematical modeling applied to the respiratory system; (Berger) structural dynamics in motor proteins during muscle contraction; (Beynnon) sports medicine, ankle, knee shoulder and spine biomechanics, low back pain; (Chesler) effects of mechanical stimuli on vascular physiology and pathology;

(Clark) health care technology planning and management, instrumentation for life sciences research and medical device validation; (Fleming) sports medicine, lower and upper extremity ligament and tendon injuries, biomechanics; (Hamrell) mechanisms of sarcomere function, normal and diseased heart muscle, viral myocarditis; (Haugh) statistical process control and quality improvement, medical biostatistics and clinical trials, orthopaedics and rehabilitation, low back pain, reliability estimation, time series analysis; (Hazard) spine disability risk factors, seating design, continuous passive spinal motion, low back pain; (Henry) motor control of human posture and movement, related to musculoskeletal injuries; (Hitt) mechanics of branching blood flows, microcirculatory hemodynamics, artificial blood; (Huston) whole body vibration, low back pain, electromyography; (Iatridis) soft-tissue and spinal bioengineering; (Irvin) respiratory biomechanics; (Johnson) sports, knee and ski injuries and knee biomechanics; (Keller) spine mechanics, material and structural properties of biologic tissues, orthopaedic implant biomechanics and design, skeletal growth and remodeling; (Krag) normal and degenerative disc biomechanics, spinal instrumentation, spinal disorders; (Lakin) applied mathematics, modeling intracranial pressure dynamics, microgravity effects on human physiology; (Laible) computational biomechanics, analysis of flow and transport modeling in biologic materials; (Low) regulation of smooth muscle contractile proteins; (Maughan) molecular biophysics of muscle contraction; (Stokes) biomechanics of spine and spinal deformity; (Warshaw) smooth muscle physiology, including structure/function relationship of molecular motors; (G. Wu) biomechanics of human postural control and aging, modeling, and instrumentation. (J. Wu) muscle mechanics, molecular mechanics, ultrasonic biosensors, ultrasonic heating and enhanced anti-cancer action.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Students applying for admission to the graduate program must meet the general requirements of admission of The University of Vermont Graduate College. Admission is competitive and students are selected on the basis of their scholastic preparation and intellectual capacity.

The following minimum preparation is recommended:

- Biology, Chemistry: Two semesters each, or four introductory courses in the following subjects - anatomy, biology, biophysics, chemistry, physiology.
- Engineering: Two introductory courses in one or more of the following subjects - biomechanics, mechanics, thermodynamics, electrical engineering, control theory, or fluid mechanics.
- Mathematics: One course past differential equations.
- Physics: Two semesters of physics.

Special arrangements may be made, on an individual basis, for students who are highly prepared in one area, but less well prepared in another.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Completion of any deficient admission requirements.

Minimum Degree Requirements

Candidates for the degree of Master of Science must complete 30 graduate credit hours of an approved program of study, including 18-24 semester credits of graduate-level courses approved by the program faculty and distributed as follows: Physiology and Biophysics (eight credits); engineering subspecialty (electrical, civil, or mechanical engineering), seven-11 credits; physics, mathematics or engineering elective, three credits. In addition, the candidate must present a research thesis (six-12 credits) and pass a final oral examination. Most candidates complete a six-seven credit thesis.

Electrical Engineering (M. S.)

College: Graduate College
Department(s): Electrical andComputer Engineering Department

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates normally have obtained the Bachelor of Science degree in Electrical Engineering prior to application for admission but other applicants are encouraged to consider the program if they have extensive background in mathematics and the basic sciences. In such cases, it may be necessary for a student to complete the entrance qualifications without receiving credit toward graduate studies. The general requirements for admission as outlined under the "Regulations of the Graduate College" must be met. Areas of research expertise are control systems, biomedical engineering, test engineering, machine vision, mechatronics, computer engineering, solid state physical electronics, electromagnetics, information processing, communication theory, semiconductor materials, devices and integrated circuits (VLSI).

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Science

An accredited bachelor's degree in an appropriate field.

Requirements for Advancement to candidacy for the Degree of Master of Science

An accredited bachelor's degree in electrical engineering or equivalent education.

Minimum Degree Requirements

Advanced courses in electrical engineering, physics, computer science, and mathematics (18 to 24) with at least 15 credit hours appropriately distributed in approved areas of study in the Electrical and Computer Engineering Department thesis research (six to 12 hours).

Although a thesis is normally required in the program leading to the M. S. in Electrical Engineering, the thesis may be waived with departmental approval, in favor of additional courses. In such cases, the student will be expected to have considerable professional experience, or to submit high quality technical reports as evidence of professional maturity.

Electrical Engineering (Ph. D.)

College: Graduate College
Department(s): Electrical and Computer Engineering

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates normally have obtained the Bachelor of Science degree in Electrical Engineering prior to application for admission but other applicants are encouraged to consider the program if they have extensive background in mathematics and the basic sciences. In such cases, it may be necessary for a student to complete the entrance qualifications without receiving credit toward graduate studies. The general requirements for admission as outlined under the Regulations of the Graduate College must be met. Areas of research expertise are control systems, biomedical engineering, test engineering, computer engineering, solid state physical electronics, electro-optics, information processing, communication-theory, semiconductor materials, devices and integrated-circuits (VLSI).

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A master's degree in electrical engineering or the equivalent.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of Ph. D. comprehensive examinations.

The majority of students will have completed a core program comprising graduate courses before taking the comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

At least 45 credit hours in courses and seminars and 20 credit hours in dissertation. Four courses are to be chosen from a major area of concentration and two from a minor. The requirements specified under the Policies of the Graduate College must also be met. A total of 75 credit hours is required.

OFFICIAL 2003-04 CATALOGUE SITE

2003-04 Online Catalogue

Departments and Programs

English Department

Colleges: Arts and Sciences, Graduate College, Continuing Education

Faculty: English

Courses: English (ENG)

Contact Information:

University of Vermont
English Department
400 Old Mill
94 University Place
Burlington, VT 05405-0114

Phone: (802)656-3056
Fax: (802)656-3055
E-mail: pfrechet@zoo.uvm.edu
Web Site: http://www.uvm.edu/~english/

Academic Offerings

- Graduate Majors
  - English Literature (M. A.)
  - Teaching English (M. A. T.)

Courses in English

ENG 001 - Written Expression
A course in writing with some selected readings as examples of style and writing strategies.
Credits: 3.

ENG 004 - Engl for International Stdnts
Review of English grammar, practice in expository writing, vocabulary building, and improvement of speaking and listening skills. Prerequisite: Instructor's permission.
Credits: 3.

ENG 005 - First Year Seminar
Students to write in a variety of forms, styles, and genres in response to selected texts of literary or cultural significance. Themes, texts, and writing assignments to vary by section. Prerequisites: First-year standing in College of Arts and Sciences.
Credits: 3.

ENG 006 - First Year Seminar
Students to write in a variety of forms, styles, and genres in response to selected texts of literary or cultural significance. Themes, texts, and writing assignments to vary by section. Prerequisites: First-year standing in College of Arts and Sciences.
Credits: 3.

ENG 011 - Types of Literature
Introduction to fiction, poetry, and drama - past and present, British and American.
Credits: 3.

ENG 012 - Introduction to Drama
Study of the play as a work of literature and as a dramatic experience. Continental, British, and American drama from all ages.
Credits: 3.

ENG 013 - Introduction to Fiction
Exploration of a variety of fictional forms, including the short story, the novella, and the novel.
Credits: 3.

ENG 014 - Introduction to Poetry
Examination of the forms of poetry, past and present, British and American.

Provides a wide variety of perspectives on the poem.
Credits: 3.

ENG 021 - British Literature
Survey of major figures in British literature such as Chaucer, Milton, Swift, Wordsworth, and Woolf.
Credits: 3.

ENG 022 - British Literature
Survey of major figures in British literature such as Chaucer, Milton, Swift, Wordsworth, and Woolf.
Credits: 3.

ENG 023 - American Literature
Survey of major American writers from the beginning of the 19th century to the present, such as Hawthorne, Melville, Dickinson, Twain, Hemingway, and Faulkner.
Credits: 3.

ENG 024 - American Literature
Survey of major American writers from the beginning of the 19th century to the present, such as Hawthorne, Melville, Dickinson, Twain, Hemingway, and Faulkner.
Credits: 3.

ENG 025 - World Literature
writers of the world, to include Virgil, Dante, Goethe, and similar major figures. Students may not take for credit both English 25 and 27; or both English 26 and 28.
Credits: 3.

ENG 026 - World Literature
Survey in comparative literature dealing with the great writers of the world, to include Virgil, Dante, Goethe, and similar major figures. Students may not take for credit both English 25 and 27; or both English 26 and 28.
Credits: 3.

ENG 027 - Lit of Western Trad:Int Humn
Study of primary authors in the Western cultural tradition from Homer to the modern period with particular reference to history, religion, and philosophy. Students may not take for credit both English 25 and 27; or both English 26 and 28. Prerequisites: Concurrent enrollment in Religion 27, 28; History 13, 14; Integrated Humanities Program.
Credits: 3.

ENG 028 - Lit of Western Trad:Int Humn
Study of primary authors in the Western cultural tradition from Homer to the modern period with particular reference to history, religion, and philosophy. Students may not take for credit both English 25 and 27; or both English 26 and 28. Prerequisites: Concurrent enrollment in Religion 27, 28; History 13, 14; Integrated Humanities Program.
Credits: 3.

ENG 040 - Science Fiction & Fantasy Lit
Representative modern works of fantasy and science fiction, including works by

Asimov, Tolkien, and Clarke. I, II.
Credits: 3.

ENG 041 - Detective Fiction
A study of the historical development of American and British detective fiction from Poe to the present.
Credits: 3.

ENG 042 - Women in Literature
Survey of women's literary tradition in English. Focuses on the ways women have written, read, written about, and been represented in 19th and 20th century literature.
Credits: 3.

ENG 050 - Expository Writing
Writing and analysis of expository (nonfiction) essays. Prerequisite: Sophomore standing.
Credits: 3.

ENG 053 - Writing: Poetry & Fiction
Introductory course in techniques of writing poetry and short prose fiction. Classes organized around discussion of student work; weekly writing assignments. Prerequisite: Sophomore standing.
Credits: 3.

ENG 057 - Race&Ethnicity Lit Stds:Intro
Introductory courses addressing the representation and construction of "race" in literature and/or the contributions of ethnically diverse writers to the American culture. Focus and readings vary by instructor. May be repeated for credit.
Credits: 3.

ENG 061 - Intro to African Literature
Readings in African literature, concentrating on major human and political themes and literary techniques.
Credits: 3.

ENG 065 - Survey of Folklore
Basic concepts of folklore; development of the discipline; defining the major genres; role of folklore in modern society.
Credits: 3.

ENG 085 - Text&Context:1st Yr Prosp Mjrs
Introduction to the critical work of close reading and close writing. Readings vary by section. Recommended for first-year students planning to major in English.
Credits: 3.

ENG 086 - Critical Approaches to Lit
Several theoretical approaches to literary study applied to specific texts. No prerequisite, but recommended only for students with sophomore standing or first-year students with Advanced Placement. Required of all English majors.
Credits: 3.

ENG 095 - Introductory Special Topics
See Schedule of Courses for specific titles.
Credits: 0-3.

ENG 096 - Introductory Special Topics

See Schedule of Courses for specific titles.
Credits: 1-3.

ENG 101 - Structure of the English Lang
Descriptive study of modern American English. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 102 - History of the English Lang
Principles of historical linguistics and their application to English. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 103 - Old English
The sounds, works, and structure of Old English; simple prose texts and selections from Beowulf. Prerequisites: 3 hours of English numbered 11-96, sophomore standing
Credits: 3.

ENG 104 - Language Awareness
Topics will include consideration of language as part of human behavior, history of the language, dialects of American English, lexicography, language acquisition, gender differences, and cultural diversity. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 105 - American English Dialects
Class will examine dialects of American English and the methodology of dialectology with focus on Vermont speech and the social meaning of dialect variation. (Same as CMSI 162.) Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 106 - Critical Theories
Topics vary by semester and by professor. Representative topic: "Feminist Criticism." May be repeated for credit with departmental permission. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 108 - Tutoring Writing
Explores ways of responding to writers one-on-one, for students who will be tutoring at the Writing Center. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 109 - Exploring Writing Centers
Explores theoretical frameworks for writing centers and ways tutors can respond to student writers. Prerequisite: 108, 3 hours of English numbered 11-96, sophomore standing.
Credits: 2.

ENG 110 - Writing Literary Criticism
Introduction to theory and practice of literary criticism. Students read and write about literary theories representing various approaches to selected works of literature.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 111 - Stds in Composition & Rhetoric

Topics vary by semester and by professor. Representative topic: "The Composing Process." May be repeated for credit with departmental permission. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 112 - Personal Voice

Examination of the authorial voice in nonfiction writing. Reading and writing assignments include work with both traditional and experimental styles, forms, and genres. Portfolio assessment. Prerequisite: 50 or 53, 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 114 - Reading& Writing Autobiography

Study of the autobiographical literary tradition as well as practice writing within this tradition. Prerequisites: 50, permission of instructor, 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 115 - The Art of Nonfiction

Theory, readings, and practice in literary nonfiction, including the essay and/or literary journalism. Prerequisites: 50, permission of instructor, 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 117 - Advanced Writing: Non-Fiction

Students follow their own interests in the writing of non-fiction. Prerequisites: 50; instructor's permission, 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 118 - Advanced Writing: Fiction

Students follow their own interests in the writing of fiction. Prerequisites: 53; instructor's permission. 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 119 - Advanced Writing: Poetry

Students follow their own interests in the writing of poetry. Prerequisites: 53; instructor's permission, 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 120 - Writers' Workshop

An intensive two-week workshop with assignments designed to emphasize autobiographical aspects of poetry and fiction writing. Summer only. Prerequisites: 3 hours English numbered 11-96, sophomore standing.
Credits: 3.

ENG 121 - Bible as Literature

Jewish and Christian scripture analyzed as literary documents.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 122 - Dante's Comedy

(Same as World Literature 173.) A study of Dante's Comedy in Modern English translation. Prerequisites: 3 hours of English numbered 11-96, sophomore

standing.
Credits: 3.

ENG 124 - Chaucer
Study of the principal works of Chaucer, emphasizing Chaucer's literary scope, talents, and position in medieval literature. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 125 - Medieval Literature
Major works of medieval literature in translation, with some principal non-Chaucerian works in Middle English. Works by Dante and works in the Arthurian tradition will be included.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 127 - Shakespeare
A survey of plays in all genres (comedy, history, tragedy, romance) covering the early, middle, and late stages of Shakespeare's career. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 128 - Shakespeare& Renaissance Drama
A survey of drama, including the work of William Shakespeare, from the 16th and early 17th centuries in England.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 129 - Survey of Renaissance Lit
17th centuries.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 130 - The Age of Milton
Paradise Lost, Paradise Regained, Samson Agonistes, some minor poems, and selected prose works. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 133 - Res & 18 C Prose,Poetry &Drama
Significant writers and dramatists from Dryden to Sheridan and Johnson. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 134 - 18th Century British Novel
Fiction from its origin through the 18th century. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 141 - Romanticisms
Late 18th and early 19th century English literature including, for example, works by Wordsworth, the Shelleys, Keats. Occasional special topics. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 142 - Victorian Prose,Poetry & Drama

Literature from 1832 to 1900, including, for example, Tennyson, Browning, Darwin, Wilde. Occasional special topics.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 143 - 19th Century American Poetry
The poetry of Walt Whitman, Emily Dickinson, and their contemporaries.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 144 - 19th Century American Non-Fict
Essay, biography, autobiography, history, journals, and letters by such writers as Emerson, Thoreau, Douglass, Chestnut, Twain, Fuller, Parkman, Kete.
Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 145 - 19th Century American Fiction
Short stories, novellas, and novels by such writers as Cooper, Poe, Hawthorne, Melville, Stowe, James, Chopin, Crane, Gilman.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 146 - 19th Century British Novel
British fiction of the 19th century. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 147 - 19th Century Women's Writing
Novels, short stories, and poetry by 19th century women from multiple cultures.
Prerequisites: 3 hours English numbered 11-96, sophomore standing.
Credits: 3.

ENG 151 - Modern Poetry
Survey of poetry from beginning of modern period to end of World War II, emphasizing poetry of Yeats, Eliot, Stevens, Auden, Frost, Williams, and others.
Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 152 - Modern British Drama
British and continental plays of the 19th and 20th centuries, including plays by Ibsen, Pinter, and Beckett. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 153 - Modern British Novel
British novelists since 1900, including Forster, Conrad, Lawrence, Woolf, and other more recent writers. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 154 - Modern Irish Literature
Irish literature from 1890 to the present, emphasizing Joyce and Yeats.
Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 157 - Canadian Literature

The development of a national literature. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 158 - Contemporary Canadian Lit

Post-World War II Canadian poetry and fiction in English, including Atwood and Laurence. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 160 - Literature of Vermont

An exploration of Vermont writing from the narratives of the Allen brothers to the poetry and fiction of today. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 161 - Modern Short Fiction

Late 19th and 20th century short fiction by such European and American writers as Chekhov, Kafka, Joyce, Lawrence, Hemingway, Faulkner, O'Connor, Welty, Cheever, and Carver. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 162 - Modern American Novel

American novelists from 1915 to 1945. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 163 - Modern American Drama

Recent and contemporary, including plays by O'Neill, Miller, and Williams. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 166 - Slavery & American Literature

Examines connections between storytelling, bondage, and freedom. Focuses on the struggles of enslaved people to author free stories and free selves. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 167 - African-Amer Lit Harlem Ren

A survey of the writing of African Americans from the early poetry and prose of Phillis Wheatley, Frederick Douglass, and Frances Harper through the works of such writers as Nella Larsen, Countee Cullen, and Jean Toomer. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 168 - Afr-Amer Lit Since Harlem Ren

A survey of the writing of African Americans from the poetry and prose of Langston Hughes and Zora Neale Hurston through the works of such contemporaries as Amiri Baraka, Toni Morrison, and Audre Lorde. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.

Credits: 3.

ENG 170 - Race&Ethnicity Lit Studies:Int

Courses addressing "race" in literature and/or the contributions of ethnically diverse writers to American culture. Focus and readings vary by instructor. May be repeated for credit. Topics for 1999-00: American Indian Literature.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 172 - Colonial&Post-Colonial Wld Lit

departmental permission.Prerequisites: 3 hours of English Topics vary by semester and by professor. Representative topics: "African Theater" and "Contemporary Writing from the Non-Western World." May be repeated for credit with numbered 11-96, sophomore standing.
Credits: 3.

ENG 173 - Topics Pan-African Literature

Courses exploring experimental trends in 20th-century Pan-African literature and their relationship to Western and other literary traditions. Representative topics: "African Drama," "Survey of African Literature." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 175 - Contemporary American Poetry

American poetry since 1950. Prerequisites: 3 hours of English numbered 11-96,sophomore standing.
Credits: 3.

ENG 176 - Contemporary American Novel

Significant American novelists since 1945. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 181 - Literary Genre

Representative topics: "Arthurian Literature;" "Medieval Drama;" "Women Writing Autobiography." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 182 - Historical Periods

Representative topics: Literature of Civil Rights. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 183 - Major Writers

The works of one or two writers. Representative topics: "Mark Twain," "Toni Morrison." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 184 - Popular Literature & Culture

Representative topics: "Poe's Children: Detective Fiction and Horror;" "Having a Good Cry: The Sentimental Tradition in Literature, Film, and Television;" "Children's Literature." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 186 - Studies in Folklore

Representative topics: "American Folklore;" "Folklore and Ballad." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 187 - American Studies

Interdisciplinary approaches to American literature and culture. Representative topics: "American Literature and American Law;" "The Vietnam War in Literature;" "Jewish-American Literature." Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 190 - Buckham Honors Seminar

Topic and instructor varies. Each seminar includes the participation of a distinguished visiting scholar or writer, such as Stephen Greenblatt, Barbara Johnson, Houston Baker, James Clifford, William Kennedy, and Stephen King.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 3.

ENG 191 - Internship

Prerequisites: Departmental permission, junior or senior standing.
Credits: 1-6.

ENG 192 - Internship

Prerequisites: Departmental permission, junior or senior standing.
Credits: 1-6.

ENG 195 - Intermediate Special Topics

See schedule of courses for specific titles. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 0-6.

ENG 196 - Intermediate Special Topics

See schedule of courses for specific titles. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: 1-6.

ENG 197 - Rdgs & Rsch

Departmental permission required. Not to exceed three hours per semester. Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: .5-6.

ENG 198 - Readings & Research

Departmental permission required. Not to exceed three hours per semester.Prerequisites: 3 hours of English numbered 11-96, sophomore standing.
Credits: .5-6.

ENG 201 - Sem Engl Lang or Critical Thry

Recent topics: "Origins and Development of the English Language;" "Re-disciplining the History of Literature and the Literature of History;" "Women's Texts." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 202 - Sem Engl Lang or Critical Thry

Recent topics: "Origins and Development of the English Language;" "Re-disciplining the History of Literature and the Literature of History;" "Women's

Texts." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 211 - Sem in Composition & Rhetoric
Recent topics: "Writing the New Yorker;" "Writing Vermont Life;" "Editing and Publishing." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 212 - Sem in Composition & Rhetoric
Recent topics: "Writing the New Yorker;" "Writing Vermont Life;" "Editing and Publishing." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 221 - Seminar in Literature to 1800
Recent topics: "Women in 17th Century English Poetry;" "Dante and the Experience of Reading;" "Orality and Textuality in Middle English Literature." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 222 - Seminar in Literature to 1800
Recent topics: "Women in 17th Century English Poetry;" "Dante and the Experience of Reading;" "Orality and Textuality in Middle English Literature." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 241 - Seminar in 19th Century Lit
Recent topics: "Dickens"; "Reader, I Married Him: The Brontes;" "Love, Marriage, and Literary Criticism: Jane Austen;" "Reading Serially: The Victorian Novel;" "Invisible Man and 19th Century American Literature," "The Gothic." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 242 - Seminar in 19th Century Lit
Recent topics: "Dickens"; "Reader, I Married Him: The Brontes;" "Love, Marriage, and Literary Criticism: Jane Austen;" "Reading Serially: The Victorian Novel;" "Invisible Man and 19th Century American Literature," "The Gothic." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 251 - Seminar in 20th Century Lit
Recent topics: "The Beat Generation;" "Literature and Society in Modern Ireland;" "Dostoevsky's Influence on 20th Century American Literature." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 252 - Seminar in 20th Century Lit
Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 281 - Sem Lit Themes,Genres,Folklore
Recent topics: "Spiritual Journeys;" "Murder, He Said: Detective Fiction;" "Chekhov to Cheever: The Short Story." Prerequisites: 86, 6 hours at the

intermediate level, and instructor permission.
Credits: 3.

ENG 282 - Sem Lit Themes,Genres,Folklore
Recent topics: "Spiritual Journeys;" "Murder, He Said: Detective Fiction;" "Chekhov to Cheever: The Short Story." Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 290 - Sem Prospective Tchrs of Engl
English language in secondary school. This course does not logical, artistic, economic, and sociological history of the cinema from its inception through the 1920s. Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 295 - Advanced Special Topics
Prerequisites: 86, 6 hours at the intermediate level, and instuctor permission.
Credits: 1-3.

ENG 296 - Advanced Special Topics
Prerequisites: 86, 6 hours at the intermediate level, and instructor permission.
Credits: 3.

ENG 297 - Readings and Research
Departmental permission required. Not to exceed three hours per semester. UG only.
Credits: 1-3.

ENG 298 - Readings and Research
Departmental permission required. Not to exceed three hours per semester. UG only.
Credits: 1-3.

ENG 320 - Seminar:Major Author
In-depth study of the works, critical reception, and context of an author writing in English. Representative Morrison.
Credits: 3.

ENG 330 - Seminar:Literary Period
Advanced survery of authors, themes, genres, and/or cultural
Credits: 3.

ENG 340 - Studies in Rhetoric & Comp
Introduction to current issues in the field. Representative topics: Rhetorical theory; gender, class, and composing: writing across the curriculum; collaborative learning,
Credits: 3.

ENG 350 - Surv of Lit Theory & Criticism
Theory and Criticism.
Credits: 3.

ENG 360 - Seminar:Special Topics
Topic varies, based on faculty research. Representative
Credits: 3.

ENG 370 - Principles of Literary Rsch

including bibliographic, manuscript, and archival work.
Credits: 3.

ENG 391 - Master's Thesis Research
Credits: 1-6.

ENG 392 - Seminar Paper Review
Credits: 0.

ENG 397 - Special Readings & Research
Directed individual study of areas not appropriately covered by existing courses.
Permission of Graduate Director.
Credits: 1-3.

English (M. A.)

College: Graduate College
Department(s): English

Overview

The research interests of the faculty of the Department of English and library resources permit graduate students to undertake thesis subjects in virtually all fields of the discipline.

General Requirements:

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

An undergraduate major in English or its equivalent; satisfactory scores on the general (aptitude) Graduate Record Examinations; demonstration of proficiency in writing by a detailed statement concerning the purpose in pursuing graduate study in English. If admitted conditionally the student must complete satisfactorily a stipulated number of hours (usually six) of graduate level work.

Requirements for Advancement to Candidacy for the Degree of Master of Arts

Satisfactory completion of 18 hours of appropriate credit.

Minimum Degree Requirements for the Degree of Master of Arts

Thesis Option: Completion of 24 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours (at least three of these nine in English or Humanities, at most six in related fields). Candidates must submit a customized reading list, pass a comprehensive exam based on it, and complete six additional hours by writing an acceptable thesis and defending it successfully

(ENG 391).

Nonthesis Option: Completion of 30 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least fifteen additional hours (at least nine of these in English or Humanities, at most six in related fields). Candidates must pass a three-part comprehensive examination based on set Departmental reading lists, and must receive a grade of B+ or better on two seminar papers submitted to an ad hoc faculty Reading Committee (ENG 392).

Both Options: All M. A. candidates in English must demonstrate a reading knowledge of a foreign language by examination or by advanced coursework.

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English (M. A. T.)

College: Graduate College
Department(s): English

Overview

The research interests of the faculty of the Department of English and library resources permit graduate students to undertake thesis subjects in virtually all fields of the discipline.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts in Teaching

See General Requirements

Minimum Degree Requirements for the Degree of Master of Arts in Teaching

Thirty credit hours of course work; 24 in English (including five of the following six: English 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours of course work in English or Humanities – up to six of these in a related field), plus a comprehensive examination in English. Additional requirements in Education will differ for those already licensed to teach (at least 6 credit hours) and for those not licensed to teach (up to 33 credit hours). Completion of 24 hours of course work, including five of the following six: 320, 330, 340, 350, 360, and 370 or 201-296; and at least nine additional hours (at least three of these nine in English or Humanities, at most six in related fields). Candidates must submit a customized reading list, pass a comprehensive exam based on it, and complete six additional hours by writing an acceptable thesis and defending it successfully (ENG 391).

Department and Programs

Forestry Program

Colleges: The Rubenstein School of Environment and Natural Resources

Faculty: Forestry

Courses: Forestry (FOR)

Contact Information:

University of Vermont
The Rubenstein School of Environment and Natural Resources
Forestry Program
George D. Aiken Center
81 Carrigan Drive
Burlington, VT 05405

Phone: (802) 656-2511
FAX: (802) 656-8683
E-mail: John.Shane@uvm.edu
Web Site: http://www.uvm.edu/envnr/?Page=undergrads/forestry.html

Academic Offerings

- Graduate Degrees
  - Master of Science (M.S.)
    - Forestry

Overview

The Forestry major provides students with an education in ecologically responsible

forestry, emphasizing the complex landscapes of the northeastern United States. Students develop their abilities to coordinate and manage all aspects of sustainable forestry through an education that combines a strong foundation in natural and social sciences with hands-on field-based classes, internships, research experiences, and forest management projects. The curriculum is integrative, technologically current, and science-based.

Courses in Forestry

FOR 001 - Forest Conservation

Introduction to the ecology and management of American forests: forest distribution, ownership, and ecological factors, species interactions, multi-resource management goals, and silvicultural practices. Cannot be taken by junior- or senior-level SNR students.

Credits: 3.

FOR 021 - Dendrology

Classification, silvical characteristics, and identification features of native and introduced trees and shrubs.

Credits: 4.

FOR 073 - Small Woodland Management

Concepts of forest ecology, resource inventory, cultural practices, and multiple use management for small woodland areas.

Credits: 3.

FOR 081 - Forestry Seminar

forestry. Prerequisite: First-Year/Sophomore standing in Natural Resources.

Credits: 1.

FOR 120 - Forest Ecology

Forest environment and its effects on the development and distribution of forest communities. Introduction to population dynamics, systems and analysis, diversity, stability, ecosystem disturbances, and succession. Prerequisite: NR 001, or another introductory Biological Science course. Not offered 2001-02.

Credits: 3.

FOR 121 - Forest Ecology Laboratory

Application of ecological principles in the analysis of forest communities. Prerequisite: NR 025; a course in tree identification; previous or concurrent enrollment in NR 103.

Credits: 2.

FOR 122 - Forest Ecosystem Analysis

An integrated field course to investigate, through quantification and interpretation, the flora, fauna, and abiotic components (soils, physiography, water, and microclimate) of a selected forest ecosystem. Prerequisite: FOR 121, NR 140.

Credits: 4.

FOR 126 - Forest Ecology Field Trip

Assessment of southeastern forest ecosystems including Smoky Mountain communities, and upland and bottomland forests of the Georgia Piedmont and South Carolina Coastal Plain. Field trip at end of spring semester. Prerequisite: A course in plant identification; a course in ecology; Instructor permission.
Credits: 2.

FOR 132 - Forest Fire Behavior & Mgmt

Forest fire ecology, behavior, effects, weather relationships, danger rating, prevention, detection, management, prescribed fire, smoke management, wildland/urban interface, and multi-resource perspectives. Prerequisite: A course in plant ecology or concurrent enrollment; Knowledge of plant identification. Alternate years.
Credits: 3.

FOR 133 - Forest Entomology

(Cross-listed with Plant and Soil Science 107.)
Credits: 3.

FOR 146 - Remote Sensing of Natural Res

resources from aerial photographs and satellite imagery. Cross-listed with: NR 146, GEOG 185. Identification, interpretation, measurement, and mapping of natural Labs include air photo interpretation and digital image analysis. Prerequisites: Junior standing. Alternate years.
Credits: 3.

FOR 152 - Forest Resources Values

History, methods, and current issues associated with the nonmarket and market values of forest-based resources, including aesthetics, wildlife, recreation, water, and as Recreation Management 152).
Credits: 3.

FOR 158 - Stewardship: Private Woodlands

Basic financial, legal and operational aspects for long-term ownership and stewardship of woodlands; appraisals, taxation, land trusts, conservation easements, estate planning; Vermont focus. Prerequisite: Course in Economics.
Credits: 3.

FOR 162 - Properties & Uses of Wood

Properties, uses, and identification of commercial woods of the U.S. Manufacture of major wood products. Prerequisite: A course in tree identification. Alternate years.
Credits: 3.

FOR 163 - Timber Harvesting

Private forest emphasis; impacts of alternative techniques on cultural and natural resources; preharvest inventory, prescription, layout, contracts, bookkeeping; postharvest operations. Alternate years.
Credits: 3.

FOR 182 - Advanced Forestry Seminar

In-depth examination of contemporary issues in forestry. Prerequisite: Junior/Senior standing in Forestry. Credit arranged.

Credits: 1.

FOR 185 - Undergrad Special Topics

Readings, investigations, and lectures in selected forest resource subjects. Prerequisite: Instructor permission. Credit arranged.

Credits: 0-6.

FOR 191 - Forestry Work Practicum

Supervised work experience in forest resource area. Prerequisite: Instructor permission. Credit arranged.

Credits: 1-9.

FOR 205 - Mineral Nutrition of Plants

Cross-listed with: BOT 205.

Credits: 3.

FOR 222 - Advanced Silviculture

Scientific basis and contemporary status of silviculture practices. Prerequisite: FOR 223; permission. Alternate years, 2000-01.

Credits: 3.

FOR 223 - Multi-Resource Silviculture

Theory and application of forest stand maintenance/manipulation for forest ecosystem sustainability. Topics: Silvics, regeneration, tree improvement, protection, stand structure/dynamics/tending, and multi-resource perspectives. Prerequisites: NR 25, 103, FOR 121 (FOR 122-Forestry majors). UG only.

Credits: 4.

FOR 225 - Tree Structure & Function

Basic anatomy and physiology of trees and other woody plants, emphasizing their unique structural and physiological adaptations to the environment. Prerequisite: Permission.

Credits: 3.

FOR 228 - Ecosystem Ecology

Examination of the structure and function of terrestrial ecosystems using a systems approach. Laboratory sessions involve modeling and data analysis. Prerequisites: Biology 1, 2, Chemistry 23, an intermediate ecology course, Natural Resources 140, Math. 19, Physics 11 or equivalent. Alternate years, 2002-03.

Credits: 2.

FOR 231 - Integrated Forest Protection

Integration of concepts of forest protection using a holistic ecological approach to forest pest management. Detection, population dynamics, evaluation, prediction, and pest management considerations. Prerequisite: FOR 133, FOR 234, or Instructor permission. Alternate years, 2001-02.

Credits: 3.

FOR 234 - Forest Pathology

An in-depth survey of diseases of forest and shade trees emphasizing identification, morphology, physiology, ecology, epidemiology, genetic relationships, integrated disease management, and multi-resource perspectives. Prerequisites: Biology 1 & 2, knowledge of plant identification and ecology. UG only.

Credits: 4.

FOR 272 - Sustainable Mgmt Forest Ecosys

planning project. Prerequisite: FOR 122, NR 205; Principles of long-term planning and plan implementation in support of sustainable forestry; Adaptive management; biodiversity and ecosystem health; major management concurrent or prior enrollment in FOR 223, or Graduate standing.

Credits: 4.

FOR 275 - Forest Watershed Management

Concepts of forest hydrology and forest watershed management; emphasis on natural processes and impacts of quantity, quality, and seasonal distribution of flow from watersheds. Prerequisite: Natural Resources 102, junior standing or permission. (Not offered for graduate credit.)

Credits: 3.

FOR 285 - Advanced Special Topics

Advanced special topics courses or seminars in forestry beyond the scope of existing formal courses. Prerequisite: Graduate or advanced undergraduate standing; Instructor permission. Credit as arranged.

Credits: 0-6.

FOR 291 - Senior Research

Work on research problem under direction of a staff member. Findings submitted in written form as prescribed by department. Prerequisites: Senior standing, permission. (Not offered for graduate credit.)

Credits: 3.

FOR 292 - Senior Research

(Not offered for graduate credit.) Work on research problem under direction of a staff member. Findings submitted in written form as prescribed by department. Prerequisites: Senior standing, permission.

Credits: 3.

FOR 299 - Honors

Honors project dealing with the biology and/or management of forest ecosystems. Prerequisite: By application only; see program chair. UG only.

Credits: 3-6.

FOR 382 - Seminar in Research Planning

Discussions of the planning and activities associated with Graduate student projects and research. Prerequisite: Instructor Permission. Cross-listed with: NR 382.

Credits: 1.

FOR 385 - Selected Problems in Forestry

Prerequisite: Instructor permission. Advanced readings, or a special investigation dealing with a topic beyond the scope of existing formal courses.

Credits: 1-6.

FOR 391 - Master's Thesis Research

Credits: 1-6.

FOR 392 - Master's Project Research

Credits: 1-6.

Forestry (M. S.)

College: Graduate College
Department(s): School of Natural Resources

Overview

The goal of this Master of Science Program is to provide graduate students with advanced training in forestry science and the opportunity to further their knowledge and proficiency in some specialized aspect of forestry. The faculty has research interests which span the broad areas of biometry, ecology, genetics, tree improvement, management, pathology, physiological ecology, policy and administration, remote sensing, and silviculture.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate degree in forestry or in a discipline related to the intended specific field of study. Satisfactory scores on the general (aptitude) portion of the Graduate Record Examination.

Minimum Degree Requirements

The Forestry degree has two options.

Plan A (Thesis Option): Requires 15 to 24 credit hours of advanced forestry and related courses, including NR 378, a comprehensive examination, six to 15 hours of thesis research, and an oral defense of the thesis. A student's thesis research is often an integral part of ongoing research projects.

Plan B (Project Option): Requires at least 24 credit hours of advanced forestry and related

courses, including NR 378, a comprehensive examination, three to six hours for a project pertinent to the student's area of specialization, and an oral defense of the project. The project is typically a forest resources management plan, a major paper, or a series of papers.

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Departments and Programs

Geography Department

Colleges: Arts and Sciences, Graduate College

Faculty: Geography

Courses: Geography (GEOG)

Contact Information:

University of Vermont
Geography Department
200 Old Mill
94 University Place
Burlington, VT 05405-0114

Phone: (802) 656-3060
Fax: (802) 656-3042
Email: geography@uvm.edu
Web Site: http://www.uvm.edu/~geograph/

Academic Offerings

- Graduate Majors
  - Master of Arts (M. A.)
    - Geography
  - Master of Arts in Teaching (M. A. T.)
    - Geography

Courses in Geography

GEOG 001 - World Regional Geography

Basic introduction to Geography by way of a regional approach to human and environmental topics.

Credits: 3.

GEOG 002 - World Natural Environments

attention to landforms, climate, soil, vegetation, and water resources.

Credits: 3.

GEOG 043 - Weather & Climate

Introduction to the fundamentals of the weather, as well as midlatitude and tropical climates. Topics include cloud formation, hurricanes, tornadoes, winter weather, climate change.

Credits: 3.

GEOG 051 - Africa

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

Credits: 3.

GEOG 052 - Canada

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

Credits: 3.

GEOG 055 - Europe

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

Credits: 3.

GEOG 056 - Latin America

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

Credits: 3.

GEOG 057 - The United States

The character and development of the contemporary cultural, economic, and political patterns of the area against the background of its physical and resource base.

Credits: 3.

GEOG 060 - Geography/Race&Ethnicity in US

Examination of the ways in which spatial and locational processes shape and are shaped by ethnic and racial identities, struggles, and relationships.

Credits: 3.

GEOG 073 - Geography of Global Economy

Distribution of global economic activity and power. Processes of uneven development and globalization including industrialization, the "global assembly line," trade, investment, and migration.

Credits: 3.

GEOG 081 - Geotechniques

Introduction to cartography, geographic information systems (GIS), and remote sensing. Map design and analysis using topographic/satellite data, air photo interpretation, digitizing, and Internet resources.

Credits: 3.

GEOG 090 - International Field Studies

Field course abroad (e.g. South Africa or England). Intensive study of the geography of a country or region, with attention to related issues.

Credits: 3.

GEOG 092 - Vermont Field Studies

Field course on a geographical theme (e.g. physical or regional geography) in the Burlington area or surrounding region. Cross-listed with: VS 092.

Credits: 3.

GEOG 095 - Special Topics in Geography

See Schedule of Courses for specific titles.

Credits: 1-3.

GEOG 096 - Special Topics in Geography

See Schedule of Courses for specific titles.

Credits: 1-3.

GEOG 143 - Climatology

Analysis of regional and local climatic data with special reference to climatic controls; special laboratory projects. Prerequisite: 43 or instructor permission.

Credits: 3.

GEOG 144 - Geomorphology

Prerequisite: GEOL 001 or GEOL 055. Cross-listed with: GEOL 151.

Credits: 4.

GEOG 145 - Geography of Water

Examination of the spatial dimensions of water distribution from local to global scales, and the social, political, and economic dimensions of its use. Same as NR 102.

Credits: 3.

GEOG 146 - Watershed Ecosystems:N America

Examines the influence of climate, geomorphic processes, and biogeography on ecosystems at the scale of the watershed. Explores the role of social dynamics in the management and restoration of watersheds.
Credits: 3.

GEOG 151 - Southern Africa
A regionally focused course. Topics will include: information economy, legacy of apartheid, impacts of HIV/AIDS, race, class, gender, land, governance and social justice. Prerequisite: 51.
Credits: 3.

GEOG 154 - Geography of Third World Dev
Problems of poverty, insecurity, inequality and environmental degradation in the Third World. Economic change, migration, regional development, role of women. Focus on Africa and Asia.
Credits: 3.

GEOG 155 - Historical Geography of Europe
HST 120.
Credits: 3.

GEOG 170 - Historical Geography
(Same as History 170.) Examination of the tools, techniques, and perspectives used in studying the historic development of places and landscapes. Vermont and other North American case studies. Prerequisites: 57 recommended or History 11 or 12 or instructor permission .
Credits: 3.

GEOG 171 - Cultural Geography
Distribution of race, ethnicity, language, and religion at different geographical scales and how these factors contribute to world and regional events. Prerequisites: 1 or Anthropology 21 or Sociology 1.
Credits: 3.

GEOG 173 - Political Ecology
Human-environment interactions under globalization. Social and economic causes of global and local environmental problems. Environmental movements and sustainable livelihoods in First and Third Worlds.
Credits: 3.

GEOG 174 - Agricultural Geography
Credits: 3.

GEOG 175 - Urban Geography
Analysis of the morphology, function and social structure of cities. Consideration of the nature, history and theories of urban growth and development. Prerequisites: 1 or 73 or instructor permission.
Credits: 3.

GEOG 177 - Political Geography
(Same as Political Science 161.) Examines the relationships between nation states and political identity. Other political-spatial constructs are also examined, including the private and public dichotomy, cyberspace, and borders. Prerequisites: Recommended 1 or 73 or Political Science 51 or 71.
Credits: 3.

GEOG 178 - Gender, Space & Environment

(Same as Women's Studies 170.) Examination of the ways in which human relationships to both the built and the natural environment are mediated by gender. Prerequisites: Six hours in geography or women's studies, or instructor's permission.

Credits: 3.

GEOG 179 - Cultural Ecology

(Same as Anthropology 179.) Interrelationships of social groups and their natural environments and resource bases, with primary emphasis on nonindustrial cultures, examined from the perspectives of anthropology and geography. Prerequisite: 1 or Anthropology 21.

Credits: 3.

GEOG 185 - Remote Sensing

(e.g. principal components analysis). Prerequisite: GEOG 081 Examinations of the earth's surface from aerial photographs and satellite imagery. Emphasis is on image interpretation, classification, change detection, multivariate analysis recommended. Cross-listed with: FOR 146, NR 146.

Credits: 3.

GEOG 190 - International Field Studies

Field course abroad (e.g. South Africa or England.) Intensive study of the geography of a country or region, with attention to related issues. Prerequisite: Three hours in Geography.

Credits: 3.

GEOG 191 - Geography Internship

Supervised internship in applied geography working with a local public agency or private firm. Individually arranged. Prerequisite: Junior/Senior standing; department permission.

Credits: 1-6.

GEOG 192 - Vermont Field Studies

Field course on a geographical theme (e.g. physical or regional geography) in the Burlington area or surrounding region. Prerequisite: Three hours in Geography. Cross-listed with: VS 192.

Credits: 3.

GEOG 195 - Special Topics

See Schedule of Courses for specific titles.

Credits: 0-3.

GEOG 196 - Special Topics

See Schedule of Courses for specific titles.

Credits: 1-3.

GEOG 197 - Readings & Research

Credits: 1-6.

GEOG 198 - Readings & Research

Credits: 1-6.

GEOG 202 - Research Methods

A systematic overview of the art and science of geographical inquiry. Examination of key research and methodological approaches in the discipline. Prerequisite:

Junior/Senior standing; nine hours in Geography.
Credits: 3.

GEOG 203 - Contemp Geog Thought Context

A survey of paradigms and issues in contemporary geography. Attention paid to the social and historical contexts of geographic thought. Prerequisite: Nine hours in Geography or Instructor permission.
Credits: 3.

GEOG 204 - Spatial Analysis

Analysis of spatial pattern and interaction through quantitative models; introduction to measurement, sampling, and covariation in a spatial framework. Prerequisite: Senior/Graduate standing; at least nine hours in Geography, or Instructor permission.
Credits: 3.

GEOG 245 - Adv Top:Human Env Interactions

Advanced offerings on various manifestations of social-environmental relationships. Possible topics include sustainable development, environmental justice, and urban ecology. Prerequisite: Senior/Graduate standing with nine hours in Geography or Instructor permission.
Credits: 3.

GEOG 246 - Adv Top:Climate&Water Resource

Advanced analysis of regional climatology, hydroclimatological hazards, or fluvial geomorphology. Special topics might include droughts, severe weather, floods and floodplain management, mountain and lowland rivers. Prerequisites: Senior or graduate standing with nine hours in Geography, or instructor permission.
Credits: 3.

GEOG 272 - Adv Top:Space, Power, Identity

Advanced offerings on topics related to the spatial regulation and geographic construction of social identity, paying particular attention to race, gender and sexuality. Prerequisite: Senior/Graduate standing with nine hours in Geography or Instructor permission.
Credits: 3.

GEOG 273 - Adv Top:Political Econ&Ecology

Advanced offerings in political ecology and political economy, particularly at global and regional scales. Possible topics include Third World economic restructuring, globalization, international environmental movements. Prerequisite: Senior/Graduate standing with nine hours in Geography or Instructor permission.
Credits: 3.

GEOG 274 - Adv Top:Critical Urban&Soc Geo

Advanced offerings in urban and critical social geography. Possible topics include social justice and the city, human rights, geographies of social control. Prerequisite: Senior/Graduate standing with nine hours in Geography, or Instructor permission.
Credits: 3.

GEOG 281 - Adv Topic:GIS & Remote Sensing

Advanced offerings in GIS or remote sensing focusing on landscape interpretation for decision-making practices. Incorporation of applications from Vermont public

and private sectors. Prerequisites: Senior or Graduate standing with nine hours in Geography; or Instructor permission.
Credits: 3.

GEOG 295 - Advanced Special Topics
See schedule of courses for specific titles.
Credits: 3.

GEOG 296 - Advanced Special Topics
See schedule of courses for specific titles.
Credits: 3.

GEOG 297 - Readings & Research
Credits: 1-6.

GEOG 298 - Readings & Research
Credits: 1-6.

GEOG 300 - Graduate Tutorial
Instructor permission. Readings and research on topics arranged individually by students with instructors; attendance in appropriate undergraduate courses may be required. Prerequisite:
Credits: 3.

GEOG 391 - Master's Thesis Research
Credits: 1-18.

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Geography (M. A.)

College: Graduate College
Department(s): Geography

Overview

Faculty research interests include most systematic aspects of geography including social, urban, political, economic, historical and physical geography. Technique interests are in remote sensing, geographic information systems and quantitative methods. Regional interests and field experiences are in Africa, Europe, Canada and the US.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

Evidence of a strong interest in geography. Satisfactory scores on the general (verbal and quantitative) portion of the Graduate Record Examination.

Requirements for Advancement to Candidacy for the Degree of Master of Arts

Twelve semester hours or its equivalent in geography and supporting courses in related fields or demonstrated proficiency in geography which would be assurance of success in graduate study.

Minimum Degree Requirements

Twenty-one hours in geography courses including 203, 204, or a reading knowledge of a foreign language, and six hours of thesis research (391); nine additional hours in geography or a related field. For additional information, please write to the Graduate

Program Coordinator, Department of Geography.

Geography (M. A. T.)

College: Graduate College
Department(s): Geography

Overview

Faculty research interests include most systematic aspects of geography including social, urban, political, economic, historical and physical geography. Technique interests are in remote sensing, geographic information systems and quantitative methods. Regional interests and field experiences are in Africa, Europe, Canada and the US.

General Requirements

- Graduate (Master's)

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Departments and Programs

Geology Department

Colleges: Arts and Sciences, Graduate College

Faculty: Geology

Courses: Geology (GEOL)

Contact Information:

University of Vermont
Geology Department
Perkins Building
43 Colchester Ave
Burlington, VT 05405-0122

Phone: (802) 656-3396
Fax: (802) 656-0045
Email: bdoolan@moose.uvm.edu
Web Site: http://geology.uvm.edu/

Academic Offerings

- Graduate Majors
  - Master of Arts in Teaching (M. A. T.)
    - Geology
  - Master of Science (M. S.)
    - Geology
  - Master of Science for Teachers (M. S. T.)
    - Geology

Courses in Geology

GEOL 001 - Introductory Geology
Process, agents, and their effects on materials, structures, and morphology of earth's crust. Laboratory includes field trips, study and interpretation of rocks,
Credits: 4.

GEOL 003 - Fire & Ice
Introduction to volcanoes/plate tectonics ("fire") and glaciers/climate change ("ice") using lectures, slides, discussion, and field trips. Considers Vermont and world-wide geological examples.
Credits: 3.

GEOL 004 - Dynamic Earth
only.
Credits: 4.

GEOL 005 - Ecol & Geol of Lake Champlain
Introduction to the principles and processes of ecology and geology applicable to the Lake Champlain basin. A topical, project-oriented format rather than a comprehensive overview. Priority to first-year students.
Credits: 4.

GEOL 007 - Earth Hazards
and destruction by earthquakes, landslides, floods,
Credits: 3.

GEOL 010 - Geological Oceanography
Characteristics and development of the oceans, their basins and shorelines, including plate tectonic history and basic physical, chemical, and biological processes. Prerequisite: GEOL 001 or introductory science course.
Credits: 3.

GEOL 053 - Planetary Geology
that shape our home planet and compares the geologic processes active in our Solar System. Prerequisites: Introductory science course or ASTR 005.
Credits: 3.

GEOL 055 - Environmental Geology
Introduction to geologic processes and materials pertinent to environmental problems: ground water movement, supply, and contamination, waste disposal,

flooding, subsidence, and landslides. Local field trips. Designed for intended Natural Science majors.
Credits: 4.

GEOL 062 - Earth Env & Life Through Time
This course presents an overview of how the Earth has changed over time and how this has influenced the history of life. Prerequisites: GEOL 1,3,4,5, or 55.
Credits: 4.

GEOL 095 - Special Topics
See Schedule of Courses for specific titles.
Credits: 0-4.

GEOL 096 - Special Topics
See Schedule of Courses for specific titles.
Credits: 0-6.

GEOL 101 - Field Geology
Geological evolution of western Vermont as seen through actual field mapping in the Burlington area. Specifically designed for sophomores majoring or minoring in Geology or related sciences. Prerequisite: GEOL 001, GEOL 055, or Instructor permission.
Credits: 4.

GEOL 102 - Plate Tectonics & Evol Earth
Tectonic processes on Earth related to the origins of continents and oceans following concepts of Plate Tectonics. Laboratory sessions examine earth materials and geologic processes. Prerequisite: Any introductory Geology course.
Credits: 4.

GEOL 112 - Mineralogy&Optic Crystallgrphy
Credits: 4.

GEOL 116 - Glacial Geology
Prerequisites: GEOL 1,5,7, or 55.
Credits: 3.

GEOL 131 - Igneous/Metamorph/Sedmnt Petro
(3-3) Description, classification, and genesis of igneous and metamorphic rocks. Introduction to petrogenetic models of the earth's crust and mantle. Prerequisite: GEOL 112.
Credits: 4.

GEOL 151 - Geomorphology
Examines, using lectures, labs, and field-based independent study research projects, processes which change Earth's surface and the history of landscape development. Considers fundamental geologic constraints on environmental problems. Prerequisite: GEOL 001 OR GEOL 055. Cross-listed with: GEOG 144.
Credits: 4.

GEOL 153 - Strat & Sedimentary Petrology
Properties of physical sedimentation, principles of stratigraphy and basin analysis, and comparison of modern and ancient environments. Lab includes description and classification of sedimentary rocks. Prerequisite: 131.
Credits: 4.

GEOL 155 - Fluvial Geology

A discussion of fluvial systems including hydrology, sedimentation, geomorphology, water chemistry, and human impacts. Prerequisite: Instructor permission.
Credits: 4.

GEOL 172 - Regional Geology
Discussion of the geology of a selected region of North America. A four-week summer field trip to the area in question. Prerequisites: one other Geology course or permission.
Credits: 4.

GEOL 195 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

GEOL 196 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

GEOL 197 - Research in Geology
Supervised research and readings in a selected field of geology. Students from allied sciences, Mathematics, and Engineering may elect a research problem that combines their major field of study and geology. Prerequisite: Department permission.
Credits: 1-6.

GEOL 198 - Research in Geology
Supervised research and readings in a selected field of geology. Students from allied sciences, mathematics, and engineering may elect a research problem that combines their major field of study and Geology. Prerequisite: Department permission.
Credits: 1-6.

GEOL 201 - Advanced Field Geology
Advanced field mapping techniques, analysis of field data, preparation of geological maps and reports. Prerequisite: GEOL 260.
Credits: 3.

GEOL 210 - Systems Dynamics & Earth Sci
Analysis of generic systems with examples from physical and natural sciences. Geological systems emphasized. and behavior over time. Prerequisites: A major or minor in science, mathematics, natural resources, engineering, or permission of instructor. UG only.
Credits: 3.

GEOL 230 - Adv Igneous&Metamorphic Petrol
Application of phase equilibria, elemental and isotopic data, and textural interpretations to problems in igneous and metamorphic petrology, stressing modern theories of tectonics and petrogenesis. Prerequisite: GEOL 131.
Credits: 4.

GEOL 233 - Environmental Isotope Geochem
Course focuses on stable isotope geochemistry of low temperature processes occurring on and near the earth surface through lecture, laboratory, and seminar. Prerequisite: Introductory Chemistry.

Credits: 3.

GEOL 234 - Global Biogeochemical Cycles

Integrated perspective on biogeochemical cycles describing

Credits: 3.

GEOL 235 - Geochemistry of Natural Waters

Basic concepts of chemical equilibria applied to natural waters, including thermodynamics, pH, oxidation-reduction, weathering, and solution equilibria. Prerequisites: Chemistry 1, 2.

Credits: 3.

GEOL 240 - Tectonics

Applications of igneous and metamorphic petrology to problems in tectonophysics, including petrochemistry of the earth's crust and upper mantle and the internal structure of orogenic belts. Prerequisite: 101, 102.

Credits: 3.

GEOL 241 - Clastic Depositional Systems

Selected readings and field studies emphasizing the interpretation of clastic sedimentary deposits including transportation, processes of sedimentation, and geomorphology of ancient and recent sedimentary environments. Prerequisite: GEOL 153. Alternate years.

Credits: 3.

GEOL 243 - Clastic Petrology Laboratory

Study of clastic rocks in hand specimen and thin section. Prerequisite: Concurrent enrollment in GEOL 241.

Credits: 1.

GEOL 245 - Carbonate Depositional Environ

Paleoenvironmental analysis of carbonate rocks including selected readings, field investigations, and petrographic studies. Prerequisite: GEOL 153. Alternate years.

Credits: 3.

GEOL 247 - Carbonate Petrology Lab

Study of carbonate rocks in hand specimen and thin section. Prerequisite: Concurrent enrollment in GEOL 245.

Credits: 1.

GEOL 255 - Geohydrology

Field-based projects address hydrologic processes in geological context; precipitation, runoff, ground water flow, river behavior, and hillslope stability. Stresses data analysis, writing, and practical approaches to water-related environmental problems. Prerequisite: Major in science or engineering or permission.

Credits: 4.

GEOL 260 - Structural Geology

Examines processes and problems concerning the mechanical behavior of the Earth's crust and surface. Includes rock deformation stress, strain, and the interpretation of geological structures. Prerequisites: 101, 102, Physics 11 or permission.

Credits: 4.

GEOL 261 - Geodynamics

global scale. Project oriented, focusing on analysis and interpretation of geologic and geophysical data. Prerequisites: GEOL 101 and 102 or permission. UG only.
Credits: 4.

GEOL 272 - Regional Geology
Discussion of the geology of a selected region of North America; a four-week summer field trip to the area in question. Prerequisite: GEOL 101, GEOL 110, equivalent. or
Credits: 4.

GEOL 273 - Geology of the Appalachians
Origin of mountain belts; the Appalachian mountain system discussed in terms of tectonics and geologic processes active in modern continental margins. Prerequisites: 101, 102, or permission.
Credits: 3.

GEOL 278 - Principles of Aquatic Systems
See NR 278.
Credits: 3.

GEOL 295 - Advanced Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

GEOL 296 - Advanced Special Topics
See Schedule of Courses for specific titles.
Credits: 1-6.

GEOL 301 - Intro to Graduate Studies
in the Geosciences. Prerequisite: Graduate standing in For first year graduate students in Geology. Includes orientation to faculty, abstract and grant writing, comprehensive exams, talk preparation and scientific method Geology.
Credits: 1.

GEOL 302 - Intro Graduate Studies Geology
For first year graduate students in Geology. Includes orientation to faculty, abstract and grant writing, comprehensive exams, talk preparation and scientific method in the Geosciences. Prerequisite: Graduate standing in Geology.
Credits: 1.

GEOL 350 - Paleogeography
Paleopositions of continents and the distribution of land areas and ocean basins through geologic time in the context of plate tectonics. Prerequisite: Instructor permission.
Credits: 3.

GEOL 351 - Surface Proc & Quaternary Geol
Discussion and critique of scientific literature pertaining to Earth surface history and processes. Critical examination of author's methods, data, and assumptions. Student-led discussions. Specific focus changes yearly. Prerequisites: Graduate standing in science, natural resources or engineering, or Instructor permission.
Credits: 1-3.

GEOL 352 - Environmental Geology Seminar
Geologic constraints on environmental problems including: groundwater flow, contaminant transport, slope stability, climate change, sedimentation, deforestation

and earthquake hazards. Extensive readings and student-led discussions. Prerequisites: Graduate standing in science, natural resources, or engineering, or Instructor permission.
Credits: 1-3.

GEOL 353 - Crit Writing Earth&Env Science
Review of manuscripts and grants prepared by UVM students and faculty. Learn to write better by presenting writing, grammar and logic critiques in a seminar format. Prerequisite: Instructor permission.
Credits: 1-2.

GEOL 360 - Structural Anyl Deformed Rocks
Mechanisms of rock deformation; fracture phenomena and analysis; fault zone characteristics; fold generation analysis. Stress and strain interpretation of deformational features in rocks and minerals. Field work. Prerequisite: GEOL 260 or equivalent.
Credits: 4.

GEOL 361 - Advanced Structural Geology
Selected topics in analytical structural geology. Prerequisite: GEOL 260 or equivalent.
Credits: 3.

GEOL 371 - Advanced Readings
Readings and research problems intended to contribute to the program of graduate students in areas of geology for which formal courses are not available. Prerequisite: Graduate standing in Geology.
Credits: 1-3.

GEOL 391 - Master's Thesis Research
Credits: 1-9.

Geology (M. A. T.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

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Geology (M. S.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate field: 12 semester hours in geology; satisfactory scores on the general (aptitude) Graduate Record Examination. Year courses in chemistry, physics or biology, and calculus or in an approved ancillary science strongly recommended.

Requirements for Advancement to candidacy for the Degree of Master of Science

Satisfactory completion of one year of graduate study plus a comprehensive examination.

Minimum Degree Requirements for the Degree of Master ofScience

Thesis and advanced courses in geology must total at least 30 semester hours, including at least one 300-level course. Advanced courses in related sciences are encouraged and may be substituted for some selected geology courses on approval by the departmental advisor. All students must complete successfully a course in field geology before graduation. This can be satisfied by Geology 201, or a comparable course at another institution, or recognized experience with a state survey, U.S. Geological Survey, an oceanographic institute, a geolimnological group or industry. Satisfactory completion will be determined by the DepartmentalStudies Committee.

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Geology (M. S. T.)

College: Graduate College
Department(s): Geology

Overview

Research programs include environmental geology, geomorphology, and water resources; sedimentary, igneous and metamorphic environments and structural evolution of orogenic belts. Specific faculty interests include geologic history and recent sedimentation in the Lake Champlain Basin, processes and chronology of glaciation, stable and cosmogenic isotopic studies, water quality and pollutant transport, tectonic evolution of deformed continental margins, petrofabric and structural analysis of deformed rocks, partial melting processes, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

1. A bachelor's degree from an accredited institution;
2. Certification as a teacher of a physical or natural science;
3. Satisfactory scores on the Graduate Record Examination (general portion).

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Satisfactory completion of one year of graduate study plus departmental recommendation.

Minimum Requirements for the Degree of Master of Science in Teaching (Geology)

Thirty hours of course work that will strengthen the student's background in earth science. Up to 12 hours of 100-level courses may be chosen if applicable. Course work may be chosen from supporting subject areas as well as from geology. Each student, in conference with an advisor, will develop a program suited to his/her needs and background. No thesis is required; however, each degree recipient must complete a general written or oral examination.

Departments and Programs

Historic Preservation Department

Colleges: Graduate College

Faculty: Historic Preservation

Courses: Historic Preservation (HP)

Contact Information:

University of Vermont
Historic Preservation Department
213 Wheeler House
133 South Prospect Street
University of Vermont
Burlington, VT 05405-0164

Phone: (802) 656-3180
Fax: (802) 656-8794
Email: histpres@zoo.uvm.edu
Web Site: http://www.uvm.edu/~histpres/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Historic Preservation

Overview

This interdisciplinary graduate program leading to a Master of Science in Historic Preservation is offered in collaboration with the History Department. Enrollment is limited to qualified participants who are seeking an intensive, community-oriented educational experience that provides a balance between academic and professional training. As its

underlying philosophy, the program recognizes the diverse contributions, both high-style and vernacular, that every generation has made to the built environment and views historic preservation as a form of management which keeps these contributions in balance. The program is designed to develop future leaders to help foster economic growth through the stewardship of historic resources and to provide a focus for research on and public awareness of the built environment.

Applicants desiring financial aid may be nominated for Graduate College Fellowships or for Graduate Teaching Assistantships in the History Department.

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Courses in Historic Preservation

HP 200 - History American Architecture

Study of architectural history to gain fluency in the stylistic terms so essential to historic preservation and to public support for conserving our architectural heritage. Prerequisite: Open to non-HP majors by permission.

Credits: 3.

HP 201 - History on the Land

Identifying and interpreting evidence of the cultural forces - early settlement patterns, transportation, industry, agriculture, planning, conservation - that have shaped our land, buildings, towns and cities. Cross-listed with: HST 201.

Credits: 3.

HP 202 - Special Topics

Courses are offered under this number in specialized areas of historic preservation through Continuing Education.

Credits: 3.

HP 204 - Historic Pres: Devlpmnt Econ

Survey of economic, financial aspects of real estate development pertaining to preservation and adaptive use of historic buildings (market studies, pro-formas). Field trips. Actual proposal development for underutilized properties. Prerequisite: HP 201.

Credits: 3.

HP 205 - Historic Preservation Law

Legal issues in conservation of the built environment. Basic legal techniques for protection of historic structures (historic districts, protective legislation, easements, covenants). Study of significant court decisions. Prerequisite: HP 201.

Credits: 3.

HP 206 - Rschg Historic Structure/Sites

Methods for researching historic structures and sites using archival and physical evidence, deciphering archaic building technologies, and documenting structures through professional reports, architectural photography, measured drawings. Prerequisite: HP majors or by permission.

Credits: 3.

HP 302 - Community Preservation Project

Third-semester graduate students apply developed professionals skills to actual community preservation problems. Projects include strategy development, securing and allocating funds, research, advocacy, and implementation. Prerequisite: HP 301; Historic Preservation majors.
Credits: 3.

HP 303 - Grad Internship
Participants will devote a semester to preservation within an appropriate institution or agency. Prerequisite: Historic Preservation majors only.
Credits: 3.

HP 304 - Contemp Preservation Plan&Pol
This introduction to the professional practice of preservation planning traces the evolution of the historic preservation movement and examines contemporary preservation policy-making issues. Prerequisites: Historic Preservation Graduate majors only.
Credits: 3.

HP 305 - Hst Preservation Pract Methods
This course introduces students to professional practice methods for conducting historic site and structures surveys. National Register nominations, and rehabilitation investment tax credit application projects. Prerequisites: Historic Preservation Graduate majors only.
Credits: 3.

HP 306 - Architectural Conservation I
An examination of the physical properties of historic building materials, their deterioration mechanisms, and strategies for assessing conditions, conserving and rehabilitating historic resources. Lecture and lab. Prerequisites: Historic Preservation majors or by Instructor permission.
Credits: 3.

HP 307 - Architectural Conservation II
A continuation of Architectural Conservation I, emphasizing an integrated examination of historic preservation through lectures, seminars, and field and laboratory research projects. Prerequisite: HP 306.
Credits: 3.

HP 391 - Master's Thesis Research
Total of six hours required.
Credits: 1-6.

HP 395 - Advanced Special Topics
Credit as arranged.
Credits: 1-3.

HP 397 - Special Readings & Research
Credit as arranged.
Credits: 1-6.

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Historic Preservation (M. S.)

College: Graduate College
Department(s): Historic Preservation

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science in Historic Preservation

(1) A baccalaureate degree with a major in a preservation-related field such as architecture, architectural history, history, planning, business administration, economics, engineering, interior design, law, or environmental studies. (2) Applicants must take the general (aptitude) portion of the Graduate Record Examination and submit a sample independent research paper, design project, or other evidence of preservation-related professional ability. Almost all successful applicants have spent at least a year in a preservation-related job or volunteer work after the baccalaureate.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Admission to this highly competitive program constitutes acceptance to candidacy as well.

Minimum Degree Requirements for the Master of Science

(1) Thirty-six credit hours of course work. A minimum of 33 credit hours (including an internship or thesis) must be taken in historic preservation. (2) A written comprehensive examination given during the third semester. (3) An internship in a preservation agency, or a written thesis. This may be undertaken upon completion of two or three semesters of concentrated course work. At the conclusion of the internship, an oral presentation describing work accomplished will be given before a jury of practicing professionals for evaluation. (4) Historic Preservation 200, 201, 204, 205, 206, 301, 302, 306, 307 and 303

or 391 are required courses for the degree. Students also take one elective unless they elect to do a thesis instead of an internship. For the thesis option, a total of six credit hours is required for HP391.

Departments and Programs

History Department

Colleges: Arts and Sciences, Graduate College

Faculty: History

Courses: History (HST)

Contact Information:

University of Vermont
History Department
Wheeler House
133 South Prospect St
Burlington, VT 05405

Phone: (802) 656-3180
Fax: (802) 656-8794
Email: Debra.Smail@uvm.edu
Web Site: http://www.uvm.edu/~history/

Academic Offerings

- Graduate Degrees
  - Master of Arts (M. A.)
    - History
  - Master of Arts in Teaching (M. A. T.)
    - History

Concurrent Degree Programs

- History (B. A. / M. A.)

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Courses in History

HST 009 - Global History to 1500
The development and cross-fertilization of civilizations in Eurasia, Africa, and the Americas from about 3500 B.C.E. to A.D. 1500.
Credits: 3.

HST 010 - Global History Since 1500
Character, development, and emerging interdependence of the world's major civilizations since 1500.
Credits: 3.

HST 011 - History of the US
Survey from the pre-Revolutionary period to 1876.
Credits: 3.

HST 012 - History of the US
Survey from 1876 to the present.
Credits: 3.

HST 013 - Ideas in the Western Tradition
setting. Greece and Rome. Prerequisites: Concurrent enrollment in English 27, 28; Religion 27, 28; Integrated Humanities Program.
Credits: 3.

HST 014 - Ideas in the Western Tradition
Great books of Western civilization in their historical setting. Renaissance to Existentialism. Credit will not be given for History 14 and History 25 or 26. Prerequisites: Concurrent enrollment in English 27, 28; Religion 27, 28; Integrated Humanities Program.
Credits: 3.

HST 019 - Western World Since 1945
Comparative history of European nations and the United States since 1945.
Credits: 3.

HST 021 - Classical Greek Civilization
Cross-listed with: CLAS 021.
Credits: 3.

HST 022 - Classical Roman Civilization
Cross-listed with CLAS 023.

Credits: 3.

HST 023 - The Birth of Europe

Survey of history of Western Europe from the late Roman Empire to the stabilization of Medieval Civilization around A.D. 1000.

Credits: 3.

HST 024 - High & Later Middle Ages

The stabilization and expansion of Western European civilization in the Age of the Crusades; the crisis of the 14th century; 15th century recovery.

Credits: 3.

HST 025 - European Civilization to 1815

Introduction to political, social, and intellectual movements which have shaped the foundations of Western civilization from the Renaissance to the French Revolution.

Credits: 3.

HST 026 - Europe 1815 - 1945

Europe from the fall of Napoleon to the end of World War II, focusing on political, social, economic, and intellectual developments.

Credits: 3.

HST 027 - Modern Eastern Europe

Eastern Europe since 1772, especially areas comprising present-day states of Bosnia-Herzegovina, Croatia, the Czech Republic, Hungary, Macedonia, Poland, Slovakia, Slovenia, and Yugoslavia. Focus on politics and culture of nationalism.

Credits: 3.

HST 040 - African History to C-1870

Introduction to the political, social and economic history of Africa, focusing on the major events and forces that shaped the continent before the colonial period.

Credits: 3.

HST 041 - Africa From C-1870 to Present

Introduction to African history from European conquest to the present, with special attention paid to African resistance, the nature of colonialism, and African independence movements.

Credits: 3.

HST 045 - Hst Islam&Middle East to 1258

Introduction to the major institutions evolved in the Middle East from the advent of Islam to the Mongol conquest of Baghdad in 1258.

Credits: 3.

HST 046 - Hst Islam&Mid East Since 1258

Islamic Middle East since the Mongol conquest of Baghdad

Credits: 3.

HST 050 - China & Japan to 1800

Historical development of the politics, economics, social structure, philosophy, religion, and the arts in East Asia from neolithic times to 1800.

Credits: 3.

HST 051 - China & Japan Since 1800

Continuity and change in the politics, economics, society, and culture of China and Japan in the 19th and 20th centuries.

Credits: 3.

HST 062 - Colonial Latin American Hist

Comparative survey concentrating on the complex cultural, economic, and political development of Spanish and Portuguese America from pre-Conquest to 1820.
Credits: 3.

HST 063 - Modern Latin American History

Comparative survey concentrating on Latin America from the independence movements to the present with emphasis on cultural, political, and economic development and U.S. intervention.
Credits: 3.

HST 065 - History of Canada

Survey of Canadian history from aboriginal settlement to the present. Themes include Indian-White relations, colonial societies, national identities, American influence. Field trip to Canada.
Credits: 3.

HST 068 - History U.S. Peoples of Color

Comparative survey of historical experiences of African-Americans, Latinos, Asian-Americans, and Native Americans in U.S. Racism, conquest, slavery, exploitation, civil rights, militancy, liberation movements, and cultural renaissance.
Credits: 3.

HST 085 - History of Science

Survey of the history of the physical and biological sciences from antiquity to the present. Stresses science as an intellectual activity within the contemporary context of philosophy, religion, and social organization.
Credits: 3.

HST 086 - History of Science

Survey of the history of the physical and biological sciences from antiquity to the present. Stresses science as an intellectual activity within the contemporary context of philosophy, religion, and social organization.
Credits: 3.

HST 095 - Introductory Special Topics

See Schedule of Courses for specific titles.
Credits: 1-6.

HST 096 - Introductory Special Topics

See Schedule of Courses for specific titles.
Credits: 1-3.

HST 120 - Historical Geography of Europe

Cross-listed with: GEOG 155.
Credits: 3.

HST 121 - History of Greece

Cross-listed with CLAS 121.
Credits: 3.

HST 122 - History of Rome

Mediterranean world: cultural conflict, development of a unifying national identity, and the foundation of European states. Prerequisites: HST 009, CLAS 023/HST 022, or appropriate work in Classics. Cross-listed with: CLAS 122.
Credits: 3.

HST 125 - The Renaissance

European society from the 14th to early 16th century, emphasizing the transition from medieval to "modern" society and the roots of Renaissance Italy's cultural and artistic brilliance. Prerequisite: 9 or 10 or 14 or 25 or 26.

Credits: 3.

HST 126 - The Reformation

Reformation and their impact on the social, political,

Credits: 3.

HST 127 - European Culture&Soc 1914-1945

Survey of European high modernism, focusing on the avant-garde, Stalinism, fascism, and popular culture. Prerequisite: 26 or 128 or three hours history.

Credits: 3.

HST 128 - Eur Soc & Culture 1880-1920

European society and culture before and during "The Great War." Transitions in the arts, philosophy, science and technology, industry, dance, theatre, attitudes, and diplomacy. Prerequisite: 26.

Credits: 3.

HST 130 - European Intellectual History

The history of ideas in Europe from the 15th to the 20th centuries. Topics vary according to instructor. Prerequisites: 25 or 26.

Credits: 3.

HST 132 - Modern Irish History

Ireland 1600 to present. English subjugation of Ireland, Anglo-Irish, emergence of Irish nationalism, Irish Literary Renaissance, Irish Free State, and ongoing problem of Northern Ireland. Prerequisite: 25 or 26.

Credits: 3.

HST 136 - Topics in History of France

Varying themes on the political, cultural, and intellectual history of France from the French Revolution to the present. Prerequisite: Three hours history.

Credits: 3.

HST 137 - History of Russia

Russian political, social, and intellectual history from Kievan Rus' to the Revolutions of 1917, focusing on the Imperial period (1700-1917). Prerequisite: 10 or 26.

Credits: 3.

HST 138 - History of the Soviet Union

Soviet political and social history, 1917-1991, centering on the Stalin era and on efforts of post-Stalin regimes to deal with the Stalinist legacy. Prerequisite: 10, 26 or 137.

Credits: 3.

HST 139 - Modern Germany

Political, cultural, and social history of Germany from unification in 1871 through the Wilhemine empire, Weimar Republic, Nazi era, and postwar period. Prerequisites: 10 or 14 or 26 or work in German.

Credits: 3.

HST 140 - W Africa:Holy War-Colonialism

Lecture survey. Topics include: Sudanic states, Islamic revolution, slavery and the slave trade, European scramble and the African resistance, colonialism and the colonial state, African nationalism. Prerequisite: HST 040 or HST 041.
Credits: 3.

HST 141 - History of Southern Africa

Lecture survey, covering the history of Southern Africa from the Bantu Migrations to the end of Apartheid. Prerequisite: HST 040 or HST 041.
Credits: 3.

HST 149 - History of Ancient Near East

Survey of primary civilizations of Egypt and Mesopotamia and the secondary cultures of Anatolia, Syria-Palestine, Assyria, and Persia. Prerequisities: HST 009 or CLAS 021 (HST 021) or appropriate work in Classics. Cross-listed with: CLAS 149.
Credits: 3.

HST 150 - China:The 19th&20th Centuries

China from the late Qing Dynasty to the present, with particular attention to the influence of Western imperialism, the process of revolution, and the Communist era. Prerequisite: Six hours of history, 50 recommended.
Credits: 3.

HST 151 - Modern Japan

Transition from tradition to modernity in Japan from the Meiji Restoration, 1868 to the present. Prerequisite: Six hours of history, 50 recommended.
Credits: 3.

HST 152 - The Chinese Revolution

Examination of the ongoing process and significance of the Chinese Revolution of the 20th century, emphasizing the socio-economic and cultural aspects of the changes it wrought. Prerequisite: Six hours of History; HST 051 recommended.
Credits: 3.

HST 157 - Greek Feminism

The construction of the status of women in ancient Greek society. Readings include lyric, tragic, and comic poetry, philosophy, oratory, novel, and nonliterary documents. Prerequisite: Sophomore standing; three hours in literature, History, Anthropology, or Sociology. Cross-listed with: CLAS 157, WLIT 157, WST 157.
Credits: 3.

HST 161 - Caribbean & Latin American Hst

Topics include colonialism, plantation economy, slavery, race relations, gender issues, economic development, and U.S. influence. Prerequisite: HST 062 or HST 063 or permission.
Credits: 3.

HST 163 - Early Caribbean History

Exploration of the economic, political and cultural developments in the Caribbean, pre-Conquest to the 19th century. Prerequisite: Three hours History; HST 062 or HST 063 recommended.
Credits: 3.

HST 164 - Mod Carib Hist:Cannons-Cricket

Exploration of the economic, political and cultural developments in the Caribbean,

19th century to the present. Prerequisite: Three hours History; HST 062 or HST 063 recommended.
Credits: 3.

HST 165 - Canadian-American Relations
Canada's relationship with the U.S. from the Revolutionary War to the present, emphasizing diplomatic, economic, social, and environmental relations in the 19th and 20th centuries. Prerequisite: Three hours in U.S. or Canadian history.
Credits: 3.

HST 168 - Native American History
A survey of North American Indian history from European contact to the present. Cultural and military conflicts, resistance movements, accommodation, and cultural adaptation within the U.S. Prerequisite: Three hours History.
Credits: 3.

HST 169 - Hist Native American Thought
An examination of Native American philosophies, spiritualities, political theories, and ecological perspectives. Traditional Native American thought, intellectuals and intellectual movements, and contemporary resistance and reform movements. Prerequisite: Three hours.
Credits: 3.

HST 170 - Historical Geography of the US
(Same as Geography 170.)
Credits: 3.

HST 171 - Social History of the U.S.
Selected topics in history of American society, including community structures, family life, work patterns, value systems, social class, and mobility. Prerequisite: HST 011 or HST 182.
Credits: 3.

HST 172 - Social History of the U.S.
Selected topics in history of American society, including community structures, family life, work patterns, value systems, social class, and mobility. Prerequisite: HST 012 or HST 182.
Credits: 3.

HST 173 - US Foreign Relations to 1914
The domestic and international contexts of U.S. relations with the rest of the world, 1776-1914. Prerequisites: 10 or 11.
Credits: 3.

HST 174 - US Foreign Relations 1914 On
The domestic and international contexts of U.S. relations with the rest of the world, 1914-present. Prerequisites: 10 or 12.
Credits: 3.

HST 177 - American Revolution
Survey of the Revolutionary Era, 1760-1791. Causes of the Revolution, War for Independence, establishment of the Constitution. Prerequisite: Six hours of history or other social sciences of which History 25 is highly recommended.
Credits: 3.

HST 179 - U.S. History Since 1960

Topical review of U.S. history since 1960, emphasizing problems of interpreting and reconstructuring the recent past. Prerequisite: 12.
Credits: 3.

HST 181 - Film and History
Topics in the history of American and European cinema and society, focusing on the filmmaker as historian and the film as historical artifact. Prerequisite: Three hours History or Film.
Credits: 3.

HST 182 - History of Women in the US
Survey of the origins and changes in images, status, and roles of women in American society since the colonial period. Prerequisite: Three hours in Histroy (HST 011 or HST 012 recommended), or WST minor. Cross-listed with: WST 161.
Credits: 3.

HST 183 - US Military History
Development of the U.S. military establishment within the framework of U.S. history from the Colonial era to the present. Prerequisite: HST 010, HST 011, or HST 012.
Credits: 3.

HST 184 - Vermont History
Survey of Vermont history from early times to the present. Prerequisite: HST 011 or HST 012. Cross-listed with: VS 184.
Credits: 0-3.

HST 185 - Science & Culture
emphasizing works of leading scientists, mathematicians, and humanists. Prerequisite: HST 086 or six hours of European history, or science major.
Credits: 3.

HST 186 - The Scientific Revolution
Interrelationship between European scientific activity and social change during 16th and 17th centuries. Emphasis on philosophical, religious, artistic, and social context of the times. Prerequisite: HST 085 or six hours of European history, or science major.
Credits: 3.

HST 187 - Afr Amer Hst:1619 to Civil War
Economic, social, political, and intellectual developments in U.S. history as they have affected and been affected by African-Americans, 1619 to Civil War. Prerequisite: Three hours History.
Credits: 3.

HST 188 - Afr Amer Hst:Civil War-present
Economic, social, political, and intellectual developments in U.S. history as they have affected and been affected by African-Americans, Civil War to present. Prerequisite: Three hours History.
Credits: 3.

HST 189 - Hist African-American Women
An exploration of the experiences of women of African descent from their arrival in America to contemporary times. Prerequisites: Any one of the following: HST 011; HST 012; HST 182, HST 187, HST 188; WST 073; HST 174, HST 235, HST 273.

Credits: 3.

HST 190 - The Holocaust

Study of the background, events, and aftermath of the Holocaust in Nazi Germany and Europe under German control. Prerequisite: 10 or 26 or 27 or instructor's permission.

Credits: 3.

HST 191 - World War II

Causes, conduct, and consequences of global war from 1931-1945, including social, economic, political, and diplomatic as well as military aspects. Prerequisite: 10 or 12 or 26 or 51.

Credits: 3.

HST 192 - Sp Meth Sec Ed for Soc Studies

(Same as Education 179.) Social studies curricula and selected social studies topics. (Not acceptable toward fulfilling Arts and Sciences College major requirements.) Prerequisite: Acceptance in teacher certification program.

Credits: 3.

HST 195 - Intermediate Special Topics

See Schedule of Courses for specific titles. Prerequisites: Junior or senior standing, six hours of history.

Credits: 0-3.

HST 196 - Intermediate Special Topics

See Schedule of Courses for specific titles. Prerequisites: Junior or senior standing, six hours of history.

Credits: 0-3.

HST 197 - Readings & Research

Prerequisite: May be prescribed by an individual Instructor; Junior/Senior standing.

Credits: 3-6.

HST 198 - Readings & Research

Prerequisite: May be prescribed by an individual Instructor; Junior/Senior standing.

Credits: 3-6.

HST 199 - Internship in History

Supervised cooperative internship work in history in archives, museums, libraries, etc. To be individually arranged for each student. Prerequisite: Junior/Senior standing; department permission.

Credits: 3-6.

HST 201 - History on the Land

(Same as Historic Preservation 201; Art 201.)

Credits: 3.

HST 209 - Seminar in Global History

since 1500.

Credits: 3.

HST 210 - Seminar in Global History

Selected topics on the nature and results of interactions among the world's peoples. HST 209: to 1500. HST 210: since 1500. Prerequisite: Minimum Junior standing; twelve hours of History including HST 009 or HST 010.

Credits: 3.

HST 221 - Seminar in Ancient History

(See Classics 221, 222.)

Credits: 3.

HST 222 - Seminar in Ancient History

(See Classics 221, 222.)

Credits: 3.

HST 224 - Seminar in Medieval Europe

Selected topics on Europe from the Fall of Rome to the Renaissance. Prerequisites: Twelve hours of history including 23 or 24; junior, senior, or graduate standing.

Credits: 3.

HST 225 - Seminar in Early Modern Europe

Selected topics on European history from the Renaissance to the French Revolution. Prerequisite: Junior/Senior/Graduate standing and twelve hours of History.

Credits: 3.

HST 226 - Seminar in Modern Europe

Selected topics on European history from 1815 to present. Prerequisites: Junior, senior, or graduate standing; 12 hours history.

Credits: 3.

HST 227 - Seminar in Modern Europe

Selected topics on European history from 1815 to present. Prerequisites: Junior, senior, or graduate standing; 12 hours history.

Credits: 3.

HST 228 - Seminar in Popular Culture

History of the attitudes of ordinary people towards every day life in European society from the Middle Ages to the present. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.

Credits: 3.

HST 237 - Seminar in Russia before 1917

Selected topics in Russian intellectual, social, and cultural history focusing on the period 1825-1917. Prerequisites: Junior, senior, or graduate standing, 12 hours of history including 137.

Credits: 3.

HST 238 - Seminar in Soviet History

Selected topics in Soviet social and cultural history from the Bolshevik Revolution to the death of Stalin (1917-53). Prerequisite: Junior/Senior/Graduate standing; twelve hours of History including HST 138.

Credits: 3.

HST 240 - Comparative Slavery:Hist Persp

History of slavery from a comparative perspective, including Classical Antiquity, Islam and the Middle East, Africa, Latin America, and the Southern United States. Prerequisite: Minimum Junior standing.

Credits: 3.

HST 241 - Seminar in African History

Topics in African history. Generally, the seminar will focus on one of three themes:

Islam, slavery or urbanism. Prerequisite: Junior/Senior/Graduate standing; twelve hours History.
Credits: 3.

HST 250 - Seminar in East Asian History
Topics in the history of East Asia. Prerequisite: Junior/ Senior/Graduate standing; twelve hours of History.
Credits: 3.

HST 252 - Seminar on China
Selected topics on the history of China. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History, including HST 150 or equivalent.
Credits: 3.

HST 262 - Sem Caribbean & Latin Amer Hst
Selected topics in Caribbean and Latin American history. Prerequisite: Junior/Senior/Graduate standing; HST 062 or HST 063, or permission.
Credits: 3.

HST 265 - Seminar in Canadian History
Topics in 19th and 20th century Canadian history; national development, regionalism, multiculturism, and international relations. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.
Credits: 3.

HST 271 - Seminar in US Social History
Prerequisite: Minimum Junior standing;
Credits: 3.

HST 272 - Seminar in US Social History
Topics in U.S. Social History. HST 271: to the Civil War; HST 272: Civil War to the present. Prerequisite: Junior/Senior/ Graduate standing; twelve hours of History.
Credits: 3.

HST 273 - Seminar in Modern U.S. History
Selected topics in U.S. history, among them foreign relations, the role of the presidency, World War II, and the Cold War. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.
Credits: 3.

HST 274 - Seminar in Modern U.S. History
Selected topics in U.S. history, among them foreign the Cold War. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.
Credits: 3.

HST 284 - Seminar in Vermont History
Vermont Historical Society, and the Vermont State Archives. Prerequisite: Junior/Senior/Graduate standing; twelve hours History, including HST 184 or permission.
Credits: 3.

HST 285 - Seminar in History of Science
Selected topics in the history of science. Prerequisite: Junior/Senior/Graduate standing;12 hours of History.
Credits: 3.

HST 287 - Seminar in Historiography

Topics and methods in contemporary historical writing. Prerequisite: Junior/Senior/Graduate standing: twelve hours of History.
Credits: 3.

HST 295 - Special Topics Seminar
See Schedule of Courses for specific titles. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.
Credits: 3.

HST 296 - Special Topics Seminar
See Schedule of Courses for specific titles. Prerequisite:
Credits: 3.

HST 300 - Graduate Tutorial
Variable credit.
Credits: 3-6.

HST 301 - Intro to Grad Study in History
Historical methods, philosophy of history, and the history of history writing.
Credits: 3.

HST 351 - American Cultural History
Intended primarily for students in Historic Preservation, but open to other Graduate students.
Credits: 3.

HST 391 - Master's Thesis Research
Required of all candidates for the M.A. Normally arranged for two semesters at three hours each. Credits: 1-6.
Credits: 1-6.

HST 395 - Special Topics
Credits: 3.

HST 397 - Special Readings and Research
Directed individual study of areas not appropriately covered by existing courses. Variable credit. Credits 1-6.
Credits: 1-6.

History (M. A.)

College: Graduate College
Department(s): History

Overview

The History Department offers a comprehensive program of courses in the history of the Western Hemisphere, European history, and non-Western history.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

Applicants should have an undergraduate major in history, or in a related field of the social sciences or humanities with the equivalent of a minor in history. They must take the Graduate Record Examination and submit with the application a sample of writing, such as a research paper done in the course of undergraduate study.

Requirements for Advancement to Candidacy for the Degree of Masters of Arts

Each student's Studies Committee will certify admission to candidacy when it has approved a course of study (which may include remedial work such as courses in appropriate foreign languages) and a tentative thesis topic.

Minimum Degree Requirements for the Degree of Master of Arts

Plan A: (Non-thesis) Thirty hours of coursework in history, at least fifteen of which must be earned in seminar courses.

Plan B: (Thesis) Thirty hours of course work in history, including six hours of thesis research. The thesis must be successfully defended in an oral examination.

Each plan requires that the student pass a comprehensive exam (oral or written) in two areas of historical knowledge.

History (M. A. T.)

College: Graduate College
Department(s): History

Overview

The History Department offers a comprehensive program of courses in the history of the Western Hemisphere, European history, and non-Western history.

General Requirements

- Graduate (Master's)

Accelerated Master's Program in History (B. A. / M. A.)

College: Graduate College
Department(s): History

Overview

History majors in their third year of undergraduate standing at UVM may apply to the department for the AMP in history. Students accepted into the program will during their senior year work simultaneously on their B. A. and M. A. requirements, toward which they may count up to six concurrent credits. Application forms and further information may be obtained from the Director of Graduate Studies, Department of History.

Departments and Programs

Materials Science Program

Colleges: Graduate College

Faculty: Materials Science

Courses: Materials Science (MATS)

Contact Information:

University of Vermont
Materials Science Program
A405 Cook Physical Sciences Building
82 University Place
University of Vermont
Burlington, VT 05405-0125

Phone: (802) 656-0308
Email: sanjeeva.murthy@uvm.edu
Web Site: http://www.uvm.edu/matsci/

Related Programs:

- Accelerated B. S./M. S. Program

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Materials Science
  - Doctor of Philosophy (Ph. D.)
    - Materials Science

Overview

Participating faculty are from the following departments: Electrical an Computer Engineering, Civil and Environmental Engineering, Mechanical Engineering, Physics, and Chemistry.

The program in Materials Science is multidisciplinary. It is involved with the mechanical, electrical, chemical, and physical properties of materials - primarily solids - and applications of these materials. It is multidisciplinary in the sense that it combines the theoretical and experimental capabilities of a variety of disciplines and applies them to the solution of complex scientific and engineering problems. Problems such as analysis and synthesis of electronic materials, development of bulk and thin film electronic devices and integrated circuits, physical and mechanical properties of biomaterials and polymers are typical examples requiring such an interdisciplinary approach. The course program gives a broad background in materials. It also provides flexibility allowing specialization in particular areas of interest.

The program in Materials Science offers the Master of Science degree and the Doctor of Philosophy degree. Each student must meet the general requirements for admission as outlined under the Regulations of the Graduate College. Students in the program are sponsored by the participating department which best reflects the students' backgrounds and interests.

Courses in Materials Science

MATS 391 - Master's Thesis Research
Credits: 1-18.

MATS 396 - Advanced Special Topics
See Schedule of Courses for specific titles.
Credits: 1-18.

MATS 491 - Doctoral Dissertation Research
Credits: 1-18.

Materials Science (Multidisciplinary) (M. S.)

College: Graduate College
Department(s): Materials Science Program

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

A bachelor's degree in physics, chemistry, metallurgy, engineering, materials science, or mathematics. Applicants with other backgrounds will be evaluated individually.

Minimum Degree Requirements

The above requirements for admission must be supplemented in either of the following ways:

Plan A With Thesis: 30 graduate credit hours of an approved program of study including at least 18 credit hours of course work; completion of at least one three-credit hour course in each of the following categories; solid state theory, quantum mechanics, applied mathematics, and materials properties of solids; satisfactory completion of a comprehensive examination, and satisfactory completion of an M. S. thesis including its defense at an oral examination.

Plan B Without Thesis: 30 credit hours of an approved program of study; completion of at least one three-credit hour course in each of the following categories: solid state theory, quantum mechanics, applied mathematics, and materials properties of solids, and satisfactory completion of a comprehensive examination.

Materials Science (Multidisciplinary) (Ph.D)

College: Graduate College
Department(s): Materials Science Program

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Doctor of Philosophy

An accredited master's degree (or equivalent) in physics, chemistry, metallurgy, engineering, mathematics, or materials science.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of a Ph. D. comprehensive examination in Materials Science and demonstrated competence in computer programming. The comprehensive examination includes the areas of quantum mechanics, solid state theory, applied mathematics, thermodynamics, and materials properties of solids.

Minimum Degree Requirements

In addition to the above, the following are required:

A minimum of 75 graduate credit hours including a minimum of 20 in dissertation research. An overall grade-point average in graduate courses of 3.25 or better. Completion of at least one three-credit hour course in each of the following categories: solid state theory, quantum mechanics, applied mathematics, thermodynamics and kinetics, and one course in each of two categories dealing with materials properties of solids. Satisfactory completion of a Ph.D dissertation including its defense at an oral examination.

Departments and Programs

Mechanical Engineering Department

Colleges: Engineering and Mathematics, Graduate College

Faculty: Mechanical Engineering

Courses: Mechanical Engineering (ME)

Contact Information:

University of Vermont
Mechanical Engineering Department
201 Votey Building
33 Colchester Ave.
Burlington, VT 05405

Phone: (802) 656-3320
Fax: (802) 656-1929
Email: [unavailable]
Web Site: http://www.emba.uvm.edu/me/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Biomedical Engineering

- Mechanical Engineering
    - Doctor of Philosophy (Ph. D.)
        - Mechanical Engineering
- Concurrent Degree Programs
    - Mechanical Engineering (B. S. / M. S.)
    - Mechanical Engineering/Materials Science (B. S. / M. S.)

Overview

Mechanical engineering spans the broadest spectrum of engineering activities from concept and design, through manufacturing and maintenance of all kinds of products and systems. Nearly all objects created by humans have some mechanical engineering input, from a simple spoon to a streamlined skateboard to an elegant spacecraft.

Please view our mission statement and objectives at:
http://www.emba.uvm.edu/me/mission.phtml

Courses in Mechanical Engineering

ME 012 - Dynamics

Kinematics and kinetics of particles and rigid bodies in two and three dimensions. Computer-aided analysis. Prerequisite: CE 001, MATH 121.

Credits: 3.

ME 014 - Mechanics of Solids

Cross-listed with: CE 100.

Credits: 3.

ME 040 - Thermodynamics

Principles of engineering thermodynamics; applications of these principles to thermodynamic cycles. Credit not allowed for both 40 and 41. Prerequisite: Math 22, Physics 31 with 21.

Credits: 3.

ME 042 - Engineering Thermodynamics

Properties and processes of fluids; perfect gases, and approximate relationships for real gases; applications of thermodynamics, principles of combustion, mixtures, power cycles, gas compression, and refrigeration. Prerequisite: 40.

Credits: 3.

ME 044 - Heat Transfer

Introductory treatment of heat transfer by conduction, convection, and radiation. Co-requisite: ME 040.

Credits: 1.

ME 082 - Mech Engineering Lab I

Computer methods in mechanical engineering. Introduction to scientific programming; solids modeling and stress

Credits: 3.

ME 095 - Special Topics

One to three hours with instructor's approval.

Credits: 0-3.

ME 101 - Engineering Materials I

Atomic structure, crystalline structure, mechanical properties of metals; testing of materials, multicomponent systems, phase equilibria, processing metals, polymers, composite materials, ceramics and glass corrosion. Prerequisite: 14.

Credits: 3.

ME 111 - System Dynamics

Modeling of systems with mechanical, electrical, fluid, and thermal elements. Linear systems analysis. Response of vibratory and feedback systems. Computer simulation. Prerequisite: 12.

Credits: 3.

ME 114 - Intro Engineering Mechanics

Introduction to statics, dynamics, fluid mechanics, strength of materials, thermodynamics. Prerequisite: Junior standing in engineering or physical sciences.

Credits: 3.

ME 123 - Mechanical Engineering Lab II

Engineering measurements, data analysis and theory of experimentation. Experiments with fluids and material testing machines and instrumentation for dynamic measurements. Corequisite: 143.

Credits: 2.

ME 124 - Mechanical Engineering Lab III

Engineering measurements, data analysis and theory of experimentation. Experiments with fluids and material testing machines and instrumentation for dynamic measurements. Corequisite: 143.

Credits: 2.

ME 143 - Fluid Mechanics

Fluid pressure distributions; integral control volume systems; differential relations for a fluid particle; dimensional similarity; viscous flow in ducts; boundary layer flows; inviscid incompressible flows. Prerequisites: 12, 42.

Credits: 3.

ME 144 - Heat Transfer

One- and two-dimensional steady and unsteady thermal conduction; natural and forced internal and external convection; thermal radiation; heat exchangers; boiling and condensation heat transfer. Prerequisite: ME 143.

Credits: 3.

ME 150 - The Engineering Profession

Professional practice of engineering. Laws, ethics, engineering economy, liability, insurance, and contracts. Prerequisite: Senior standing or Instructor permission.

Credits: 3.

ME 161 - Manufacturing Engineering I

Mechanical and thermal processing of metallic and nonmetallic materials; casting, forming, cutting, grinding, joining, high energy forming, EDM, ECM, Laser, and ultrasonic. Prerequisite: Senior ME standing.

Credits: 3.

ME 162 - Manufacturing Engineering II

Machine tools engineering, flexible manufacturing systems, robotics in manufacturing, automatic factory, computer-aided manufacturing.

Credits: 3.

ME 170 - Mechanical Design I

Advanced mechanics of materials, stress strain, bending and torsion of slender

members, energy methods, finite element modeling, and CAD topics including parametric and solid modeling. Prerequisite: ME 101.
Credits: 4.

ME 171 - Design of Elements
Mechanical fatigue criteria, fatigue analysis and design of springs, bolted/welded joints, gearing, shafts, bearings, power transmission. Computer-aided design and analysis. Prerequisite: Junior standing; ME 014.
Credits: 3.

ME 172 - Design of Systems
Design synthesis and optimization; probabilistic aspects in design; expert systems in design. Prerequisite: ME 171.
Credits: 3.

ME 174 - Industrial Design Project
Design projects from industry. Prerequisite: ME 171.
Credits: 1.

ME 183 - Mechanical Engineering Lab IV
of a specified product. Prerequisite: Senior standing Advanced engineering experimentation,data collection and reduction techniques applied to areas of mechanical engineering; projects involving "design for manufacturing" in Mechanical Engineering.
Credits: 3.

ME 185 - Senior Project
An individual engineering study designed to particular interest of the student, utilizing and synthesizing the student's total mechanical engineering educational experience. Prerequisite: Senior standing.
Credits: 1 or 2.

ME 186 - Senior Project
An individual engineering study designed to particular interest of the student, utilizing and synthesizing the student's total mechanical engineering educational experience. Prerequisite: Senior standing.
Credits: 1 or 2.

ME 191 - Senior Thesis
Investigation of a research or design project under supervision of assigned staff member culminating in acceptable thesis. Prerequisite: Senior standing; department permission.
Credits: 3.

ME 193 - College Honors
Credits: 1-3.

ME 194 - College Honors
Credits: 1-6.

ME 195 - Special Topics
Prerequisite: Senior standing in Civil or Mechanical Engineering.
Credits: 1-3.

ME 203 - Machinery Analysis & Synthesis
Kinematic and kinetic analysis of two- and three-dimensional machines; kinematic synthesis, electromechanical and servo mechanisms; application to robotic

mechanisms. Prerequisite: Senior standing in ME.
Credits: 3.

ME 207 - Biomechanics I
Introduction to the structure and mechanics of the musculoskeletal system. Application of mechanics to bone, tendon, ligaments, and other biological materials. Prerequisite: Senior or graduate standing in ME, or instructor permission.
Credits: 3.

ME 208 - Biomechanics II
Introduction to biomaterials and the mechanical behavior of bioviscoelastic fluids or solids. Prerequisite: 207 or instructor permission.
Credits: 3.

ME 209 - Biofluid Dynamics
Fluid dynamics of human physiology. Circulatory and respiratory mechanics, steady and unsteady laminar flow, pulse wave reflections, curved and collapsible tube flow, turbulence. Prerequisite: 143 or equivalent.
Credits: 3.

ME 234 - Mechanical Vibrations
Analysis, measurement, and control of mechanical vibrations; SDOF, MDOF, and rotating systems, forced, free, and random vibrations. Prerequisite: ME 111 or Senior/ Graduate standing in engineering or physical sciences.
Credits: 3.

ME 235 - Turbomach Vibration Anyl/Tstng
Vibration in rotating machines; vibration measurement techniques; machinery condition and degradation; condition monitoring and predictive maintenance; industrial vibration techniques including proximity probes, accelerometers, FFT analyzer. Prerequisite: ME 244.
Credits: 2.

ME 241 - Combustion Processes
Combustion thermodynamics; chemical kinetics; laminar flames, premixed and diffusion; turbulent flames; ignition, explosion, and detonation; droplet combustion; flame spread; large scale fires; rocket combustion. Prerequisite: Senior/Graduate standing.
Credits: 3.

ME 242 - Adv Engr Thermodynamics I
Foundations of statistical mechanics. Gases and crystals. Chemical equilibrium. Irreversible processes. Prerequisite: Senior/Graduate standing or permission.
Credits: 3.

ME 243 - Inviscid Flow
Eulerian and Lagrangian descriptions of motion. Potential flow. Thin-airfoil theory and numerical methods. Linear wave theory. Flow stability. Linearized subsonic and supersonic flow. Prerequisite: 143.
Credits: 3.

ME 244 - Intro to Turbomachinery Anyl
Fundamental turbomachinery principles of fluid mechanics, thermodynamics, and structural analysis; basic equations and computational techniques for analysis and

design to model and evaluate turbomachinery. Prerequisite: ME 243, MATH 271.
Credits: 2.

ME 245 - Advanced Heat Transfer I

Transient heat conduction; integral methods; convection; formulation and solution; boiling, condensation; radiant heat exchange in enclosures and with emitting-absorbing gases, advanced view factors. Prerequisite: Senior standing in ME or instructor's permission.
Credits: 3.

ME 246 - Centrifugal Compressors

Fluid dynamic and thermodynamic principles of centrifugal compressor design and design practice; limits of stable operation and instability prediction and control. Prerequisite: ME 244.
Credits: 2.

ME 247 - Centrifugal Pumps

Centrifugal pump design principles and practice; performance limits; cavitation; design tools and pump design optimization. Prerequisite: ME 244.
Credits: 2.

ME 248 - Turbomachinery Special Topics

Content in axial fans/compressors; axial, radial, or steam turbines; CFD, dynamics/rotordynamics, or materials for turbo-machinery; power plant or refrigeration cycle developments; turbocharged and compound IC-engines. Prerequisite: ME 244.
Credits: 1 or 2.

ME 249 - Computational Fluids Engr

Computational methods for solving the Navier-Stokes equations and combined thermo-fluid flows; finite- differences and finite-volume techniques; use of standard commercial CFD software. Prerequisites:
Credits: 3.

ME 252 - Mechanical Behavior Materials

Elastic and plastic behavior of single crystals; dislocations; approximate plastic analysis; anisotropic materials; hardness; fractures; fatigue; damping; creep and surface phenomena. Prerequisite: 101, permission. Credit given for 252 or 272, not both.
Credits: 3.

ME 253 - Corrosion of Materials

Corrosion principles: electrochemical, environmental, and metallurgical aspects. Corrosion testing. Corrosion prevention. Seawater corrosion. Biological corrosion. Material selection. Prerequisite: 101. Credit given for 253 or 273, not both.
Credits: 3.

ME 255 - Adv Engineering Materials

Phase diagrams. Thermodynamics of crystals, alloys. Defects. Phase transformations. Heat treatment of steels. Prerequisites: Senior or graduate standing, or instructor's permission.
Credits: 3.

ME 257 - Composite Materials

Fibers, matrices. Unidirectional and short fiber composites. Experimental

characterization. Prerequisite: 101. Credit given for 257 or 277, not both.
Credits: 3.

ME 265 - Integrated Product Developmnt

(See Business Administration 293.) Prerequisite: Senior standing.
Credits: 3.

ME 270 - Structural Dynamics

Virbrations, matrices, earthquake engineering, stability and wave propagation. Prerequisites: Senior or graduate standing in engineering or physical sciences, or instructor permission. Cross-listed with CE 272.
Credits: 3.

ME 281 - Seminar

Presentation and discussion of advanced mechanical engineering problems and current developments. Prerequisite: Senior/Graduate engineering enrollment.
Credits: 1.

ME 282 - Seminar

Presentation and discussion of advanced mechanical engineering problems and current developments. Prerequisite: Senior/Graduate engineering enrollment.
Credits: 1.

ME 283 - Lab Techniques Turbomach Dev

Instruments and transducers for performance, flow, and structural measurements in turbo-machinery; the role of test data in design and development; experimental data acquisition and processing. Prerequisite: ME 244.
Credits: 2.

ME 285 - Biomedical Engineering Seminar

Presentation and discussion of advanced biomedical engineering problems and current research developments. Prerequisite: Senior/Graduate engineering enrollment.
Credits: 1.

ME 295 - Special Topics

Prerequisite: Senior/Graduate standing.
Credits: 1-3.

ME 301 - Intro Biomedical Engineering

Introduction to basic biomedical engineering science; biomedical computing and pattern recognition, biomedical instrumentation and signal analysis, biomechanics, biomaterials, rehabilitation engineering, physiological transport phenomena, intelligent systems.
Credits: 3.

ME 304 - Adv Engineering Analysis I

Problems in analysis in engineering, including ordinary and partial differential equations, special functions, matrices, tensor analysis, variational calculus, complex variables, perturbation methods. Prerequisites: Math. 271 or Math. 230; ME 304 for ME 305. Cross-listings: CE 304, 305; Math 275, 276.
Credits: 3.

ME 305 - Adv Engineering Analysis II

Problems in analysis in engineering, including ordinary and partial differential equations, special functions, matrices, tensor analysis, variational calculus,

complex variables, perturbation methods. Prerequisites: Math. 271 or Math. 230; ME 304 for ME 305. Cross-listings: CE 304, 305; Math 275, 276.
Credits: 3.

ME 320 - Special Problems in Elasticity
Advanced topics in the theory of elasticity in which there is a particular student and staff interest.
Credits: 3.

ME 321 - Special Problems in Fluid Mech
Advanced topics in fluid mechanics in which there is a particular student and staff interest.
Credits: 3.

ME 322 - Special Problems in Dynamics
Advanced topics in dynamics in which there is a particular student and staff interest.
Credits: 3.

ME 323 - Special Prob in Thermodynamics
Advanced topics in thermodynamics in which there is a particular student and staff interest.
Credits: 3.

ME 324 - Spec Problems in Heat Transfer
Advanced topics in heat transfer in which there is a particular student and staff interest.
Credits: 3.

ME 325 - Special Problems in Materials
Advanced topics in behavior of materials in which there is a particular student and staff interest.
Credits: 3.

ME 330 - Matrix Meth in Struct Dynamics
Matrices, eigenvalue problems, forced vibration, wave propagation.
Credits: 3.

ME 332 - Engineering Elasticity
Tensors, complex variables, variational methods.
Credits: 3.

ME 333 - Stress Analysis
Theory and experimental method of measuring static and dynamic stress and strain.
Credits: 3.

ME 336 - Continuum Mechanics
Tensors, conservation laws, field equations for solids and fluids.
Credits: 3.

ME 338 - Advanced Dynamics
Application of Lagrange's equation, Hamilton's principle to mechanical systems. Systems with constraints. Matrix formulation of problems in kinematics, dynamics. Stability of linear, nonlinear systems.
Credits: 3.

ME 342 - Advanced Combustion

or equivalent.
Credits: 3.

ME 343 - Advanced Fluid Dynamics
theory; transient flows; free laminar, turbulent flows; Stress in continuum; kinematics, dynamics; potential fields; Wing theory; Navier-Stokes equation; hydrodynamic stability; turbulence; laminar, turbulent boundary layer mixing.
Credits: 3.

ME 344 - Adv Eng Thermodynamics II
Microscopic thermodynamics; Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics; kinetic theory of gases; transport properties, compressed gases, liquids, solid states; chemical systems; irreversible processes; fluctuations.
Credits: 3.

ME 345 - Advanced Heat Transfer II
Generalized equation of heat conduction; classical integral transforms, approximate solutions; thermal boundary layers; forced and free convection; condensation, boiling, ablative cooling; radiation, statistical theory; mass transfer.
Credits: 3.

ME 346 - Advanced Gas Dynamics
Compressible flow in ducts; friction, heat transfer; shock waves; small perturbation theory; high speed flows; transonic, supersonic, hypersonic flows; methods of characteristics. Aerodynamic heating; rarified gas flows.
Credits: 3.

ME 371 - Adv Engr Des Anyl&Synthesis I
Application of fundamental concepts, principles of advanced mathematics, physics, mechanics, electricity, thermodynamics, fluid dynamics, heat transfer, and decision-making processes to design, analysis, synthesis of complex engineering systems.
Credits: 4.

ME 372 - Systems Engineering
Instructor permission.
Credits: 3.

ME 373 - Integr Mechanism Design Anyl
ME 371 or Instructor permission. Application of system analysis, rigid body dynamics, finite elements, fatigue analysis and structural dynamics to an integrated approach to mechanisms design. Prerequisites:
Credits: 3.

ME 391 - Master's Thesis Research
Credits: 1-18.

ME 395 - Advanced Special Topics
Advanced topics in recently developed technical areas. Prerequisites: three hours with Instructor permission.
Credits: 1-3.

ME 491 - Doctoral Dissertation Research
Credits: 0-18.

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Mechanical Engineering (M. S.)

College: Graduate College
Department(s): MechanicalEngineering

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encourages to apply. In such cases, it is typically necessary for students to complete some preparatory course work in addition to the graduate studies. In all courses, general requirements for admission, as outlined under the Regulations of the Graduate College, must be met. Areas of research interest include: applied mechanics, biomechanics, fluid mechanics, fuel science, heat transfer, mechatronics, microelectromechanical systems (MEMS), precision engineering, smart structures, tissue engineering, vibrations.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Science

An accredited bachelor's degree in Mechanical Engineering or equivalent is the typical requirement; however, students holding a bachelor's degree in a related engineering or scientific field may also qualify for admission.

Requirements for Advancement to Candidacy for the Degree of Master of Science

A cumulative grade point average of 3.0 or better for the first nine credit hours of graduate course work.

Minimum Degree Requirements for the Degree of Master ofScience

The Department of Mechanical Engineering offers both thesis and non-thesis options for the master's degree. Both options require the completion of advanced courses in mechanical engineering, mathematics, and other approved courses and research (for thesis students) totaling at least 30 credits. Graduate students. Graduate students receiving financial support via teaching or research fellowships are required to select the thesis option. Part-time students typically select the non-thesis option but may choose the thesis option if they prefer. Students normally decide on which option they intend to pursue at the beginning of their program.

All students are required to complete a prescribed set of fifteen core course credits which cover areas of advanced engineering mathematics, mechanics, and numerical methods. In addition, all students must select an area of specialization for their degree. Currently, the department offers specialization tracks in (1) solid mechanics and design; (2) thermo-fluid mechanics; and (3) biomechanics. Further details on the core course requirements and the areas of specialization can be obtained from the Department of Mechanical Engineering or its website.

Thesis Option: In addition to core courses, students selecting the thesis option must complete a minimum of six credits of course work in their chosen area of specialization. Students must also complete six to nine hours of independent thesis research; those opting for a six-credit thesis must complete an additional three credits of approved course work.

Non-Thesis Option: Students selecting the non-thesis option must complete an additional fifteen credits of course work beyond the core credits in lieu of a thesis. Of the additional course work, a minimum of nine credits must be in a chosen area of specialization.

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Mechanical Engineering (Ph. D.)

College: Graduate College
Department(s): MechanicalEngineering Department

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encourages to apply. In such cases, it is typically necessary for students to complete some preparatory course work in addition to the graduate studies. In all courses, general requirements for admission, as outlined under the Regulations of the Graduate College, must be met. Areas of research interest include: applied mechanics, biomechanics, fluid mechanics, fuel science, heat transfer, mechatronics, microelectromechanical systems (MEMS), precision engineering, smart structures, tissue engineering, vibrations.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Doctor of Philosophy

An accredited bachelor's or master's degree in mechanical engineering or closely related discipline is required.

Requirements for Advancement to Candidacy for the Degreeof Doctor of Philosophy

Successful completion of the Ph. D. comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor ofPhilosophy

The degree of Doctor of Philosophy requires of candidates a minimum of 75 credit hours

to be earned in course work and in dissertation research. The 75 credit hours must be distributed in such a way that at least 40 credit hours must be earned in courses and seminars and a minimum of 25 credit hours must be earned in dissertation research. All Ph. D. candidates complete a doctoral thesis consisting of original research and of sufficient quality to merit publication in an archival journal.

Accelerated Master's Program in Mechanical Engineering (B. S./M. S.)

College: Graduate College
Department(s): MechanicalEngineering

Overview

An Accelerated Masters Program is available for undergraduate students at the University of Vermont currently majoring in Mechanical Engineering. Further details can be obtained from the Department of Mechanical Engineering, 201 Votey Building, (802) 656-3320.

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Departments and Programs

Microbiology and Molecular Genetics Department

Colleges: College of Agriculture and Life Sciences, Graduate College, College of Medicine

Faculty: Microbiology and Molecular Genetics

Courses: Microbiology and Molecular Genetics (MMG)

Contact Information:

University of Vermont
Microbiology and Molecular Genetics Department
201 Stafford Hall
Burlington, VT 05405

Phone: (802) 656-2164
Fax: (802) 656-8749
Email: @zoo.uvm.edu
Web Site: http://www.uvm.edu/microbiology/

Related Programs:

Academic Offerings

- Graduate Programs
  - Master of Science (M. S.)
    - Microbiology and Molecular Genetics*
  - Doctor of Philosophy
    - Microbiology and Molecular Genetics
- Concurrent Degree Programs
  - Microbiology and Molecular Genetics (B. S. / M. S.)

* MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M. S. program should contact the individual faculty member with whom they wish to study.

Overview

Undergraduates who undertake studies in the Department of Microbiology and Molecular Genetics receive instruction in the classroom and in state-of-the-art teaching and research laboratories. The Department offers either a Microbiology or a Molecular Genetics major or minor as well as courses in the areas of molecular genetics, general, clinical, and environmental microbiology, virology, and immunology which are available to students in other programs. Numerous research opportunities provide undergraduates with close interactions with faculty at the cutting edge of microbiology using molecular genetics technology.

Courses in Micr & Molecular Genetics

MMG 065 - Microbiology & Pathogenesis
Overview of microbiology, emphasizing the relationships between the structure, metabolism, and genetics of pathogenesis. Prerequisite: One semester chemistry. Not intended for students who have completed BIOL 001 and BIOL 002 or equivalent. Fall.
Credits: 4.

MMG 095 - Special Topics
Credits: 1-3.

MMG 096 - Special Topics
Credits: 1-3.

MMG 101 - Biology of Microorganisms
An introduction to the biology of microorganisms, encompassing their diversity, metabolism, pathogenesis, and ecology. Prerequisites: One semester of chemistry and biology, or equivalent, or instructor's permission. Fall.
Credits: 4.

MMG 102 - Molecular Genetics
Modern molecular genetics. Topics include: mechanisms of gene expression in prokaryotes and eukaryotes; retroviruses; cancer biology; human genetic diseases. Emphasis on experimental and conceptual aspects. Prerequisite: MMG 101, BOT 132, or Instructor permission. Spring.
Credits: 4.

MMG 195 - Special Topics
Prerequisite: Instructor's permission. Credits negotiable.
Credits: 1-6.

MMG 196 - Special Topics
Prerequisite: Instructor's permission. Credits negotiable.
Credits: 0-6.

MMG 197 - Undergrad Research
Undergraduate honors students accommodated in individual research projects sponsored by department member. Arrangement with individual department member and department chairperson approval. Credits negotiable.
Credits: 1-6.

MMG 198 - Undergrad Research

Undergraduate honors students accommodated in individual research projects sponsored by department member. Arrangement with individual department member and department chairperson approval. Credits negotiable.
Credits: 1-6.

MMG 201 - Molecular Cloning Lab

Intensive advanced laboratory course in the fundamentals of recombinant DNA technology through the isolation and characterization of a unique gene.
Prerequisite: 102 or equivalent. Fall.
Credits: 3.

MMG 203 - Mamm Cell Cult:Molecular Biol

The basic principles and techniques of mammalian cell culture, as well as cell and mammalian molecular genetics. Prerequisite: Permission of coordinator. Alternate years, Spring.
Credits: 4.

MMG 205 - Biochemistry I

Introduction to chemistry and structure of biological macromolecules; examination of mechanisms of chemical processes in biological systems, including enzyme catalysis, biosynthesis, regulation, and information transfer. Prerequisites: CHEM 142 or 144. Crosslisted with BIOC 205 and CHEM 205. UG only. Fall.
Credits: 3.

MMG 206 - Biochemistry II

with BIOC 206 and CHEM 206. UG only. Spring.
Credits: 3.

MMG 207 - Biochemistry Lab

spectrometry, chromatography, and electrophoresis;
Credits: 2.

MMG 211 - Prokaryotic Molecular Genetics

The organization, replication, and expression of genes in prokaryotes, focusing on the genetics of Escherichia coli and its viruses. Prerequisite: Introductory microbiology, biochemistry, genetics, and/or cell biology courses. Fall.
Credits: 3.

MMG 220 - Environmental Microbiology

The activities of microorganisms, primarily bacteria, in air, soil, and water.
Prerequisite: A previous course in microbiology. Alternate years.
Credits: 3.

MMG 222 - Clinical Microbiology

Comprehensive study of human pathogenic microorganisms and their disease states in humans, which includes pathogenic bacteriology, medical mycology, and virology. Laboratory sessions provide practical experience in handling and identifying these pathogens. Prerequisite: 65 or 101 or equivalent. Spring.
Credits: 4.

MMG 223 - Immunology

Analysis of the immune response with respect to structure and function of immunoglobulins and the T-cell receptor, tolerance, innate and adaptive immunity, the Major Histocompatibility Complex, hypersensitivity states, transplantation,

cancer, and AIDS. Prerequisite: Instructor's permission. Alternate years. Fall.
Credits: 3.

MMG 225 - Eukaryotic Virology

An in-depth analysis of eukaryotic virus-mammalian cell interactions emphasizing mechanisms by which viruses modulate gene expression in infected cells. Prerequisite: 101 or 102 or equivalent. Alternate years. Fall.
Credits: 3.

MMG 231 - Bioinformatics

Prerequisites: Instructor's permission; STAT 151, CS 26, and MMG 102 desirable. (Cross-listed with CS 231). Fall.
Credits: 3.

MMG 240 - Macromol Struct Prot&Nucl Acid

Introduction to structural biology and macromolecular structure with an emphasis on protein-protein and protein-nucleic acids interactions. Prerequisites: Biology 1, 2; Organic Chemistry; Junior standing recommended; concentration in Physics. (Cross-listed with BIOC 240) Alternate years, not approved for graduate credit. Spring.
Credits: 3.

MMG 295 - Special Topics

Supervised investigations in microbiology or molecular genetics. Prerequisite: Instructor permission. Credit as arranged.
Credits: 1-6.

MMG 296 - Special Topics

Supervised investigations in microbiology or molecular genetics. Prerequisite: Instructor permission. Credit as arranged.
Credits: 0-6.

MMG 302 - Medical Microbiology

Fundamentals of pathogenic microbiology emphasizing mechanisms of disease production and mechanisms of resistance to infection. The ecologic rather than taxonomic approach is stressed. Primarily for Medical students.
Credits: 8.

MMG 310 - Current Topics in MMG

Seminar to focus on specific issues at the forefront of current research in molecular genetics. Meetings will involve student presentation and discussion of research articles. Prerequisite: Permission of Coordinator.
Credits: 2.

MMG 312 - Eukaryotic Molecular Genetics

The use of lower eukaryotes, such as the yeasts Saccharomyces cerevisiae and Schizosaccharomyces pombe, as model genetic systems to answer questions of basic biological importance. Prerequisites: Instructor permission; MMG 233 and CLBI 301, or equivalent.
Credits: 3.

MMG 320 - Cellular Microbiology

Utilizes primary literature to explore the cellular and molecular basis of microbial pathogenesis caused by viruses, pathogenic bacteria and protozoan parasites. Alternate years. Spring.

Credits: 4.

MMG 332 - Critical Reading

Students will participate in group discussions to critically evaluate and interpret the experimental data from one assigned paper from the scientific literature per week. Prerequisite: Permission of Coordinator. Fall.

Credits: 1.

MMG 352 - Protein:Nucleic Acid Interact

Structure of DNA and RNA, and the structure and assembly of nucleoprotein complexes will be described using examples from prokaryotes, yeast, viruses, and mammalian cells in culture. Prerequisite: MMG 211 or equivalent; AGBI 201 or BIOC 301; BIOC 302 or equivalent. Cross-listed with: BIOC 352. Alternate years. Spring.

Credits: 3.

MMG 391 - Master's Thesis Research

Credits: 1-18.

MMG 491 - Doctoral Dissertation Research

Credits: 1-18.

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Microbiology and Molecular Genetics (M. S.)

College: Graduate College, Medicine
Department(s): Microbiology and Molecular Genetics

Overview

Research activities include: Mutagenic mechanisms in human populations; the enzymology and regulation of cellular DNA replication and repair; molecular mechanisms of genetic recombination; structural biology of proteins and nucleic acids; cell cycle control of transcription and DNA replication in eukaryotes; regulation and enzymology of RNA polymerase II transcription; enzymology and atomic structure of mammalian cell mRNA processing factors; molecular basis of tRNA recognition; ribozyme structure and enzymology; signaling networks that regulate morphogenesis in yeast; isolation and regulation of mating type genes in Schizophyllum; plant growth and development; molecular mechanisms of bacterial adhesion and pathogenesis; molecular and cellular mechanisms of host-pathogen interactions; and bacterial transformations of organic pollutants.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Master of Science Degree

MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M. S. program should contact the individual faculty member with whom they wish to study. One year of biological science; one year physics (equivalent of Physics 11 and 12); one year of inorganic chemistry and one year of organic chemistry (equivalent of Chemistry 1, 2, 141 and 142), mathematics through calculus (equivalent of Math 19 and 20); additional courses required by the Department depending on the aims of the student. A student may be admitted pending satisfactory completion of one or two

of the above courses during the first semester(s) of graduate study. Satisfactory scores on the general aptitude portion of the Graduate Record Examination. Subject GRE tests are recommended but not mandatory.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Applicants may be accepted concurrent with admission, or candidacy may be deferred pending a period of satisfactory graduate study at The University of Vermont. Acceptance to candidacy is granted only to those students who have met all undergraduate course prerequisites.

Minimum Degree Requirements for the Degree of Master ofScience

Thirty total credits to include six credit hours of Thesis Research (MMG 391) and 24 course credits, including the Microbiology and Molecular Genetics core curriculum (six course credits each in Biochemistry, Genetics, and Microbiology); at least two credits in current Topics in Molecular Genetics (MMG 310); other approved courses such that at least 16 course credits are taken from courses offered by the Department of Microbiology and Molecular Genetics; qualifying exam; successful completion of dissertation.

Combined Medical College and Graduate College Degree Programs

Qualified students, following acceptance into the medical college, may simultaneously enroll in the Graduate College for a Master of Science or Ph. D. degree program in Microbiology and Molecular Genetics. The program would be developed with concurrence of the Dean for Student Affairs in the College of Medicine.

Microbiology and Molecular Genetics (Ph. D.)

College: Graduate College, Medicine
Department(s): Microbiology and Molecular Genetics

Overview

Research activities include: Mutagenic mechanisms in human populations; the enzymology and regulation of cellular DNA replication and repair; molecular mechanisms of genetic recombination; structural biology of proteins and nucleic acids; cell cycle control of transcription and DNA replication in eukaryotes; regulation and enzymology of RNA polymerase II transcription; enzymology and atomic structure of mammalian cell mRNA processing factors; molecular basis of tRNA recognition; ribozyme structure and enzymology; signaling networks that regulate morphogenesis in yeast; isolation and regulation of mating type genes in Schizophyllum; plant growth and development; molecular mechanisms of bacterial adhesion and pathogenesis; molecular and cellular mechanisms of host-pathogen interactions; and bacterial transformations of organic pollutants.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for theEither the Master of Science or the Doctor of Philosophy Degree

MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M. S. program should contact the individual faculty member with whom they wish to study. One year of biological science; one year physics (equivalent of Physics 11 and 12); one year of inorganic chemistry and one year of organic chemistry (equivalent of Chemistry 1, 2, 141 and 142), mathematics through calculus (equivalent of Math 19 and 20); additional courses required by the Department depending on the aims of the student. A student may be admitted pending satisfactory

completion of one or two of the above courses during the first semester(s) of graduate study. Satisfactory scores on the general aptitude portion of the Graduate Record Examination. Subject GRE tests are recommended but not mandatory.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Completion of one full year of graduate study at The University of Vermont, satisfactory performance on teaching assignments, successful completion of the Department core curriculum and qualifying exam, and approval of the student's thesis advisor and Studies Committee, the Faculty of the Department of Microbiology and Molecular Genetics, and the Dean of the Graduate College.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Seventy-five total credits to include at least 30 credit hours of Dissertation Research (MMG 491) and at least 30 course credits, including the Microbiology and Molecular Genetics core curriculum (six course credits each in Biochemistry, Genetics, and Microbiology); at least four credits in Current Topics in Molecular Genetics (MMG 310); other approved courses such that at least 20 course credits are taken from courses offered by the Department of Microbiology and Molecular Genetics; teaching assignments as arranged by Department; proficiency in computer applications; qualifying exam; successful completion of dissertation.

Combined Medical College and Graduate College Degree Programs

Qualified students, following acceptance into the medical college, may simultaneously enroll in the Graduate College for a Master of Science or Ph. D. degree program in Microbiology and Molecular Genetics. The program would be developed with concurrence of the Dean for Student Affairs in the College of Medicine.

Accelerated Master's Program in Microbiology and Molecular Genetics (B. S./M. S.)

College: Graduate College
Department(s): Microbiology and Molecular Genetics

Overview

Outstanding students with an interest in the graduate degree may apply to enter the Accelerated Masters Program of the Department. In this program students commence study for their master's degree in their senior year and have the potential to obtain a B. S./M.S. in a five-year period.

Microbiology and Molecular Genetics normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program.

Department and Programs

Natural Resources Program

Colleges: The Rubenstein School of Environment and Natural Resources, Graduate College

Faculty: Natural Resources

Courses: Natural Resources (NR)

Contact Information:

University of Vermont
The Rubenstein School of Environment and Natural Resources
Natural Resources Program
George D. Aiken Center
81 Carrigan Drive
Burlington, VT 05405

Phone: (802) 656-2698 (undergraduate), (802) 656-2511 (graduate)
FAX: (802) 656-8683
E-mail: Clare.Ginger@uvm.edu (undergraduate), Dean.Wang@uvm.edu (graduate)
Web Site: http://www.uvm.edu/envnr/?Page=undergrads/natural_res.html (undergraduate), http://www.uvm.edu/envnr/?Page=master_phd_info/snr_doctor.html (graduate)

Academic Offerings

- Graduate Degrees
  - Doctor of Philosophy (Ph. D.)
    - Natural Resources

Courses in Natural Resources

NR 001 - Natural Hist & Field Ecology

Introduction to the dynamics of the natural world. Basic concepts of biological, chemical, physical, and ecological sciences and the application and interpretation of quantitative measurements are presented within a natural history context.
Credits: 4.

NR 002 - Nature & Culture

Introduction to natural resources and the environment from a social/cultural perspective. Emphasis on environmental history, values, and ethics with application to natural
Credits: 3.

NR 006 - Race & Culture in NR

Introduces the first-year student to issues of race and culture from a variety of disciplinary perspectives.
Credits: 1.

NR 025 - Measurements & Mapping

Introduction to surveying, mapping, aerial photo measurements, and interpretation for natural resource planning and management. Prerequisite: A course in high school or college trigonometry; permission required of nonmajors.
Credits: 4.

NR 051 - Environ Aesthetics & Planning

Examines historical changes in perceptions of natural and built landscapes, the issues involved in the appearance of landscapes today, and techniques for enhancing landscape beauty.
Credits: 3.

NR 073 - Understanding Water Quality

Introduction to water quality and water pollution in streams, lakes, wetlands, and ground water. Provides foundation for knowledgeable citizen participation in management of public waters. Credit not allowed for both NR 073 and NR 102.
Credits: 3.

NR 099 - Aiken Scholars Seminar

Seminar discussions on current environment issues. Guest speakers and field trips. Prerequisite: Open only to First-Year Aiken Scholars.

Credits: 1.

NR 102 - Water as a Natural Resource

Characteristics of water-sheds, lakes, rivers, and wetlands; discussion of the management of these ecosystems; effects of society on the water resource. Prerequisites: Biology 1; Zoology 9 or Botany 4 or equivalent; Chemistry 31, 23, 26, or 42 or equivalent.

Credits: 3.

NR 103 - Ecology, Ecosystems & Environ

Major ecological concepts and their application. Analysis of form, structure, and function of organisms, populations, communities, ecosystems, and landscapes. Prerequisites: 1; concurrent enrollment in 104 and 105 required.

Credits: 3.

NR 104 - Social Proc & the Environment

Social science theories and their application to environmental issues. Analysis of issues using theories of government, economics, and social movements. Emphasis on integrating frameworks to analyze environmental issues. Prerequisite: 2 and concurrent enrollment in 103 and 105 required.

Credits: 3.

NR 105 - Environmental Problem Analysis

Examination of interdisciplinary dimensions of natural resource and environmental problems. Emphasis on social and ecological aspects of environmental issues and interdisciplinary teamwork. Prerequisite: NR 001, NR 002; concurrent enrollment in NR 103 and NR 104.

Credits: 1.

NR 107 - The Environment&Human Health

Interdisciplinary understanding of the effects of anthropogenic factors including pollution, reduced biodiversity, climate change, overpopulation, and resource depletion on the health of natural systems and human populations. Pre/co-requisites: a college level science course and sophomore standing. (Crosslisted with NH 107).

Credits: 3.

NR 130 - Global Environmental Assessmnt

Cross-listed with ENSC 130.

Credits: 3.

NR 140 - Natrl Resources Biostatistics

Introduction to applied statistical methods for typical natural resources biological problems. Descriptive statistics, hypothesis testing, regression, and sampling design. Emphasis on problem formulation and solution. Prerequisites: Sophomore standing, two years of high school algebra.

Credits: 4.

NR 143 - Intro to Geog Info Systems

Understanding and application of computer-based, geographically-referenced information systems. Prerequisites: Junior standing; CS 003 or CS 011.

Credits: 3.

NR 146 - Remote Sensing of Natural Res

Cross-listed with: FOR 146, GEOG 185.

Credits: 3.

NR 155 - Fluvial Geology

Cross-listed with: GEOL 155.

Credits: 3.

NR 170 - Intro Dynamic Simulation Mdlg

Elementary principles of dynamic simulation modeling and use of the STELLA II dynamic simulation software. Example simulations of natural environmental systems. Prerequisite: Sophomore standing.

Credits: 1.

NR 176 - Water Quality Analysis

Selected aspects of elementary water chemistry and bioassay as related to surface and ground waters. Five laboratory experiences. Prerequisite: 176. (2.5 hours lecture per week and 20 hours lab per semester.)

Credits: 3.

NR 185 - Special Topics

Special topics in natural resources beyond the scope of existing formal courses. Variable credit.

Credits: 1-6.

NR 189 - Student-Designed Course Work

Student-taught course work beyond the scope of formal courses in natural resources. Developed according to SNR guidelines with sponsorship by interested faculty. Variable credit.

Credits: 1-3.

NR 199 - Honors Seminar

A discussion and readings seminar that features guest speakers, and is part of the SNR Spring Seminar Series. Focus of the seminars change annually. Can be repeated. Prerequisite: Sophomore standing; open only to SNR Honors Students.

Credits: 1.

NR 205 - Ecosys Mgt:Integ Sci,Soc & Pol

Integration of natural and social science into ecosystem management and policy. Consideration of ecosystem integrity, ecosystem degradation, human needs and values, and the application of management principles within a (Not offered for graduate credit.)

Credits: 3.

NR 206 - Env Prob Sol & Impact Assessmt

Group dynamics, impact assessment, risk assessment, and decision making. Emphasis on the process of solving complex environmental problems, interdisciplinary team work, and the National Environmental Policy Act. Prerequisites: 1, 2, 103, 104, 205, and statistics. (Not offered for graduate credit.)

Credits: 4.

NR 220 - Landscape Ecology

Study of pattern, process, and dynamics in the landscape. Considers the role of landscape pattern in determining habitat quality and ecosystem function. Prerequisites: One biology, one ecology course; senior standing. Alternate years, 2002-03.

Credits: 2.

NR 222 - Pollution Ecology

(Cross-listed with Environmental Sciences 222.)

Credits: 3.

NR 224 - Conservation Biology

Conservation of biological diversity at genetic, species, ecosystem, and landscape levels. Emphasis on genetic diversity, population viability, endangered species, critical habitats, international implications. Prerequisites: Biology 1, 2; a 100-level ecology course. (Not offered for graduate credit.)

Credits: 3.

NR 228 - Ecosystem Ecology

(Cross-listed with Forestry 228.) UG only.

Credits: 2.

NR 235 - Legal Aspects of Plng & Zoning

Comparison of Vermont planning and zoning law with that of other states. Case studies in planning, zoning, and land use controls. Prerequisite: Senior standing. Not offered 2002-03.

Credits: 3.

NR 236 - Geochemistry

(Cross-listed Geology 235.)

Credits: 3.

NR 240 - Wilderness & Wilderness Mgmt

(Cross-listed with Recreation Management 240.)

Credits: 3.

NR 244 - Quantitative Assmnts of NR

Credits: 3.

NR 250 - Limnology

experience. Prerequisites: One year Biology; one Ecology of lakes and reservoirs, including their origin, physics, chemistry and biology, and the effects of anthropogenic perturbations. Field and laboratory year Chemistry; ecology course.

Credits: 4.

NR 252 - Visual Resource Planning & Mgt

Investigates the theories and principles of aesthetics related to landscape perception, and their applications to visual impact assessment and scenic resource planning. Prerequisite: Senior standing.

Credits: 3.

NR 254 - Adv Natural Resource Policy

Advanced seminar in natural resource policy, emphasizing current issues in forest policy. Prerequisite: Graduate or advanced undergraduate standing; Instructor permission.

Credits: 3.

NR 255 - Field Mthds in Water Resources

Techniques used in field assessment of water quality in rivers and lakes. Case studies on the LaPlatte River and Lake Champlain. Sampling strategies, field measurements, and data evaluation. Extensive field work. Prerequisite: NR 102 or equivalent basic course in water.

Credits: 3.

NR 256 - Ecology of a Large Lake

A field exploration of the littoral zone and deep lake environments and human impacts on large lakes using Lake Champlain as the class laboratory. Prerequisite: 100-level ecology course.
Credits: 4.

NR 260 - Wetlands Ecology & Mgmt

Structure, dynamics and values of natural and artificial BIOL 001 and BIOL 002; an upper-level ecology course.
Credits: 3.

NR 261 - Wetlands Ecology Lab

Credits: 1.

NR 262 - Int'l Problems in NR Mgmt

Discussion of problems associated with the management of natural resources which have international implications. Topics may include deforestation, desertification, fisheries, wildlife, refuges, fuelwood, pollution. Prerequisite: Senior standing; permission.
Credits: 3.

NR 270 - Toxic&Hzrds Subst in Srf Water

The fate of toxic and hazardous pollutants, including trace elements and organics, in surface waters; effects on human health and aquatic biota. Prerequisite: BIOL 001, CHEM 023, CHEM 042; CHEM 102 or equivalent; Senior standing.
Credits: 3.

NR 275 - NR Planning: Theory & Methods

Investigates theoretical development of natural resource planning. Studies planning methods appropriate to protection and use of scenic, recreational, forest, agriculture, and historic resources and ecologically sensitive areas. Prerequisite: Senior standing.
Credits: 3.

NR 276 - Water Quality Anlys & Interp

Selected aspects of water chemistry and bioassay as related to surface and ground waters. Laboratory analysis of water quality parameters and data interpretation. Prerequisite: One course in Chemistry, calculus, and Statistics; Senior standing.
Credits: 3.

NR 278 - Principles of Aquatic Systems

Study of physical, chemical and biological principles as related to natural aquatic systems. Modeling dynamic behavior of aquatic systems using system simulation techniques. Prerequisite: MATH 019, PHYS 011, CHEM 023, CHEM 026 or equivalent; NR 170 or equivalent or as a co-requisite; Senior standing. Lecture and three hours laboratory per week.
Credits: 3.

NR 279 - Watershed Management Hydrology

Fundamental elements of hydrology and contaminant transport in watersheds. Application of dynamic simulation techniques. Discussion of new technologies for watershed management. Prerequisite: NR 170 or equivalent or as a co-requisite; NR 020, PHYS 011, CHEM 023, CHEM 026 or equivalent; Senior standing.

Credits: 3.

NR 280 - Stream Ecology

Ecology of streams including hydrodynamics, morphology, sediment transport, chemistry, biology and human impacts. Field and laboratory experience. Prerequisites: One year Biology; one year Chemistry;
Credits: 4.

NR 285 - Advanced Special Topics

Graduate/Senior standing; Instructor permission.
Credits: 0-6.

NR 298 - Honors 'Project' Planning

Discussions leading to the development of an individual or group Senior Honors Project Proposal. Prerequisites: Junior standing; open only to SNR Honors Students. UG only.
Credits: 1.

NR 299 - Honors

Honors project dealing with aquatic resources, terrestrial ecology, or integrated natural resources. Prerequisite: By application only; see program chair. UG only.
Credits: 3-6.

NR 360 - Environmental Sociology

Insturctor permission.
Credits: 3.

NR 361 - Politic:Landscape,Place,Nature

Seminar exploring the social and political construction of nature, emphasizing how natural resources and environment are defined through social relationships in particular landscapes and places.
Credits: 2.

NR 370 - Sp Tpcs in Aquatic Toxicology

Concurrent enrollment in NR 270. Prerequisite:
Credits: 1.

NR 375 - NR Planning: Laboratory

theory and methods to local or regional issues. Students conduct a planning exercise for a town or region. Co-requisite: Concurrent enrollment in NR 275.
Credits: 1.

NR 378 - Integrating Analyses NR Issues

Resource Issues. Seminar contrasting epistemologies and ontologies of natural resource disciplines. Applications from fields such as ecology, policy, sociology, engineering, and ethics. Prerequisite: Graduate standing.
Credits: 2.

NR 380 - Seminar in Natural Resources

Presentation and discussion of advanced problems, research, and current topics in natural resources by faculty, graduate students, and outside guest speakers.
Credits: .5-2.

NR 382 - Seminar in Research Planning

Cross-listed with: FOR 382.
Credits: 1.

NR 384 - Independent Study in NR

Readings, with conferences, to provide graduate students with backgrounds and specialized knowledge relating to an area in which an appropriate course is not offered.

Credits: 1-3.

NR 385 - Special Topics in NR

Graduate topics and material that may eventually develop into a regular course offering; in addition, it may include topics and material presented only once.

Credits: 0-3.

NR 391 - Master's Thesis Research

Credits: 1-18.

NR 392 - Master's Project Research

Credits: 1-12.

NR 491 - Doctoral Dissertation Research

Credits: 1-18.

Natural Resources (Ph. D.)

College: Graduate College
Department(s): NaturalResources

Overview

The Ph. D. program provides the opportunity for focused, in-depth research in any of the specialties of the school, while fostering an interdisciplinary appreciation and perspective through course work and interactions with ecological, physical, and social scientists in an integrated academic setting. Students can develop programs in areas such as pollution ecology, recreation and tourism, conservation biology, and environmental policy, as well as any of the traditional natural resource disciplines featured in our Masters programs.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate studies for theDegree of Doctor of Philosophy

While an undergraduate degree in a discipline appropriate to the field of study will be considered, applicants with a Master of Science degree are preferred. Satisfactory scores on the Graduate Record Examination general (aptitude) section. Acceptability to a potential faculty advisor holding an appointment in The Rubenstein School of Environment and Natural Resources.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

It is ordinarily expected that a student will complete the following requirements for advancement to candidacy prior to the end of the second year in the program: (1) one year of full-time graduate study in residence at The University of Vermont; (2) teaching

experience in one course; (3) at least 12 credit hours of research; (4) at least 15 credit hours of course work at the graduate level acceptable to the student's Studies Committee; (5) satisfactory performance on a comprehensive examination; and (6) a dissertation proposal accepted by the student's Studies Committee.

Minimum Degree Requirements

The student must (1) present at least 75 credit hours in approved course work and research, including not less than 20 and not more than 35 credit hours in research; (2) have a reading knowledge of a foreign language or an experience living in or working with another foreign or domestic culture (approved by the ENVNR Graduate Studies Committee); and (3) satisfactorily complete and defend the dissertation.

Departments and Programs

Nursing Department

Colleges: Nursing and Health Sciences, Graduate College

Faculty: Nursing

Courses: Graduate Nursing (GRNU)

Contact Information:

University of Vermont
Nursing Department
216 Rowell Building
106 Carrigan Drive
University of Vermont
Burlington, VT 05405

Phone: (802) 656-3830
Fax: (802) 656-8306
Email: nursing@uvm.edu
Web Site: http://nursing.uvm.edu/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Nursing
- Concurrent Degree Programs
  - Nursing for Registered Nurses (B. S. / M. S.)

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Courses in Graduate Nursing (GRNU)

GRNU 296 - **Special Topics**

Topics of interest to graduate nursing which are based on theory, research or advanced practice. Course content will deal with topics beyond the scope of existing formal courses or thesis research. Prerequisite: Instructor permission.
Credits: 3.00

GRNU 300 - **Research:Adv Practice Nursing**

This course focuses on understanding the research process and methodologies appropriate to nursing. Emphasis is on the synthesis of the body of health- related research to initiate change and improve nursing practice. An underlying theme is the role of the advanced-practice nurse for incorporating evidence-based practice. Prerequisite: Undergraduate Statistics.
Credits: 3.00

GRNU 301 - **Adv Prac Nursing:Prof Dev&Soc**

In this course, the role dimensions of advanced practice nursing are analyzed. The advanced practice nursing role in the context of a dynamic, complex health care system is examined. The process of role development is explored and professional and role resocialization is initiated.
Credits: 3.00

GRNU 305 - **Pathophysiology**

Focus on physiologic and pathophysiologic aspects of disease. Emphasis on biochemical mechanisms associated with selected disease states which occur across the lifespan. Prerequisite: Permission.
Credits: 3.00

GRNU 306 - **Pharmacotherapeutics I**

Indepth examination of the pharmacokinetics and pharmacodynamics of select drugs. Attention to and ethical and legal standards of prescriptive authority. First section of a 2-semester course. Prerequisites: 305 strongly recommended.
Credits: 3.00

GRNU 307 - **Pharmacotherapeutics II**

Continuation of GRNU 306. Indepth examination of the pharmacokinetics and pharmacodynamics of select drugs. Attention to ethical and legal standards of

prescriptive authority. Prerequisite: GRNU 306.
Credits: 2.00

GRNU 308 - **Family Focus Adv Pract Nrsg**
Focus on assessment of family health within the context of culture and development across the lifespan. Socioeconomic, demographic, and political influences will be examined. Prerequisite: GRNU 310.
Credits: 3.00

GRNU 310 - **Nursing Theory**
Exploration of the concepts, conceptual frameworks, and theories in nursing. Analysis of the current nursing theories with emphasis on the relationship between theory and practice. Prerequisite: Permission.
Credits: 3.00

GRNU 315 - **Nurs Issues & Hlth Care Trends**
Issues germane to contemporary nursing are explored. Forces influencing health care organizations are discussed with respect to concepts of management, leadership, change, and nursing roles. Prerequisite: Permission.
Credits: 3.00

GRNU 320 - **Rsch: Appl of Qualitative Meth**
Study of purposes, methods, and strategies underlying historical and philosophical principles, and the implementation of qualitative research in nursing. Prerequisite: Instructor permission.
Credits: 3.00

GRNU 324 - **Nurse as Administrator-Theory**
This course is a critical study of the knowledge and skills necessary to exercise effective leadership in contemporary and dynamic health care systems. Prerequisites: GRNU 310, GRNU 315, and GRNU 300 or GRNU 320.
Credits: 3.00

GRNU 326 - **Nurse as Administrator-Pract**
Provide student with opportunity to integrate administrative theory, operations and research in a variety of settings. Practicum is structured according to the needs of the individual to provide knowledge, skills essential for the nurse administrator. Pre/Co-requisite: GRNU 324
Credits: 3.00

GRNU 328 - **Curriculum/Instruction Nursing**
Study of the development, implementation and evaluation of curricula in collegiate and nursing service education. Prerequisites: GRNU 310, GRNU 315, and GRNU 300 or GRNU 320.
Credits: 3.00

GRNU 330 - **Thry&Pract/Adult Hlth NursingI**
Examination of concepts and theories essential to the assessment, diagnosis, and clinical decision making in adult health nursing. Class and clinical placement. Prerequisites or Corequisite: 300, 305 and 310. Alternate years, 1999-2001. * (class hours-clinical hours.)

Credits: 6.00

GRNU 331 - **Thry&Pract/Adult Hlth Nurs II**

Analysis and evaluation of nursing concepts based upon theories, research and the practice of adult health nursing. Class and clinical placement. Prerequisite: 330. Corequisite: 315 and 320. Alternate years, spring 2000 and 2002.
Credits: 5.00

GRNU 332 - **Thry&Pract/Adult Hlth Nurs III**

Application and synthesis of concepts relevant to advanced practice in adult health nursing, with emphasis on role development. Class and clinical placement. Prerequisite: GRNU 331 and one elective.
Credits: 6.00

GRNU 333 - **Advanced Health Assessment**

Development of advanced knowledge and skills in systematic collection, organization, interpretation, and communication of data necessary for formulation of nursing and medical diagnoses. Lab fee required. Prerequisites: 305 or permission.
Credits: 3.00

GRNU 340 - **Thry&Pract/Adv Pop-Focus Nrsg1**

Overview of factors related to advanced population-focused nursing with special emphasis on the determinants of health of populations. Prerequisites: 300, 310, and Statistics 200.
Credits: 6.00

GRNU 341 - **Thry&Pract/Adv Pop-Foc Nsg II**

Examines advanced practice roles in population-focused nursing related to strategies for change in the health of populations. Prerequisites: 315, 320, and 340.
Credits: 6.00

GRNU 342 - **Thry&Prac/Adv Pop-Foc Nsg III**

Examines theoretic frameworks and strategies for evaluating the effectiveness of population -focused health services. Prerequisite: GRNU 341.
Credits: 6.00

GRNU 348 - **Practicum in Nursing Education**

A practicum provides opportunity to investigate the roles and functions of the teacher in higher education and/or nursing service settings. Builds on the theory studied in GRNU 328 and focuses on the interactive nature of the teaching-learning process. Prerequisites: GRNU 330 or GRNU 340. Pre/co-requisite: GRNU 328.
Credits: 3.00

GRNU 350 - **Thry/Pract Prim Care Children**

This course provides the theoretical basis for the primary care of children. An opportunity to apply and evaluate theories and research is provided in clinical settings. Prerequisites: GRNU 305,310,333. Pre/corequisites: GRNU 306, 308 and 300 or 320.

Credits: 5.00

GRNU 351 - **Assess Hlth Maintenance Adults**

Course provides opportunities for students to solidify knowledge of health assessment and initiate and evaluate interventions focusing on maintenance and enhancement of health of adults. Prerequisites:GRNU 305,333.
Credits: 1.50

GRNU 352 - **Theory&Prac Prim Care Wmn(FNP)**

Course provides the theoretical basis needed by FNPs for the primary care of women. Opportunities for application are provided through a 67.5 hour practicum. Prerequisites: GRNU 305,306,308,310,333. Pre/corequisites: GRNU 307 and 300 or 320.
Credits: 3.00

GRNU 353 - **Theory&Prac Prim Care Wmn(ANP)**

Course provides the theoretical basis needed by ANPs for the primary care of women. Opportunities for application are provided through a 67.5 hour practicum. Prerequisites: GRNU 305,306,310,333. Pre/corequisites: GRNU 307 and 300 or 320.
Credits: 2.50

GRNU 354 - **Th/Pract Prim Care Fam I (FNP)**

This course focuses on the assessment, diagnosis, management and evaluation of acute and chronic health conditions commonly encountered in primary care. Prerequisites: GRNU 305,333,351. (Prerequisites: GRNU 308 & 350 for FNP students). Pre/corequisites: GRNU 307, 352/353.
Credits: 5.00

GRNU 355 - **Th/Prac Prim Care Fam II (FNP)**

Focus is on refinement of diagnostic and ethical judgements and therapeutic interventions used by FNPs in the provision of primary health care. Prerequisite: GRNU 354.
Credits: 8.00

GRNU 356 - **Th/Prac Prim Care Fam II (ANP)**

Focus is on refinement of diagnostic and ethical judgements and therapeutic interventions used by ANPs in the provision of primary health care. Prerequisite: GRNU 354.
Credits: 6.00

GRNU 357 - **Adv Nursing Pract Older Adults**

Focus on health and disease and associated care and treatment of older persons by the advanced practice nurse. Prerequisite: GRNU 310.
Credits: 3.00

GRNU 358 - **Prac Prim Care Adult(Spec Pop)**

Students refine their assessment, diagnostic and management skills for a specific clinical specialty. Prerequisites: GRNU 353, 354, 307.
Credits: 2.00

GRNU 359 - **Prim Care Fam Prac:Clin Integr**

Integration of the multidimensional aspects of the FNP role is the focus of this course. Prerequisites: GRNU 350, 352.
Credits: 2.00

GRNU 362 - **Thry & Pract in Nurs Admin**
Credits: 6.00

GRNU 372 - **Thry & Pract in Nurs Educ**
Credits: 6.00

GRNU 390 - **Master's Project**
Self-designed clinical paper or innovative production pertinent to advanced nursing practice. Prerequisites: 331, 335 or 341 and permission of academic advisor.
Credits: 3.00

GRNU 391 - **Master's Thesis Research**
Prerequisites: 331, 335 or 341 and approval of Studies Committee.
Credits: 1.00 to 6.00

GRNU 395 - **Independent Study**
Individual work in graduate nursing with a base of theory, research, or advanced practice. Student in consultation with faculty sponsor devises objectives, plan of work, and evaluation for designated credit hours. Prerequisites: Permission of academic advisor and sponsoring faculty. Graduate nursing faculty as selected by student.
Credits: 4.00

GRNU 396 - **Special Topics**
Topics of interest to graduate nursing which are based on theory, research or advanced practice. Course content will deal with topics beyond the scope of existing formal courses or thesis research. Prerequisite: Instructor permission.
Credits: 6.00

Nursing (M. S.)

College: Graduate College
Department(s): Nursing

Overview

The Master of Science in nursing prepares professional nurses to assume leadership roles within the discipline of nursing in a variety of settings, to expand knowledge of nursing, develop expertise in a specialized area of nursing and acquire the foundation for doctoral study and continued professional development.

The tracks/majors offered are: Adult Health Nursing, Advanced Community / Public Health Nursing and Primary Health Care Nursing. Upon completion of the Adult or Advanced Population Focused Nursing tracks/majors, graduates are eligible to take the ANCC certification examination for Adult or Community Health Clinical Nurse Specialist. Upon completion of the Primary Health Care Nursing track/major, graduates are eligible to take the ANCC or AANP certification examination for Adult or Family Nurse Practitioner.

Current research interests of the faculty include: rural health issues, women's health issues, determinants of healthy aging, health promotion, caring, feminist theory, end of life decision making, ethical decision making, advanced practice framework, determinants of leadership, alcohol and drug use within a community health context, program evaluation, suicide, women's mental health, psychosocial concerns of consumers and health care providers, multidimensional healing, therapeutic touch, diabetes, cancer, and client self-teaching tools.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of

Science

A bachelor's degree with a major in nursing, preferably with a grade point average of 3.00 or better including a basic course in statistics. Eligible for licensure as a registered nurse in Vermont. Satisfactory scores on the Graduate Record Exam. Three letters of recommendation from persons who can assess your potential for graduate work. RN's with a bachelor's degree in another field may be admitted upon successful completion of the Bridge Process (a means to assess prior nursing knowledge).

Requirements for Advancement to Candidacy for the Degree of Master of Science

Under most circumstances, meeting the requirements for admission as stated above will allow advancement to candidacy. Students who appear to be marginal in meeting admission requirements may be required to satisfactorily complete certain courses before acceptance as a degree candidate.

Minimum Degree Requirements for the Degree of Master of Science

Credit hour requirements vary depending on track and include thesis or project and successful completion of a comprehensive exam.

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B. S. Program for Registered Nurses

College: Nursing and Health Sciences
Department(s): Nursing

The program for registered nurses has been designed in light of changes in the health care delivery system and to better serve the registered nurse returning to school.

In this program, the Bachelor of Science degree with a major in nursing is awarded upon completion of a minimum of 127 credit hours (125 if the student is over 25 years of age) in full or part-time study. The major components of the curriculum are: required non-nursing courses, elective courses, and major nursing courses. The curriculum plan may vary for each student depending on the type and number of credits transferred to UVM.

The focus of the **baccalaureate program** component is on health and health promotion for individuals, families, groups, and communities; and the factors that influence delivery of health care services.

The program is an RN-BS-MS accelerated program, with an option for students to "step out" after completion of the baccalaureate requirements with a B. S. degree. Separate application is required for the graduate program.

The baccalaureate nursing courses are available on-line or through interactive TV and include:

Course	Hours
Professional Nursing 111	3
Professional Nursing 151	4
Professional Nursing 152	4
Professional Nursing 261	4
Professional Nursing 262	4
Graduate Nursing 310	3
Graduate Nursing 315	3

The baccalaureate non-nursing courses include:

Course	Hours
Chemistry 23[1]	4
Chemistry 26[1]	4
Environmental Studies 1,2,7; Environmental Sciences 1 or 130; or Natural Resources 2	3/4
Statistics 111 or 141[1]	3
Human Development 5	3
Microbiology and Molecular Genetics 65	4
Nutrition 43	3
Anatomy and Physiology 19 and 20	8
Philosophy, Religion, or Ethics elective	3
English 1	3
Psychology 1	3
Psychology 152	3
Sociology elective	3
General Education electives	18-19
Physical Education	2
Race and Culture	3

Departments and Programs

Nutrition and Food Sciences Department

Colleges: College of Agriculture and Life Sciences, Graduate College

Faculty: Nutrition and Food Sciences

Courses: Nutrition and Food Sciences (NFS)

Contact Information:

University of Vermont
Nutrition and Food Sciences Department
305 Terrill Hall
570 Main St
Burlington, VT 05405-0148

Phone: (802) 656-3374
Fax: (802) 656-0407
Email: ammartin@zoo.uvm.edu
Web Site: http://nutrition.uvm.edu/

Academic Offerings

- Graduate Degrees

  Master of Science (M. S.)

  - Nutrition and Food Sciences

Overview

The Department of Nutrition and Food Sciences (NFS) prepares students to enter the rapidly expanding field of dietetics, food science, nutrition, health, and fitness. Nutrition and Food Science, unique in fields of study, are rooted in the physiological, chemical, and biochemical sciences but are comprehensive in scope since they integrate knowledge learned in the social and psychological sciences. The faculty in the department believe that excellence in teaching, research and undergraduate student advisement are critical components of their responsibility to undergraduate education. Through formal course work, field experience, and independent research, students prepare themselves in the biochemical, psychological, and socioeconomic aspects diet, nutrition and foods. Thus NFS majors are able to meet the current and future needs in nutrition and food science and assume innovative, leadership roles in society and industry.

The course credits earned in NFS provide background in preventive and therapeutic nutrition as well as nutrient requirements for human growth, development, health, and fitness throughout the life cycle. Other courses focus on the physical, chemical, and nutritional properties of food, food safety, and consumer aspects of food related to socioeconomic status, life style, cultural beliefs, and health. Although a series of courses providing knowledge in these areas is required of all majors, each student has a generous amount of free elective credits to pursue personal interests.

It is possible for students to meet the requirements for more than one program option (for example, Dietetics majors are also double majors in Nutrition and Food Sciences) or combine a major in this department with another area of study (e.g. Athletic Training). In addition, department majors may elect to meet the undergraduate requirements needed for admission to medical schools (including naturopathic, chiropractic, or osteopathic) or graduate school in nutrition, food science, sports nutrition, or family and consumer sciences.

Courses in Nutrition and Food Sciences

NFS 043 - Fundamentals of Nutrition

Comprehensive study of specific nutrients in terms of their availability, function, and utilization in mammalian species. Prerequisites: High school chemistry and biology. Fall /Spring.

Credits: 3.

NFS 044 - Survey of the Field

Nutrition and Food Sciences Introduction to the professional field and career opportunities in dietetics, nutrition and food science. Required of all First-Year and transfer students. Fall.

Credits: 1.

NFS 053 - Basic Concepts of Foods

preparation. Spring.

Credits: 3.

NFS 054 - Basic Concepts of Foods Lab

Developing comprehension of scientific principles of food preparation through modification of standard recipes, manipulation of ingredients and techniques, and evaluation using sensory and objective methods. Prerequisite: NFS 053 or concurrent registration in NFS 053 or permission. Spring; Department majors only.

Credits: 1.

NFS 063 - Obesity,Weight Control&Fitness

Introduction to the causes, consequences, and reputed cures of obesity which includes: evaluation of body composition and modification of eating and exercise behaviors in weight control. Fall / Spring.

Credits: 3.

NFS 124 - Professional Presentations

Credits: 3.

NFS 143 - Nutrition in the Life Cycle

Nutritional needs of people throughout the life cycle. Physiological and environmental factors which affect nutritional status. Designed for Nutrition majors. Prerequisite: NFS 043. Fall.

Credits: 3.

NFS 150 - Quantity Food Production&Serv

Principles and techniques of food accounting, recipe and menu planning/costing, preparation and service including equipment, sanitation, and time motion studies. Prerequisite: NFS 053. Fall.
Credits: 4.

NFS 153 - Principles of Food Technology
Food processing technologies and underlining principles of changes in microbiological quality and safety, chemical composition and nutritional value, and interaction of functional additives and ingredients. Prerequisite: NFS 043, NFS 053; organic chemistry. Spring.
Credits: 3.

NFS 154 - Principles Food Technology Lab
Experiential learning of principles of major modern food processing and preservation technologies, essential skills of food quality and safety assurance, and new product development. Prerequisite: NFS 054, NFS 153, or concurrent enrollment in NFS 153, organic chemistry; Department majors only.
Credits: 1.

NFS 163 - Sports Nutrition
Timing and composition of meals for training and pre- and post-competition. Prerequisite: Instructor permission. Fall/Spring.
Credits: 3.

NFS 165 - Mgmt of Eating Disorders
Examination of the causes, diagnosis, and treatment of body image disorder, anorexia nervosa, bulimia nervosa, binge eating, and obesity. Information is provided through readings, lecture, discussion, and speakers. Spring.
Credits: 3.

NFS 175 - International Nutrition
Credits: 3.

NFS 176 - Food and the Consumer
Credits: 3.

NFS 195 - Special Topics
Lectures, laboratories, readings, or projects relating to contemporary areas of study. Credits negotiable. Enrollment may be more than once, maximum of 12 hours in NFS 195 and NFS 295 combined. Prerequisite: Department permission
Credits: 1-12.

NFS 196 - Field Experience
Professionally-oriented field experience under joint supervision by faculty and business or community representative. Credits negotiable, maximum of 15 hours in NFS 196 and NFS 296 combined. Prerequisite: Department permission.
Credits: 1-15.

NFS 197 - Undergraduate Research
Individual laboratory or community research in food or nutritional sciences under the guidance of a faculty member. Arrangement with faculty member and permission of Department Chair.
Credits: 1-3.

NFS 198 - Undergraduate Research
Individual laboratory or community research in food or nutritional sciences under

the guidance of a faculty member. Arrangement with faculty member and Department Chair permission.
Credits: 1-3.

NFS 201 - Fermented Dairy Foods
Fundamental processes involved in the manufacture of domestic and imported cheese varieties and other cultured dairy foods. Acquired knowledge of manufacturing procedures applied at pilot plant level. Prerequisite: A course in organic chemistry; AGBI 201, or permission. Alternate years.
Credits: 4.

NFS 203 - Food Microbiology
Desirable and undesirable activities of bacteria in foods. Mechanisms of food-borne infection and intoxication. Laboratory methods to enumerate and identify microorganisms associated with food. Prerequisite: A course in Biochemistry. Fall.
Credits: 4.

NFS 204 - Industrial Microbiology
Undergraduate only.
Credits: 3.

NFS 208 - Sensory Evaluation of Foods
Nature of sensory responses to aroma, taste, and texture of foods; relation of sensory data to instrumental measurements; statistical analysis and interpretation of sensory data. Prerequisite: a course in Statistics. Alternate years.
Credits: 4.

NFS 223 - Meth Education Human Sciences
Credits: 3.

NFS 238 - Food Service Systems Mgmt
Credits: 3.

NFS 243 - Advanced Nutrition
Study of nutrients and their specific functions in metabolic process integrating cellular physiology, biochemistry, and nutrition. Prerequisites: 43, AGBI 201 or equivalent, ANPS 19 or equivalent; Junior standing. Spring.
Credits: 3.

NFS 249 - Nutrition Seminar
Undergraduate only.
Credits: 1.

NFS 250 - Food Service Systems Mgmt
Organization and administration of food service systems including principles of production, accounting management decisions, communications, and legal responsibilities specific to quantity food production. Emphasis on problem solving. Prerequisites: 150, BSAD 120, or permission. Spring. (Not offered for graduate credit.)
Credits: 3.

NFS 253 - Food Safety & Regulation
Comprehensive study of the relationships between food processing and preservation, food toxicology, and the scope, applicability, and limitations of U.S. food laws. Prerequisite: AGBI 201 or equivalent. Spring.
Credits: 3.

NFS 260 - Diet and Disease

Examination of the physiologic, biochemical, and psychosocial basis of several disease states with application of the normal and therapeutic food and nutrition principles associated with treatment. Prerequisites: 53, 143, 243. Fall.
Credits: 3.

NFS 261 - Clinical Nutrition

Applications of clinical nutrition including practice experiences in interviewing, nutritional assessment and counseling, case studies, and in-depth discussions of current controversies in the dietary management of specific diseases. Prerequisite: NFS 260 or concurrently enrolled. Fall.
Credits: 3.

NFS 262 - Community Nutrition

Study of U.S. public health nutrition policies, programs and practices. Emphasis on community nutrition program planning including needs assessment, intervention development and evaluation. Prerequisite:NFS 260; Senior standing. Spring.
Credits: 3.

NFS 263 - Nutritional Biochemistry

Comprehensive study of metabolism of carbohydrates, lipids, and protein emphasizing diet induced, hormone mediated alterations in metabolism (e.g. starvation and obesity). Prerequisite: NFS 243 or Instructor permission. Spring.
Credits: 3.

NFS 273 - Nutrition Counseling

Professional field experience providing preventive and therapeutic nutritional information and education to individuals or groups under the direct supervision of a Registered Dietitian. Credit nego-tiable but not to exceed three per semester. Enrollment may be more than once. Prerequisite: Instructor's permission Fall/Spring. (Not offered for graduate credit.)
Credits: 1-3.

NFS 274 - Community Practicum

Professional field experience in a community nutrition organization. Credit negotiable but not to exceed three per semester. Enrollment may be more than once, maximum of 6 credits. Prerequisite: Instructor's permission. (Not offered for graduate credit,)
Credits: 1-6.

NFS 290 - Rsrch Meth Nutritional Science

nutritional biochemistry. Prerequisite: AGBI 201, Advanced research methods, including grant preparation, Institutional Review Board requirements, data analysis and presentation, and selected techniques in advanced AGBI 202, or equivalent. Fall. Undergraduate only.
Credits: 4.

NFS 295 - Special Topics

Lectures, laboratories, readings, or projects relating to contemporary areas of study. Credits negotiable. Enrollment may be more than once, maxi-mum of 12 hours in 195 and 295 combined. Prerequisite: Departmental permission.
Credits: 1-15.

NFS 296 - Field Experience

Professionally-oriented field experience under joint supervision of faculty and business or community representative. Credit negotiable. Maxi-mum of 15 hours in 196 and 296 combined. Prerequisite: Departmental permission.

Credits: 1-15.

NFS 350 - Nutrition&Food Science Seminar

Credits: 1.

NFS 360 - Rsch Meth Nutr & Food Sciences

Advanced research methods, including grant preparation, IRB requirements, data analysis and presentation, and selected topics in advanced nutritional and food sciences.

Credits: 3.

NFS 391 - Master's Thesis Research

Credits: 1-18.

Nutrition and Food Sciences (M. S.)

College: Graduate College
Department(s): Nutrition and Food Sciences

Overview

The department mission is to study the relationship between nutrition, food science, health and fitness (preventive nutrition) and between diet and disease (therapeutic nutrition). Faculty research encompasses both basic and applied or community aspects of human nutrition and food science and technology. Research is being conducted on: the impact of attitudes and behaviors toward eating and exercise on body size, shape and composition, the elucidation of arrhythmogenicity of long-chain acyl-carnitines in humans, factors effecting energy intake and expenditure in aging, developing web-based interactive multimedia tools for use in teaching and research, inter-generational nutrition program development, developing behavior modification programs to improve individual eating behaviors and the nutritional status, health, and fitness of communities, testing the effectiveness of Internet support on the long term management of obesity, factors effecting the nutritional status of children, milk chemistry and cheese technology (i.e., structure, function, and properties of mozzarella and goat's milk cheese), chemistry and processing of infant formula, food microbiology, food material science, mathematical modeling of biological processes important to foods and cheese rheology.

For more information, contact Professor Robert S. Tyzbir, Chair of the Department of Nutrition and Food Sciences, 315 Terrill Hall, (802) 656-3374 or e-mail rtyzbir@zoo.uvm.edu.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in nutrition, dietetics, food science, or a science-related field. Satisfactory scores on the Graduate Record Examination, general (aptitude) portion.

Minimum Degree Requirements for the Degree of Master of Science

Thirty hours including six to fifteen hours of thesis research. Twenty-one hours should be earned in the field of specialization; nine hours may be selected from related areas; courses is statistics, Research Methods in Nutrition and Food Sciences, and Nutrition and Food Sciences Seminar are required.

Departments and Programs

Pathology Department

Colleges: Graduate College

Faculty: Pathology

Courses: Pathology (PATH)

Contact Information:

University of Vermont
Pathology Department
E203 Given
89 Beaumont Ave.
Burlington, VT 05405-0134

Phone: (802) 847-3059
Fax: (802) 656-8892
Email: sally.huber@uvm.edu
Web Site: http://www.fahc.org/pathology/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Pathology

Overview

Research interests are in the fields of anatomic, clinical, and experimental molecular pathology. Current studies include histochemistry, connective tissue pathology and biochemistry, thrombosis, cardiovascular disease, electron microscopy, neoplasia, teratology, immunopathology, virology, and lung diseases.

Courses in Pathology

PATH 101 - Intro to Human Disease
Elementary course in human pathology designed for Allied Health students. First portion deals with general mechanisms of disease, followed by disorders of specific organs. Prerequisite: College biology, anatomy, and physiology.
Credits: 3.

PATH 295 - Special Topics
Credits: 1-3.

PATH 301 - General Pathology
An introductory study of the basic mechanisms and principles of cell injury, inflammation and repair, neoplasia, aging, immunological, nutritional, genetic and environmental diseases, and coagulation disorders as they affect cells, tissues, and the human patient. Lecture and Lab (gross and microscopic). For Medical students. Prerequisite: Instructor Permission. Histology recommended.
Credits: 3.

PATH 302 - Systematic Pathology
Introduction to diseases, and their effects on virtually all organ systems. Emphasis is on correlation of gross and microscopic pathology with clinical laboratory medicine, and the patient's signs and symptoms. Prerequisites: PATH 301, Instructor permission.
Credits: 8.

PATH 305 - Molecular Mech Environ Disease
Introductory course on molecular and cellular pathways of disease induction and development. Emphasis on environmental diseases. For graduate students and postdoctoral fellows and undergraduates with permission of course director. Alternate years.
Credits: 3.

PATH 306 - Pathobiology of Disease
Computer-assisted basic pathology series with emphasis on skin, lung, brain, and digestive tract. Alternate years with PATH 305.
Credits: 1.

PATH 375 - ST:Molecular Pathobiology
Techniques, Cell Signalling in Five independent, rotating one-semester modules

concerning: Atherosclerosis, DNA Replication, Human Genetics, Cell Imaging Differentiation and Apoptosis, and Cancer Genetics. Each course based on critical review of the primary literature. Altrnate years. Prerequisites: Biochemistry 301, 302 or instructor's permission. Open to undergraduates with instructor's permission.
Credits: 3.

PATH 391 - Master's Thesis Research
Credits: 1-18.

PATH 395 - Spec Top:Immunopathology
In-depth analysis of the role of the immune system in disease processes. Discussions center on current and controversial areas of immunopathology. Prerequisites: Immunology (Microbiology 223) desirable. Alternate year course with 305.
Credits: 1-6.

Pathology (M. S.)

College: Graduate College
Department(s): Pathology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Satisfactory undergraduate or graduate course work in chemistry and the biological sciences. Microbiology and immunology are also recommended but not required. Satisfactory scores on the Graduate Record Examination, general (aptitude) section. Persons interested in a Ph. D. program may wish to consider the interdisciplinary program in Cell and Molecular Biology in which Pathology participates.

Minimum Degree Requirements for the Degree of Master of Science

Anatomy 311 (three hours), Pathology 305 (three hours), Biochemistry 301-302 (six hours); additional approved courses; thesis research (six to 15 hours).

Departments and Programs

Pharmacology Department

Colleges: Graduate College

Faculty: Pharmacology

Courses: Pharmacology (PHRM)

Contact Information:

University of Vermont
Pharmacology Department
B303 Given Building
89 Beaumont Ave
University of Vermont
Burlington, VT 05405-0068

Phone: (802) 656-2500
Fax: (802) 656-4523
Email: asalisbu@zoo.uvm.edu
Web Site: http://pharmweb.med.uvm.edu

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Pharmacology
  - Doctor of Philosophy (Ph. D.)
    - Pharmacology

Overview

This degree program involves development of a broadly based background in biomedical science followed by intensive laboratory research in the chosen area of specialization.

Primary research interests of the faculty include: Cardiovascular Pharmacology (ionic basis of vascular smooth muscle function, neurovascular communication, gene transcription and smooth muscle cell proliferation), Signal Transduction (protein nuclear transport, signaling by protein kinases), and Pharmacokinetics of anti-AIDS and anti-cancer drugs (chemical determinants of therapeutic activity, natural products as anti-cancer agents).

A pre- and postdoctoral training program in clinical pharmacology of anticancer drugs is offered in cooperation with the Vermont Cancer Center.

Courses in Pharmacology

PHRM 272 - Toxicology

The biology of environmental intoxicants and of drug abuse. Ecologic and physiologic consequences of the dissemination of agricultural, industrial, and medicinal chemicals. Prerequisites: Organic chemistry, background in biology.
Credits: 3.

PHRM 290 - Topics Molecular&Cell Pharm

Focuses on basic principles, drug interactions with receptors, membranes, synapses, neurotransmitters, macromoles, cytoskeleton, ion channels and pumps, and mechanisms of drug resistance. Prerequisite: Introductory course in organic chemistry, background in physiology or health sciences.
Credits: 3.

PHRM 301 - Medical Pharmacology

The chemical and biological properties of drugs. Prerequisite: Permission.
Credits: 6.

PHRM 302 - Pharmacological Techniques

Experiments conducted under supervision in the areas of drug metabolism, modes of drug action, physicochemical properties of drugs, bioassay, and toxicology. Open to undergraduates with instructor's permission.
Credits: 2.

PHRM 303 - Pharmacological Techniques

Experiments conducted under supervision in the areas of drug metabolism, modes of drug action, physicochemical properties of drugs, bioassay, and toxicology. Open to undergraduates with instructor's permission.
Credits: 2.

PHRM 328 - Intro to Medicinal Chemistry

Important classes of drugs are surveyed. Emphasis on relationships between physicochemical properties and pharmacologic activity; synthetic aspects considered. Prerequisites: Chemistry 131-132. Open to undergraduates with instructor's permission.
Credits: 3.

PHRM 372 - Special Topics

Topics of current interest and importance in pharmacology are considered in depth

through presentations by staff, students, and visiting scientists. Prerequisite: Instructor Permission. Credit variable.
Credits: 1-3.

PHRM 373 - Readings in Pharmacology
Intensive directed reading in one area of pharmacology. Pharmacology students must choose a topic outside thesis research area. Term paper and seminar on selected topic required. Prerequisite: Instructor Permission.
Credits: 2.

PHRM 381 - Seminar
Current developments in pharmacology are presented for discussion by students. Prerequisite: Instructor Permission.
Credits: 1.

PHRM 391 - Master's Thesis Research
Credits: 1-12.

PHRM 491 - Doctoral Dissertation Research
Credits: 1-12.

Pharmacology (M. S.)

College: Graduate College
Department(s): Pharmacology

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegrees of Master of Science

Year courses in biology, organic chemistry, physics, analytic geometry and calculus; physical chemistry and/or a reading knowledge of one foreign language may be additional prerequisites, depending on the requirements of the research supervisor; and acceptable scores on the general (verbal, quantitative) section of the Graduate Record Examination.

Minimum Requirements for the Master of Science Degree

Pharmacology 301, 302, 303, 381, 391; supporting courses in biochemistry and physiology.

Pharmacology (Ph. D.)

College: Graduate College
Department(s): Pharmacology

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degrees of Doctor of Philosophy

Year courses in biology, organic chemistry, physics, analytic geometry and calculus; physical chemistry and/or a reading knowledge of one foreign language may be additional prerequisites, depending on the requirements of the research supervisor; and acceptable scores on the general (verbal, quantitative) section of the Graduate Record Examination.

Minimum Requirements for the Doctor of Philosophy Degree

Physiology and Biophysics 301; Biochemistry 301, 302; Pharmacology 301, 302, 303, 328, 381, 491; Biometrics and Applied Statistics 308.

Departments and Programs

Physical Therapy Department

Colleges: Graduate College

Faculty: Physical Therapy

Courses: Physical Therapy (PT), Movement Sciences and Rehabilitation (MVSR)

Contact Information:

University of Vermont
Physical Therapy Department
305 Rowell Building
106 Carrigan Drive
University of Vermont
Burlington, VT 05405

Phone: (802) 656-3252
Fax: (802) 656-6586
Email: patricia.boldwin@uvm.edu
Web Site: http://www.uvm.edu/~cnhs/

Academic Offerings

- Graduate Degrees
  - Master of Physical Therapy (M. P. T.)
    - Physical Therapy
  - Master of Science (M. S.)
    - Movement Sciences and Rehabilitation

Overview

The Department of Physical Therapy offers two master's degree programs: the Master of Physical Therapy (MPT), the professional entry-level program; and the Master of Science

in Movement Sciences and Rehabilitation, the post-professional program for physical and occupational therapists and other rehabilitation specialists.

The Department of Physical Therapy offers a three-year graduate program, leading to the Master of Physical Therapy (MPT) degree. Prior to entry, a minimum of three to four years of undergraduate study is required.

Combined Curriculum (3+3) Option: For students who meet the criteria, we offer a guaranteed admission program to the Master of Physical Therapy program. Through this program, entering first-year undergraduates are guaranteed a space in the MPT program at the end of three years at UVM. High school students who wish to pursue physical therapy at UVM may begin their college career by selecting from the following undergraduate majors: all 42 majors in the College of Arts and Sciences; and either of two majors, Nutrition and Food Sciences or Biological Science, in the College of Agriculture and Life Sciences. Those students who opt to complete the requirements for their undergraduate major in three years, and who are not initially guarunteed admission, may apply to the MPT program during their third year. If admitted to the MPT program, students will begin their first year of graduate study during their fourth year. After successful completion of this first year of graduate study, students will be awarded the baccalaureate degree in their undergraduate major. Thereafter, following successful completion of their second and third years of graduate study, students will be awarded the Master of Physical Therapy. For students who choose this option, the total length of study is six years.

Postbaccalaureate Option: Students may opt to complete their baccalaureate degree, making application to the MPT program during their senior year, or sometime thereafter. Postbaccalaureate candidates also are encouraged to apply. For students who choose this option, the total length of postbaccalaureate study in the MPT Program is three years.

Courses in Physical Therapy

PT 201 - Clinical Science&Practice Sem
or equivalent;
Credits: 2.

PT 202 - Clinic Science&Practice Sem II
Forum to learn, analyze and discuss scientific , clinical and professional issues related to individuals with non-complex conditions involving the cardiopulmonary system and spinal musculoskeletal problems. Prerequiste: PT 201. Co-requisite: PT 212, PT 222, PT 232.
Credits: 2.

PT 211 - Clinical Skills Laboratory I
Laboratory experiences in which students will learn foundational biomechanical principles, kinesiology of joints and practice observational, verbal, written, manual and intellectual skills involved in PT examination, evaluation, and management of patients with non-complex conditions of the peripheral joints of the musculoskeletal system. Co-requisite: PT 201, PT 221.
Credits: 3.

PT 212 - Clinical Skills Labs II
Laboratory to practice skills in PT examination, evaluation, and management of patients with non-complex conditions involving the cardiopulmonary system and spinal musculoskeletal problems. Prerequisite 211. Co-requisites: 202, 222, 232.
Credits: 2.

PT 221 - Tutorial I-Clin Care Issues I
Tutorials to investigate, apply and integrate relevant basic and social sciences applied to persons with non-complex conditions involving primarily peripheral joint problems of the neuromusculo-skeletal system. Co-requisite: PT 201; PT 211.
Credits: 2.

PT 222 - Tutorials II
Tutorials where students investigate, apply and integrate foundational sciences as applied to patients with non-complex conditions involving the cardiopulmonary system and spinal musculoskeletal problems. Prerequisite: PT 221. Co-requisite: PT 202, PT 212, PT 232.
Credits: 2.

PT 232 - Clinical Education I

Two week clinical experience to understand the role of the physical therapist. Exposure to comprehensive patient care; examinations, intervention, discharge planning, and outcome assessment. Prerequisites: 201, 211, 221. Co-requisites: 202, 212, 222.

Credits: 1.

PT 255 - Prof Abilities Assessment

Assessment of students' professional behaviors by faculty, based upon generic abilities and the expected stage of development, examined within all courses during the semester.

Credits: 0.

PT 302 - Prof Practice I

Credits: 2.

PT 315 - Clinical Skills Lab III

and multiple systems impairments and disabilities. Students practice observational, verbal, written, manual, and intellectual skills in PT examination, evaluation, and management of peripheral neruo-musculo-skeletal, metabolic Prerequisites:211,212. Co-requisites:323, 341, 333, 355.

Credits: 4.

PT 316 - Clinical Skills Lab IV

conditions. Prerequisite: PT 211, PT 212, PT 315. Students practice observational, verbal, written, manual, and intellectual skills in PT examination, evaluation, and management of individuals with various neurological Co-requisite: PT 324, PT 342, PT 355.

Credits: 4.

PT 317 - Clinical Skills Laboratory V

Therapeutic approaches to pain, restoration of function and movement, assistive technology, training and education, patient advocacy, and coordination of care throughout the life span. Prerequisite: PT 211, PT 212, PT 315, PT 316. Co-requisite: PT 325, PT 334, PT 343.

Credits: 3.

PT 323 - Tutorial III

with peripheral neuro-musculo-skeletal, metabolic and

Credits: 4.

PT 324 - Tutorial IV

Small group tutorials to investigate, apply and integrate the relevant foundational sciences pertaining to persons with various neurological conditions. Prerequisite: PT 221, PT 222, PT 323. Co-requisite: PT 316, PT 342, PT 355.

Credits: 4.

PT 325 - Tutorials V

health, politics, culture, ethics and professionalism, patient advocate and health team member. Prerequisite: PT 221, PT 222, PT 323, PT 326. Co-requisite: PT 316, PT 334, PT 343.

Credits: 3.

PT 333 - Clinical Education II

involvement and responsibility for safe, effective, comprehensive patient care.

Prerequisites: 232. Co-requisites: 315, 323, 341, 355.
Credits: 2.

PT 334 - Clinical Education III

A 8-week full-time experience integrating didactic information with clinical skills in one of three treatment settings. Focus: critical thinking, problem solving, and application of skills. Prerequisite: PT 232, PT 333.
Credits: 4.

PT 335 - Clinical Education IV

clinical settings is required. Prerequisite: Two 8-week, full-time clinical experiences integrating didactic information and clinical skills. Practice and refine skills, attitudes and behaviors. A variety of PT 232, PT 333, PT 334.
Credits: 6.

PT 336 - Clinical Education V

Two 8-week, full-time clinical experiences integrating didactic information and clinical skills. Practice and refine skills, attitudes and behaviors. A variety of clinical settings is required.Prerequisites:232,333,334,335.
Credits: 6.

PT 341 - Clin Science&Practice Sem III

Large group forum to learn, analyze, and discuss scientific, clinical, and professional practice issues related to peripheral neurologic, metabolic, and multiple systems impairment and disabilities. Prerequisite: PT 201, PT 202. Co-requisite: PT 315, PT 323, PT 333, PT 355.
Credits: 4.

PT 342 - Clin Science&Practice Sem IV

Learn analyze and discuss scientific, clinical and
Credits: 4.

PT 343 - Clin Science & Practice Sem V

Explore global/societal aspects of health care delivery, focusing on role of physical therapist as consultant, interdisciplinary health team member, and advocate in health care. Prerequisite: PT 201, PT 202, PT 341, PT 342. Co-requisite: PT 316, PT 325, PT 334.
Credits: 4.

Courses in Movement Science & Rehab

MVSR 300 - Research Tutorial

Through seminars, actual research participation, informal discussions, and individual advisement, the student will develop a proposal for thesis research. Explore instrumentation, experimental design, and logistics of research.
Credits: 1-3.

MVSR 304 - Prof Practice Practicum

Practicum experience in a clinical specialty, teaching, management or consultation. Companion seminar to analyze and assess practicum experience.
Prerequisite: PA 312, PA 315 or PA 395.
Credits: 2 or 3.

MVSR 311 - Motor Funct&Dysfunction Muscle

Structure, function, biomechanics, plasticity, measurement of muscle characteristics, muscle performance in relation to development, aging, nutrition, activity, pathology, elasticity, viscosity and responses to therapeutic interventions.
Credits: 3.

MVSR 312 - Motor Funct:Connective Tissue

Structure, function, plasticity and biomechanics of connective tissues will be studied relative to development, aging, nutrition, activity, pathology, compressive and tensile forces, and therapeutic intervention.
Credits: 3.

MVSR 313 - Motor Funct&Dysfunct:Exer Phys

Utilization of metabolic energy on molecular, cellular and whole organism levels. Quantification of work capacity and energy expenditure with orientation to clinical situations. Prerequisite: MVSR 311.
Credits: 2.

MVSR 314 - Motor Funct&Dysfunct:Move Sci

Motor Learning, motor control, and recovery of function; their alterations with pathology, age, sex, and experience; and implications for therapeutic intervention.
Prerequisite: MVSR 311 or Instructor permission.
Credits: 4.

MVSR 381 - Special Topics Seminar

Topics of interest to graduate physical therapists based on theory, research or

advanced practice. Content will go beyond the scope of existing courses or thesis research. May be repeated for credit. Prerequisite: Advisor and Instructor permission.

Credits: 1-3.

MVSR 391 - Master's Thesis Research

Credits: 1-12.

MVSR 397 - Special Readings & Research

Directed individual study of areas not appropriately covered by existing courses. Prerequisite: Advisor and sponsoring faculty permission.

Credits: 1-3.

Physical Therapy (M. P. T.)

College: Graduate College
Department(s): Physical Therapy

Overview

The MPT professional entry-level program contains course work related to the science and art of physical therapy practice including the basic sciences of anatomy, physiology and neuroscience, the clinical sciences of pathophysiology and pharmacology related to sensorimotor function, and the applied sciences of exercise, physical agents, orthotics and environmental modification. Principles of research, education, administration, and ethical practice in multicultural settings will be addressed throughout this curriculum.

Students will acquire necessary knowledge, skills, and behaviors through case studies and practice which integrate basic and clinical sciences, professional practice and critical inquiry in a progression from the foundational sciences and clinical care issues, to an integration of health care practice, research and policy issues.

The full-time Clinical Education Program (PT 232, 333, 334, 335, 336) is an integral part of the curriculum, offering the student opportunities to apply knowledge, skills and behaviors in the clinical setting. The program is widely affiliated throughout the U.S., but focused in the Northeast. Students affiliating will be responsible for the cost of medically required vaccinations, transportation and living expenses (including room and board) during the full-time clinical experiences. The first two full-time experiences, one for two weeks, and the second for four weeks, will be completed at the same clinical site. These will be located within a commutable distance from Burlington. The last three full-time experiences each will be eight weeks in length. All students in the program are required to carry professional liability insurance prior to enrolling in the clinical education experience. Students should plan their finances to include these expenses. The affiliations will be scheduled as indicated in the curriculum plan unless insufficient clinical sites are available; in that case, students may be required to complete clinical affiliation requirements in an alternate time period. Upon completion of the program, graduates will be eligible to sit for the national professional licensure examination.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Physical Therapy

There are two routes of entry into the MPT program. First, students who have entered The University of Vermont in one of the following majors may apply during their junior year to enter the MPT program in their senior year: all majors in the College of Arts and Sciences; Nutrition and Food Sciences or Biological Sciences in the College of Agriculture and Life Sciences. Students will be advised by faculty in their undergraduate major as well as in Physical Therapy so that they can complete the requirements for that major in three years. If admitted to Physical Therapy in their senior year, they will be awarded the baccalaureate degree in their undergraduate major after the successful completion of their first year of study in Physical Therapy. Thus, the total length of study for these students will be 6 years. The MPT program will also be open to applicants who have already completed baccalaureate, masters or doctoral degrees in other disciplines. Their course of study will be three academic years.

Prerequisites to the MPT Program for the Degree of Master of Physical Therapy

Students must have completed 2 semesters of college chemistry, with laboratory, including introduction to organic chemistry; 2 semesters of college physics, with laboratory; and 1 semester of college math at least at the pre-calculus level, calculus preferred, or statistics. One semester of biology is strongly recommended.

Admissions Requirements for the Degree of Master of Physical Therapy

Minimum GPA of 3.0 in college level courses. Competence in conveying ideas in an organized manner, critical thinking and logic, and writing as demonstrated in a writing sample. Excellent interpersonal and communication skills as evidenced by life and community experience. Commitment to the profession of physical therapy, as assessed by volunteer or work experience in PT settings. Three letters of reference, at least one each from professional and educational sources. Official transcript, completion of application form, completion of health form. For students who will have completed a minimum of a baccalaureate degree prior to enrolling in the MPT program, submission of scores of the Graduate Record Examination. A minimum score of 500 on the verbal and quantitative sections and 3.5 on the written analytical section is expected. If GRE's taken prior to fall of 2002, 500 minimum score on the analytical section is expected.

Minimum Degree Requirements for the Degree of Master of Physical Therapy

Satisfactory completion of 85 credits of graduate courses in physical therapy, including 5 credits in Anatomy, 5 credits in Neuroscience, 6 credits in Physiology, and 19 credits of

full-time Clinical Education.

Movement Sciences and Rehabilitation (M. S.)

College: Graduate College
Department(s): Physical Therapy

Overview

The Master of Science Degree Program is designed for graduate physical and occupational therapists or other rehabilitation specialists who desire to expand and enhance their scientific knowledge and professional skills in a scholarly environment in preparation for practicing as an advanced clinician. The advanced clinician is a practitioner with in-depth knowledge who can act as a mentor, coach, advocate, and resource for providers and consumers by demonstrating competent advanced clinical judgment and skill, as well as competent teaching skill, and by promoting research as a critical reader and contributor. The core of the program focuses on the scientific basis of normal and abnormal movement. It is accompanied by courses within a professional practice sequence, as well as a research sequence which will culminate in the completion of a thesis. The program is designed to accommodate practicing clinicians who wish to pursue part-time or full-time graduate studies.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Graduate of an accredited entry level educational program in physical or occupational therapy or, other rehabilitation specialties, with a minimum GPA of 2.67 (B-) desired. Submission of scores of the Graduate Record Examination. A minimum score of 1500 on the aptitude portion is expected. Three letters of reference, at least one each from professional and educational sources. Official transcript, completion of application form, completion of health form. At least two years of clinical practice as a physical or

occupational therapist or other rehabilitation specialist. Current knowledge of statistics, neuroscience, and biomechanics which may be demonstrated by prerequisite courses within the last five years or satisfactory performance on equivalency tests in each of these areas. (Appropriate courses on campus, or self-study guides will be recommended for anyone who does not initially meet these standards.) A personal interview during which clearly defined educational goals and objectives for graduate study are discussed as they are reflected in the application and supportive documentation. These goals will be discussed in relationship to departmental resources and goals to determine whether personal and departmental objectives are congruent and compatible.

Minimum Degree Requirements

Completion of 36 credits of graduate courses in movement sciences and rehabilitation, including six credits of thesis research and six credits of approved electives. Completion of a practicum in one of the following areas: teaching, clinical specialty, management, and consultation. Completion of a comprehensive written exam is required prior to the initiation of the masters thesis research. In addition to the exam, the student must defend the research proposal in an oral presentation.

Academics

Catalogue 2003-04

Courses

Academic Offerings

Colleges & Schools

Faculty

Policies & General Information

Catalogue Archives

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Departments and Programs

Physics Department

Colleges: Arts and Sciences, Graduate College

Faculty: Physics

Courses: Physics (PHYS)

Contact Information:

University of Vermont
Physics Department
Cook Physical Science Building, Room A405
82 University Place
Burlington VT 05405-0125

Phone: (802) 656-2644
Fax: (802) 656-0817
Email: physics@zoo.uvm.edu
Web Site: http://www.uvm.edu/~physics/

Academic Offerings

- Graduate Programs
  - Master of Arts in Teaching (M. A. T.)
    - Physics
  - Master of Science (M. S.)

        - Physics
    - Master of Science for Teachers (M. S. T.)
        - Physics
- Concurrent Degree Programs
    - Physics (B. S. / M. S.)
    - Physics/Materials Science (B. S. / M. S.)

Courses in Physics

PHYS 011 - Elementary Physics
Survey of principles of classical and modern physics without calculus, appropriate for students concentrating in life or health sciences. Accompanying labs: Physics 21, 22. Prerequisites: secondary school algebra
Credits: 4.

PHYS 012 - Elementary Physics
Survey of principles of classical and modern physics without calculus, appropriate for students concentrating in life or health sciences. Accompanying labs: Physics 21, 22. Prerequisites: 11 or 31 for 12; secondary school algebra
Credits: 4.

PHYS 021 - Introductory Lab I
Prerequisite: Concurrent enrollment or credit in 11 or 31.
Credits: 1.

PHYS 022 - Introductory Lab II
Prerequisite: Concurrent enrollment or credit in 12 or 42.
Credits: 1.

PHYS 031 - Introductory Physics
Mechanics including oscillations, waves, heat, and kinetic theory. Recommended for students in engineering, natural sciences, premedical programs. Accompanying lab: 21.
Credits: 4.

PHYS 042 - Electromagnetism & Modern Phys
Electricity, magnetism, optics, modern physics. Recommended for students in engineering, natural sciences, premedical programs. Accompanying lab: 22. Prerequisite: 31, Math. 22.
Credits: 4.

PHYS 095 - Special Topics
Credits: 0-4.

PHYS 096 - Special Topics
Credits: 1-3.

PHYS 128 - Waves and Quanta
Classical and electromagnetic waves, physical optics, wave-particle

phenomenology, wave mechanics, and applications of the Schrodinger equation. Prerequisites: 42, Math. 121.
Credits: 3.

PHYS 130 - Introductory Laboratory III
Prerequisite: Concurrent enrollment or credit in PHYS 128.
Credits: 1.

PHYS 195 - Intermediate Special Topics
See Schedule of Courses for specific titles. Prerequisite: PHYS 128; department permission.
Credits: 3.

PHYS 196 - Intermediate Special Topics
See Schedule of Courses for specific titles. Prerequisite: PHYS 128; department permission.
Credits: 1-3.

PHYS 197 - Readings & Research
Prerequisite: PHYS 128; department permission.
Credits: 1-6.

PHYS 198 - Readings & Research
Prerequisite: PHYS 128; department permission.
Credits: 1-6.

PHYS 201 - Experimental Physics
Experiments in classical and modern physics. May be entered at beginning of either semester and repeated for credit up to a maximum of four semesters. Prerequisites: 42 or 128, Math. 121, junior standing.
Credits: 3.

PHYS 202 - Experimental Physics
Experiments in classical and modern physics. May be entered at beginning of either semester and repeated for credit up to a maximum of four semesters. Prerequisites: 42 or 128, Math. 121, junior standing.
Credits: 3.

PHYS 211 - Mechanics
Newtonian dynamics of particles and systems of particles, with applications to problems of special importance, such as driven and coupled harmonic oscillators and central field trajectories. Prerequisites: 42, Math. 121.
Credits: 3.

PHYS 213 - Electricity & Magnetism
Fundamental principles of electricity and magnetism; electrostatic fields, and magnetic fields of steady currents. Electric and magnetic properties of matter and electromagnetic energy. Prerequisites: 42, Math. 121. Credit not given for more than one of 213 or Electrical Engineering 141.
Credits: 3.

PHYS 214 - Electromagnetism
Introduction to time dependent electromagnetic fields. Maxwell's equations in vacuum and in matter. Electromagnetic waves and radiation. Prerequisite: 213. Credit not given for more than one of 214 or Electrical Engineering 142.
Credits: 3.

PHYS 222 - Biological Physics

Physical laws, processes, and interactions pertaining to biological systems. Prerequisites: 12 or 42, Math. 121.

Credits: 3.

PHYS 242 - Intro to Solid State Physics

Introduction to crystal structures, reciprocal lattices, lattice vibrations. Thermal properties of solids and free electron theory of metals and semiconductors. Elementary band theory and introduction to electronic transport theory. Prerequisite: PHYS 128.

Credits: 3.

PHYS 257 - Modern Astrophysics

Cross-listed with: ASTR 257.

Credits: 3.

PHYS 258 - Relativity

Development of Einstein's theory of special relativity. Lorentz transformation, time dilation, length contraction, mass variation, relative velocities. Introduction to four-dimensional space. Concepts of general relativity. Applications selected from astrophysics, elementary particles, etc. Prerequisite: PHYS 128.

Credits: 3.

PHYS 264 - Nuclear & Elem Particle Physic

Introduction to theoretical and experimental aspects of nuclear and elementary particle physics. Prerequisite: PHYS 128; Junior standing.

Credits: 3.

PHYS 265 - Thermal Physics

Thermodynamics, kinetic theory, statistical mechanics. Prerequisites: 42; Math. 121.

Credits: 3.

PHYS 273 - Quantum Mechanics I

Introduction to nonrelativistic quantum mechanics. Schrodinger equation and applications to simple systems. Prerequisite: PHYS 128, PHYS 211.

Credits: 3.

PHYS 295 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 1-6.

PHYS 296 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 1-6.

PHYS 301 - Mathematical Physics

Introduction to basic mathematical methods of theoretical physics; vector and tensor analysis, partial differential equations, orthogonal functions, complex variables and variational techniques. Prerequisites: PHYS 211, PHYS 214. Alternate years.

Credits: 3.

PHYS 305 - Teaching of College Physics

Instructional strategies and techniques with application to the teaching of laboratories and recitations. Prerequisites: Undergraduate degree in Physics;

Instructor permission.
Credits: 1.

PHYS 311 - Advanced Dynamics
Classical mechanics presented as the basis of the concepts and methods of modern physics. Variational, Lagrangian, and Hamiltonian formulations, canonical transformations, continuous systems. Prerequisite: PHYS 211. Alternate years.
Credits: 3.

PHYS 313 - Electromagnetic Theory
Development of Maxwell's theory of electromagnetism emphasizing its physical basis and the modes of mathematical description. Prerequisite: PHYS 214. Alternate years.
Credits: 3.

PHYS 321 - Theoretical Physics
For research students interested in pursuing topics of general and departmental research interest in theoretical physics. Prerequisite: Instructor Permission. Offered as occasion warrants.
Credits: 1-6.

PHYS 323 - Contemporary Physics
Topics of current interest in physics to be offered as student and faculty interest warrants. May be repeated for credit with department approval. Prerequisite: Instructor Permission.
Credits: 0-6.

PHYS 331 - Biological Physics
occasion warrants.
Credits: 1-3.

PHYS 341 - Solid State Physics
Introduction to crystal symmetry and the reciprocal lattice. Crystal binding and lattice vibrations. Thermal, electrical, and magnetic properties of solids, free electron theory of metals, and band theory. Prerequisites: PHYS 214, PHYS 265, PHYS 273 or their equivalents; Instructor permission.
Credits: 3.

PHYS 342 - Solid State Physics
their equivalents; Instructor permission.
Credits: 3.

PHYS 351 - Seminar:Physics of Materials
For research students in the field of the physics of materials. Lectures, reports, and directed readings related to the research for the department and the field generally. May be repeated for credit with departmental approval. Prerequisite: Instructor Permission. Offered as occasion warrants.
Credits: 1-3.

PHYS 362 - Quantum Mechanics II
Mathematical and physical foundations of nonrelativistic quantum mechanics from the unifying point of view of Dirac. Symmetry operations and the algebraic structure of quantum mechanics are emphasized. Prerequisite: PHYS 273. Alternate years.
Credits: 3.

PHYS 381 - Problems in Engr Physics

Directed readings and independent study in one or more topics in engineering physics, leading to a written report and an oral presentation. Graduate credit only.
Credits: 4-6.

PHYS 382 - Problems in Engr Physics

topics in engineering physics, leading to a written report and an oral presentation. Graduate credit only.
Credits: 4-6.

PHYS 391 - Master's Thesis Research

Credits: 1-12.

Physics (M. A. T.)

College: Graduate College
Department(s): Physics

Overview

The Department of Physics offers research opportunities in astrophysics, biophysics, condensed matter physics, and the physics of materials.

Astrophysical research centers on experimental radio astronomy, with particular emphasis on pulsars and the interstellar medium. Observations are carried out using major instruments of the U.S. National Observatories and generally involve computer analysis and interpretation.

Research in biophysical ultrasound is directed toward an understanding of the physical principles involved when ultrasound interacts with living systems. This often involves collaboration with the College of Medicine. Acoustical and optical tweezers permit manipulating single cells without touching them. New forms of ultrasonic transducers and biosensors are being developed in collaboration with Electrical Engineering, as part of the Materials Science Program.

Biophysical research includes studies on the development and employment of novel uses of in situ atomic force microscopy for biological applications, specifically high-resolution structural studies of membrane proteins, investigation of the packing of genetic materials on bilayer membranes, and studies on how DNA-bilayer interactions affect the use of cationic lipids as gene-delivery means. Other studies to better understand the structure and assembly kinetics of biological membranes focus on the physical properties of lipid layers employing in situ atomic force microscopy, fluorescence imaging, and differential scanning calorimetry.

Other research in biological physics and protein dynamics involves combining the detail of atomic-resolution X-ray crystallography with the sensitivity of optical and IR spectroscopy. We have access to a state-of-the-art protein crystallography diffractometer and make regular trips to synchrotrons in the US and Europe. Computational facilities for structural biology include several SGIs and a 12-node Beowulf parallel-processor Linux cluster.

Research in theoretical condensed matter physics focuses on the dynamics of quantum systems with application to electronic, magnetic, optical, structural, and thermal properties of nanomaterials including fullerene-derived solids (buckyballs) and carbon nanotubes. Basic research also includes the investigation of low energy scattering of atoms and molecules from surfaces and systems with many internal degrees of freedom and the development of new methods for studying quantum many-body systems, such as new extensions of density functional theory to van der Waals systems.

Theoretical studies of the optical properties of materials include the electronic structure of defect complexes in ionic crystals, the application of subtracted dispersion relations to optical data analysis, and the separation of inter- and intra-band effects in the infrared spectra of metals. Related studies are concerned with theories of X-ray scattering, of X-ray optical properties, and of X-ray optical elements.

Research in materials physics includes studies of the kinetics of thin film growth and surface processing, applied to materials with interesting and useful physical properties such as organic semiconductors and magnetic materials. Many of the research projects involve real-time X-ray or electron diffraction structural studies of surface phenomena, combined with computer simulation of relevant surface processes. We have an ultra-high vacuum thin-film deposition laboratory dedicated to these studies, and we make regular use of synchrotron X-ray facilities in the US.

Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

General Requirements

- Graduate (Master's)

Specific Requirements

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

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Physics (M. S.)

College: Graduate College
Department(s): Physics

Overview

The Department of Physics offers research opportunities in astrophysics, biophysics, condensed matter physics, and the physics of materials.

Astrophysical research centers on experimental radio astronomy, with particular emphasis on pulsars and the interstellar medium. Observations are carried out using major instruments of the U.S. National Observatories and generally involve computer analysis and interpretation.

Research in biophysical ultrasound is directed toward an understanding of the physical principles involved when ultrasound interacts with living systems. This often involves collaboration with the College of Medicine. Acoustical and optical tweezers permit manipulating single cells without touching them. New forms of ultrasonic transducers and biosensors are being developed in collaboration with Electrical Engineering, as part of the Materials Science Program.

Biophysical research includes studies on the development and employment of novel uses of in situ atomic force microscopy for biological applications, specifically high-resolution structural studies of membrane proteins, investigation of the packing of genetic materials on bilayer membranes, and studies on how DNA-bilayer interactions affect the use of cationic lipids as gene-delivery means. Other studies to better understand the structure and assembly kinetics of biological membranes focus on the physical properties of lipid layers employing in situ atomic force microscopy, fluorescence imaging, and differential scanning calorimetry.

Other research in biological physics and protein dynamics involves combining the detail of atomic-resolution X-ray crystallography with the sensitivity of optical and IR spectroscopy. We have access to a state-of-the-art protein crystallography diffractometer and make regular trips to synchrotrons in the US and Europe. Computational facilities for structural biology include several SGIs and a 12-node Beowulf parallel-processor Linux cluster.

Research in theoretical condensed matter physics focuses on the dynamics of quantum systems with application to electronic, magnetic, optical, structural, and thermal properties of nanomaterials including fullerene-derived solids (buckyballs) and carbon nanotubes. Basic research also includes the investigation of low energy scattering of atoms and molecules from surfaces and systems with many internal degrees of freedom and the development of new methods for studying quantum many-body systems, such as new extensions of density functional theory to van der Waals systems.

Theoretical studies of the optical properties of materials include the electronic structure of defect complexes in ionic crystals, the application of subtracted dispersion relations to optical data analysis, and the separation of inter- and intra-band effects in the infrared spectra of metals. Related studies are concerned with theories of X-ray scattering, of X-ray optical properties, and of X-ray optical elements.

Research in materials physics includes studies of the kinetics of thin film growth and surface processing, applied to materials with interesting and useful physical properties such as organic semiconductors and magnetic materials. Many of the research projects involve real-time X-ray or electron diffraction structural studies of surface phenomena, combined with computer simulation of relevant surface processes. We have an ultra-high vacuum thin-film deposition laboratory dedicated to these studies, and we make regular use of synchrotron X-ray facilities in the US.

Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate majors in science, engineering, or mathematics are considered for admission to the program. Satisfactory scores on the Graduate Record Examination (general and subject section) are required.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Physics 211, 213, and 273; two additional semester courses in physics above the

sophomore level; two semester courses in mathematics above the sophomore level.

Minimum Degree Requirements for the Degree of Master of Science

A total of 30 credit hours including a minimum of six hours of thesis research and at least nine hours of Physics courses numbered over 300.

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

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Physics (M. S. T.)

College: Graduate College
Department(s): Physics

Overview

The Department of Physics offers research opportunities in astrophysics, biophysics, condensed matter physics, and the physics of materials.

Astrophysical research centers on experimental radio astronomy, with particular emphasis on pulsars and the interstellar medium. Observations are carried out using major instruments of the U.S. National Observatories and generally involve computer analysis and interpretation.

Research in biophysical ultrasound is directed toward an understanding of the physical principles involved when ultrasound interacts with living systems. This often involves collaboration with the College of Medicine. Acoustical and optical tweezers permit manipulating single cells without touching them. New forms of ultrasonic transducers and biosensors are being developed in collaboration with Electrical Engineering, as part of the Materials Science Program.

Biophysical research includes studies on the development and employment of novel uses of in situ atomic force microscopy for biological applications, specifically high-resolution structural studies of membrane proteins, investigation of the packing of genetic materials on bilayer membranes, and studies on how DNA-bilayer interactions affect the use of cationic lipids as gene-delivery means. Other studies to better understand the structure and assembly kinetics of biological membranes focus on the physical properties of lipid layers employing in situ atomic force microscopy, fluorescence imaging, and differential scanning calorimetry.

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cluster.

Research in theoretical condensed matter physics focuses on the dynamics of quantum systems with application to electronic, magnetic, optical, structural, and thermal properties of nanomaterials including fullerene-derived solids (buckyballs) and carbon nanotubes. Basic research also includes the investigation of low energy scattering of atoms and molecules from surfaces and systems with many internal degrees of freedom and the development of new methods for studying quantum many-body systems, such as new extensions of density functional theory to van der Waals systems.

Theoretical studies of the optical properties of materials include the electronic structure of defect complexes in ionic crystals, the application of subtracted dispersion relations to optical data analysis, and the separation of inter- and intra-band effects in the infrared spectra of metals. Related studies are concerned with theories of X-ray scattering, of X-ray optical properties, and of X-ray optical elements.

Research in materials physics includes studies of the kinetics of thin film growth and surface processing, applied to materials with interesting and useful physical properties such as organic semiconductors and magnetic materials. Many of the research projects involve real-time X-ray or electron diffraction structural studies of surface phenomena, combined with computer simulation of relevant surface processes. We have an ultra-high vacuum thin-film deposition laboratory dedicated to these studies, and we make regular use of synchrotron X-ray facilities in the US.

Opportunities for collaborative research with other University departments and groups include those with Chemistry, the Materials Science Program, Molecular Physiology and Biophysics, the Cell and Molecular Biology Program, Computer Science and Electrical Engineering, Civil and Environmental Engineering, and Mechanical Engineering, Medical Radiology, and Geology.

The Department participates in two doctoral programs: Materials Science and Cell and Molecular Biology.

The Department also offers programs leading to the degrees of Master of Science in Engineering Physics, Master of Arts in Teaching, and Master of Science for Teachers of Physical Science. As a participant in the Materials Science program, the Department sponsors candidates for the degrees of Master of Science and Doctor of Philosophy in Materials Science. Details are available elsewhere in the catalogue and also from the Physics Department.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science for Teachers

An undergraduate major in an appropriate field. Satisfactory scores on the general (aptitude) Graduate Record Examination. Completion of at least one full year of teaching.

Requirements for Advancement to Candidacy for the Degree of Master of Science for Teachers

Successful completion of Physics 128, Chemistry 141 and 162, and Mathematics 121, or their equivalents. (These courses may have been taken at the undergraduate level, as part of this graduate program, or credit may be obtained by transfer or examination.)

Minimum Degree Requirements for the Degree of Master of Science for Teachers

The above prerequisites for admission to candidacy must be supplemented by: (1) completion of 30 hours of credit, of which at least 18 must be in Physical Sciences Option (A) or (B) as described below. The remaining 12 credits may be chosen, with the consent of the Joint Advisory Committee, from appropriate courses above 100 in science, engineering, mathematics, and education (credit in education courses is limited to six semester hours); (2) successful completion of a comprehensive examination administered by the Joint Advisory Committee.

Physical Sciences Option (A): Nine semester hours of Physics numbered 128 and above, Chemistry 131 and six semester hours of Chemistry chosen from Chemistry 161, 231, 201, 264, and 241. This option is primarily for teachers of chemistry.

Physical Sciences Option (B): nine semester hours of Chemistry numbered 141 and above and nine hours of Physics in courses numbered above 200. This option is primarily for teachers of physics.

Accelerated Master's Program in Physics (B. S./M. S.)

College: Graduate College
Department(s): Physics

Overview

Students must apply for the Accelerated Master's Program (AMP) during spring semester of their junior years. Students interested in the AMP can request information in writing from the Department. Recommendation for admission will be based upon the student's prior academic record with particular attention paid to performance in upper-division 200-level physics courses. Generally, AMP students must begin a research project by or during the summer prior to their senior years.

Accelerated Masters Program in Public Administration (MPA)

College: Graduate College
Department(s): Public Administration

Overview

The AMP-PA affords UVM students the opportunity to secure a sound undergraduate and graduate program of study in five rather than a minimum of six years, integrates more closely both programs of study, and enhances competitiveness in a marketplace stressing broad undergraduate and focused professional graduate education. The AMP-PA welcomes students majoring in the administrative, behavioral, health, environmental, organizational, social sciences and related disciplines requiring graduate work in administration, or planning and policy capacities in the public service. For more information contact the MPA Office (802) 656-2606.

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Departments and Programs

Plant and Soil Science Department

Colleges: College of Agriculture and Life Sciences, Graduate College

Faculty: Plant and Soil Science

Courses: Plant and Soil Science (PSS)

Contact Information:

University of Vermont
Plant and Soil Science Department
Hills Agricultural Building
105 Carrigan Drive
Burlington, VT 05405-0082

Phone: (802) 656-2630
Fax: (802) 656-4656
Email: pass@zoo.uvm.edu
Web Site: http://www.uvm.edu/~pss/

Academic Offerings

- Graduate Degrees
  - Master of Science (M. S.)
    - Plant and Soil Science
  - Doctor of Philosophy (Ph. D.)
    - Plant and Soil Science

Overview

The Plant and Soil Science program allows students to expand their knowledge of science and apply it to plant production, landscape design, and to environmental issues related to plants and soils. The faculty represent the disciplines of agronomy, horticulture, entomology, plant pathology, and soil science. Our program provides a unique, interdisciplinary opportunity for studying plant/soil ecosystems that are managed for food, feed, fiber production, landscape purposes, or recycling/waste utilization.

The program integrates classroom and field experiences and incorporates relevant environmental, social, and economic issues into the curriculum. Faculty help students develop individualized courses of study to match their interests and career goals. The department has two majors, Plant and Soil Science and Sustainable Lanscape Horticulture. There are three areas of concentration within the Plant and Soil Science program, they are: Agroecology/Sustainable Agriculture, Horticulture, and Environmental Soil Science.

Courses in Plant & Soil Science

PSS 010 - Home & Garden Horticulture

Planning, selecting, and maintaining shrubs, trees, flowers, lawns, fruits, and vegetables around the home. Designed primarily for non-agricultural students.
Credits: 3.

PSS 011 - Principles of Plant Science

management, and utilization of economically important horticulture and agronomic crops.
Credits: 3.

PSS 106 - Entomology & Pest Mgmt

Survey of the major insect orders, and methods for controlling injurious species. Prerequisite: 11.
Credits: 4.

PSS 107 - Forest Entomology

Ecology and population dynamics of insects affecting forests and forest products. Insect control by silvicultural, biotic, and chemical means. Prerequisite: Junior standing in Forestry or Urban Forestry and Landscape Horticulture.
Credits: 3.

PSS 117 - Plant Pathology

Introduction to the causes of plant disease including the relationship of the plant, pathogen, and environment in disease development and disease management. Prerequisites: BOT 4 or BIOL 1,2 or PSS 11. Alternate years.
Credits: 4.

PSS 121 - Indoor Plants

Indoor flowers, culture, related topics such as design. Prerequisite: PSS 10 or 11 or Botany 4 or permission. Alternate years.
Credits: 1.

PSS 122 - Small Fruit Crops

Principles of small fruit production, including propagation, culture, management, and harvesting. Prerequisite: PSS 011 or permission. Alternate years.
Credits: 2.

PSS 123 - Garden Flowers

Outdoor flowers, culture, related topics. Prerequisite: PSS 10 or 11 or Botany 4 or

permission. Alternate years.
Credits: 2.

PSS 124 - Vegetable Fruit Crops
Principles and practices of commercial vegetable fruit production, including seed production, tillage, cultural practices, and nutrition value. Prerequisite: PSS 11. Alternate years.
Credits: 2.

PSS 125 - Woody Landscape Plants
Identification, climatic requirements, cultural management, and use of ornamental plant materials in landscape planting. Prerequisite: 11 or Botany 4 or permission.
Credits: 4.

PSS 126 - Vegetable Root Crops
Principles and practices of commercial vegetable root crop production, including propagation, tillage, cultural practices, and nutrition value. Prerequisite: PSS 011. Alternate years.
Credits: 2.

PSS 127 - Greenhouse Operations & Mgmt
Principles and practices of commercial greenhouse management including construction, heating, cooling, container media, watering, fertilization, light and temperature, growth regulators, integrated pest management and disease control. Prerequisite: PSS 11. Alternate years.
Credits: 2.

PSS 131 - Landscape Design 1
A studio course emphasizing theory of landscape design and its application to actual landscape design problems. Graphic communication techniques included. Prerequisite: PSS 11 or permission.
Credits: 3.

PSS 132 - Landscape Design 2
Advanced techniques in landscape design. Grading, construction details, graphic techniques, site analysis as well as various design problems. Prerequisite: PSS 125 or PSS 131, or RM 138, or permission.
Credits: 3.

PSS 138 - Commercial Plant Propagation
Principles and practices involved in propagating herbaceous and woody plants by seeds, division, layering, cuttings, budding, grafting, and aseptic culture. Prerequisite: PSS 11 or permission.
Credits: 4.

PSS 143 - Forage Crop Management
Identification, establishment, and management of crops grown for hay, pasture, and silage. Prerequisite: PSS 11 or permission. (Cross-Listed with ASCI 143.) Alternate years.
Credits: 2.

PSS 145 - Turfgrass Management
Establishment, maintenance, and utilization of turf for lawns, parks, athletic fields, airports, cemeteries, roadsides, golf courses, and ski slopes. Prerequisite: PSS 11 or Botany 4 or permission. Alternate years.

Credits: 2.

PSS 152 - Agroecology

An ecosystem approach to agriculture. Ecological thinking in agriculture, plant/soil ecosystems, ecological design principles and specific sustainable systems (permaculture, biodynamics, agroforestry, organic). Prerequisite: Three credits in a basic biological or ecological science or permission. Alternate years.
Credits: 3.

PSS 154 - Composting Ecology & Mgmt

Examines ecological, physical and chemical principles, the practical management of the composting process, and benefits of using compost in plant and soil ecosystems. Prerequisite: 3 credits in basic biological or ecological science or permission. Alternate years.
Credits: 2.

PSS 156 - Permaculture

Design of agriculturally productive environments that have the diversity, stability, and resilience of the natural biosphere to harmoniously integrate landscape and people. Prerequisite: Three credits in a basic biological or ecological science, or permission. Cross-listed with: ENVS 156.
Credits: 2.

PSS 161 - Fundamentals of Soil Science

Biological, chemical, and physical properties of the dynamic soil system as related to plant growth and environmental problems. Prerequisite: Inorganic chemistry or permission.
Credits: 4.

PSS 162 - Soil Fertility & Management

An agroecological analysis of soil fertility management including nutrient supply and uptake, rhizosphere-microbial interactions, fertility evaluations, and management techniques. Prerequisite: PSS 161 or permission.
Credits: 3.

PSS 195 - Undergrad Special Topics

Courses or seminars on topics beyond the scope of existing department offerings. Prerequisite: Instructor permission.
Credits: 1-4.

PSS 196 - Undergrad Special Topics

Courses or seminars on topics beyond the scope of existing department offerings. Prerequisite: Instructor permission.
Credits: 1-4.

PSS 197 - Undergrad Independent Study

Department Chair.
Credits: 0-6.

PSS 198 - Undergrad Independent Study

internship, or assisting in teaching. Prerequisite: Permission. More than a total of six credits per semester requires the permission of the Department Chair.
Credits: 1-6.

PSS 210 - Ecological Soil Management

Applying basic ecological concepts and principles to practical soil management.

Will cover integrated strategies for building healthy soils, including management of biological, physical, and chemical properties. Alternate
Credits: 3.

PSS 215 - Weed/Crop Ecology
Weed identification, reproduction, ecological relationships with crops, and integrated management. Prerequisites: PSS 11, 161 or permission. Alternate years.
Credits: 2.

PSS 217 - Pasture Production & Mgmt
Physiological and ecological relationships of pasture plants, effects of grazing livestock on them; grazing management effects on livestock and pastures; emphasis on French Voisin system. Prerequisites: PSS 11 or 161 or permission. Alternate years.
Credits: 2.

PSS 221 - Tree Fruit Culture
Theory and practice of modern commercial fruit science. Nutrition and cultural responses to various management practices. Prerequisite: PSS 011, PSS 161, or permission. Alternate years, 2002-03.
Credits: 2.

PSS 261 - Soil Morph Class & Land Use
Field techniques that describe soil properties, formation, and classification. The principles and processes of soil genesis, land use classification systems, and land use challenges. Prerequisite: PSS 161 or permission. Alternate years.
Credits: 3.

PSS 264 - Chemistry of Soil & Water
An environmentally oriented study of the colloidal chemistry of soil and its interfaces with roots, water, and air. Prerequisites: PSS 161, two semesters chemistry or permission. Ross. Alternate years.
Credits: 4.

PSS 266 - Soil Water Movement
Mathematical modeling and physical principles of the soil-water-plant interaction and its relationship to environmental and agricultural issues. Prerequisites: PSS 161, one semester of physics or permission. Alternate years.
Credits: 3.

PSS 269 - Soil/Water Pollution/Bioremed
Examines key issues in pollution of soil and water. Topics include type of pollutants, their reactions in soil and water, pollution prevention and bioremediation. Alternate years.
Credits: 3.

PSS 281 - Senior Seminar
Presentation and discussion of papers on selected topics of current interest by students and staff. Spring semester. Prerequisite: Senior standing.
Credits: 1.

PSS 297 - Special Topics
Lectures, laboratories, readings, field projects, surveys, or research designed to provide specialized experience in horticulture, agronomy, soils, entomology, and

integrated pest management. Prerequisite: Senior standing and/or permission.
Credits: 1-3.

PSS 301 - Plant Science Colloquium
Graduate student and faculty discussion of current research topics in plant science.
Credits: 1.

PSS 302 - Soil Science Colloquium
Graduate student and faculty discussion of current research topics in soil science.
Credits: 1.

PSS 381 - Graduate Special Topics
Advanced readings and discussion of horticulture, crops, or soils research literature.
Credits: 1-3.

PSS 391 - Master's Thesis Research
Credits: 1-18.

PSS 491 - Doctoral Dissertation Research
Credits: 1-18.

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Plant and Soil Science (M. S.)

College: Graduate College
Department(s): Plant and Soil Science

Overview

Current research projects are concerned with the solution of horticultural and agronomic problems with special emphasis on environmental physiology, soil chemistry, pasture management, plant nutrition, and pest management. Areas of research include winter hardiness of fruits, and woody and herbaceous ornamentals; cultural and environmental interrelationships as they affect plant growth, crop adaptation, and variety; pasture production and marginal land utilization; crop establishment and soil productivity; mycorrhizal fungi; soil chemistry of the rhizosphere; redox reactions in soils; the behavior of heavy metals; compost and organic matter research; behavior of nitrogen in the soil; nutrient availability to plants; agricultural waste management; biological control of insects, disease, and weeds; integrated pest management for control of insects, diseases, and weeds. A student's thesis research will be an integral part of the on-going research efforts of the department.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

An undergraduate major in an appropriate agricultural, environmental, biological, or physical science. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Requirements for Advancement to Candidacy for the Degree of Master of Science

Satisfactory completion of one academic year of graduate study in the Department of Plant and Soil Science, and a written or oral comprehensive examination. The decision on the type of comprehensive exam will be made by the major professor after consultation with the student.

Minimum Degree Requirements for the Degree of Master of Science

Eighteen to 22 hours in Plant and Soil Science and closely related fields; satisfactory participation in seminars during residency; thesis research (six to 12 hours).

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Plant and Soil Science (Ph. D.)

Department(s): Plant and Soil Science
College: Graduate College

Overview

Current research projects are concerned with the solution of horticultural and agronomic problems with special emphasis on environmental physiology, soil chemistry, pasture management, plant nutrition, and pest management. Areas of research include winter hardiness of fruits, and woody and herbaceous ornamentals; cultural and environmental interrelationships as they affect plant growth, crop adaptation, and variety; pasture production and marginal land utilization; crop establishment and soil productivity; mycorrhizal fungi; soil chemistry of the rhizosphere; redox reactions in soils; the behavior of heavy metals; compost and organic matter research; behavior of nitrogen in the soil; nutrient availability to plants; agricultural waste management; biological control of insects, disease, and weeds; integrated pest management for control of insects, diseases, and weeds. A student's thesis research will be an integral part of the on-going research efforts of the department.

General Requirements

- Graduate (Ph. D.)

Specfic Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A Master of Science degree in an appropriate agricultural, environmental, biological, or physical science. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Satisfactory completion of two academic years of graduate study in the Department of Plant and Soil Science at The University of Vermont. With the approval of the Dean of the Graduate College and the Department of Plant and Soil Science, a master's degree may be accepted in partial fulfillment of this requirement.

Satisfactory completion of a written and oral qualifying doctoral examination as prescribed by the Department.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

The course requirements are as follows: a total of at least 40 credit hours of which a minimum of 30 must be taken in Plant and Soil Science and closely related disciplines (e.g. botany, chemistry, forestry, microbiology, and biochemistry, geology). Satisfactory participation in seminars during residency is required. All master and doctoral students must take part in the Department's undergraduate teaching program.

Departments and Programs

Psychology Department

Colleges: Arts and Sciences, Graduate College

Faculty: Psychology

Courses: Psychology (PSYC)

Contact Information:

University of Vermont
Psychology Department
Dewey Hall
2 Colchester Ave
Burlington, VT 05405-0134

Phone: (802) 656-2670
Fax: (802) 656-8783
Email:
Web Site: http://www.uvm.edu/~psych/

Academic Offerings

- Graduate Degrees
  - Master of Arts (M. A.)
    - Psychology*
  - Doctor of Philosophy (Ph. D.)
    - Psychology

* Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted.

Courses in Psychology

PSYC 001 - General Psychology

Introduction to the entire field, emphasizing the behavior of the normal adult human being.

Credits: 3.

PSYC 015 - Improv Memory,Motiv&Cog Skills

Theory and research on learning and memory, motivation, and cognitive skills. Emphasis on the application of principles to everyday life. Prerequisite: PSYC 001 or Instructor permission.

Credits: 3.

PSYC 095 - Special Topics

Credits: 1-6.

PSYC 096 - Special Topics

Credits: 1-3.

PSYC 109 - Psychology Research Methods I

Basic course in principles of research methodology, including design, statistical procedures, and reporting. Prepares students to understand and evaluate psychological research in a variety of areas of psychology. Laboratory/discussion experiences. Prerequisite: 1.

Credits: 4.

PSYC 110 - Psychology Research Methods II

More advanced methodology course for majors in psychology. Prepares students to conduct and report research in psychology, with special attention to experimental procedures in learning and cognition. Laboratory experiences. Prerequisite: PSYC 109.

Credits: 4.

PSYC 111 - Psychology of Decision Making

Introduction to the study of individual and group decisions. Focus on "how," "how best," and "how reasonably" to decide. Attention to tricks and traps in the process. Prerequisite: PSYC 001. Summer only.

Credits: 3.

PSYC 119 - History of Psychology

Review of major theoretical and empirical developments in psychology, including

schools of psychology that have influenced contemporary models of psychology. Prerequisite: PSYC 001; Junior or Senior standing.
Credits: 3.

PSYC 121 - Biopsychology
Biological bases of behavior: classical and contemporary issues, including introduction to nervous system, behavioral effects of drugs, chemical bases of behavioral disorders. Prerequisite: PSYC 001 or BIOL 001.
Credits: 3.

PSYC 130 - Social Psychology
An introduction to concepts and methods used to study the behavior of individuals in various social situations. Prerequisite: PSYC 001.
Credits: 3.

PSYC 152 - Abnormal Psychology
Describing and defining abnormal behavior; models of etiology; research evidence for biological and social models; methods of intervention and prevention. Prerequisite: PSYC 001.
Credits: 3.

PSYC 161 - Developmental Psyc:Childhood
Survey of research and theories on child development from conception to adolescence emphasizing experimental analyses of early social and cognitive development. Prerequisite: PSYC 001.
Credits: 3.

PSYC 163 - Psychology Mass Communication
Survey of theory and research concerning mass media effects in children's socialization, information diffusion, and in shaping values, behaviors regarding health, politics, consumer choices, and environment. Prerequisite: PSYC 001 or Instructor permission.
Credits: 3.

PSYC 195 - Special Topics
Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-6.

PSYC 196 - Special Topics
Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 1-6.

PSYC 197 - Independent Study
Individual research under staff direction. Prerequisite: Department permission.
Credits: 1-6.

PSYC 198 - Independent Study
Individual research under staff direction. Prerequisite: Department permission.
Credits: 1-6.

PSYC 205 - Learning
Analysis of theory and research on the basic learning process and behavior. Prerequisite: PSYC 109.
Credits: 3.

PSYC 206 - Motivation

Theory and research on motives, including hunger, fear, sex drive, and addiction, their influence on behavior, relationship to other psychological processes, and biological correlates. Prerequisite: PSYC 109.

Credits: 3.

PSYC 207 - Thinking

Survey of cognitive psychology, examining theory and research on perception, memory, language, cognition, and their interactions. Prerequisites: 109.

Credits: 3.

PSYC 208 - Cognition & Language

(See Communication Sciences 208.)

Credits: 3.

PSYC 215 - Cognition & Aging

(See Communication Sciences 215.)

Credits: 3.

PSYC 220 - Animal Behavior

Behavior of animals under controlled experimental conditions and in their natural environments. Consideration of evolution, development, function, and control of behavior. Prerequisite: 109 or Biology 102.

Credits: 3.

PSYC 221 - Physiological Psychology I

and perception. Individual laboratory experience. Prerequisite: 109.

Credits: 4.

PSYC 222 - Sel Topics Behavioral Neurosci

Selected topics examining the role of the central nervous

Credits: 3.

PSYC 223 - Psychopharmacology

Effects of drugs (both medical and recreation) on behavior. Topics such as drug effects on learning, memory, motivation, perception, emotions, and aggression. Prerequisites: 109, 121 or 222.

Credits: 3.

PSYC 230 - Advanced Social Psychology

or PSYC 130.

Credits: 3.

PSYC 231 - Psychology of Women

Psychological theories about women and research on women's roles. Biological, personality, cognitive, and developmental factors considered. Prerequisite: One Psychology course at the 100 level.

Credits: 3.

PSYC 233 - Experience & Creativity

Explores psychological processes for developing creative thinking and for enhancing the quality of conscious experience. Emphasizes personal growth as well as theoretical understanding. Prerequisite: Advanced background in at least one relevant field, such as Psychology, Environmental Studies, Studio Art, or education.

Credits: 3.

PSYC 235 - Psychology of Art

Exploration of key psychological processes involved in creating and experiencing all forms of art; participants also conduct a research project in an area of interest. Prerequisite: Strong background in Psychology and/or Art. UG only.
Credits: 3.

PSYC 236 - Theories of Human Comm

Study of the role of perception, human information processing, language, nonverbal codes, meaning, cognition, and interpersonal and sociocultural context in human communication process. Prerequisite: PSYC 109 or PSYC 130.
Credits: 3.

PSYC 237 - Cross-Cultural Communication

Study of cultural factors, cognitive processes, communication patterns, and problems in cross-cultural communication; role of communication in development and social change in third world countries. Prerequisite: PSYC 109 or PSYC 130 or PSYC 230; other advanced background in education or a social science.
Credits: 3.

PSYC 239 - Adv Soc Psyc Appl&Facilitation

Explores psychological foundations of approach used in 130 for applying academic content. Involves research and readings beyond work for 139. Prerequisite: 139, or 12 hours of psychology and department permission. Intended for 130 group facilitators with advanced psychology background. (Not offered for graduate credit.)
Credits: 3.

PSYC 240 - Organizational Psychology

Study of the psychological impact of macro and micro features of organizations upon leadership, decision making, workforce diversity, group process, conflict, and organizational performances. Prerequisite: PSYC 109, or Instructor permission.
Credits: 3.

PSYC 241 - Org Psyc:Glob/Cultrl/Loc Force

Study of global, cultural, and local dynamics upon organizational culture, leadership, workforce diversity, ethics and justice at work, and conflict resolution. Conduct applied organizational cultural analysis. Prerequisite: PSYC 109 or Instructor permission.
Credits: 3.

PSYC 250 - Intro to Clinical Psychology

Study of basic principles of interviewing, testing, assessment from life situations, and report writing. Examination of the most common approaches to psychotherapy. Prerequisite: PSYC 109, PSYC 152.
Credits: 3.

PSYC 251 - Behav Disorders of Childhood

An overview of theory, research, and practice in developmental psychopathology from infancy through adolescence. The major disorders of social and emotional development reviewed. Prerequisite: PSYC 109 or PSYC 161. PSYC 109 may be taken concurrently.
Credits: 3.

PSYC 253 - Advanced Behavior Modification

Application of techniques for the modification of human behavior in a variety of educational and social situations involving the collection and analysis of behavioral data. Prerequisite: PSYC 109, PSYC 152.
Credits: 3.

PSYC 254 - Prim Prevent&Mental Hlth Promo
An examination of empirical approaches to prevention of mental and emotional disorders; history of public health methods; sources of support and opposition to prevention efforts. Prerequisites: 109, 152. UG only.
Credits: 3.

PSYC 255 - Intro to Health Psychology
Psychology of the cause, treatment, and prevention of physical illness and disability. Topics include: stress, health behavior, medical compliance, patient-provider relationships, coping with illness. Prerequisite: 109 or advanced standing in Allied Health Sciences. UG only.
Credits: 3.

PSYC 261 - Cognitive Development
Examination of research and theory concerning developmental changes in the human processing of information from infancy to adulthood centered around the work of Piaget. Prerequisite: PSYC 109 or PSYC 161. PSYC 109 may be taken concurrently.
Credits: 3.

PSYC 262 - Social Development
Examination of theory and research concerning interpersonal development in humans from infancy through adulthood. Relationships between language, cognition, and social development emphasized. Prerequisite: PSYC 109 or PSYC 161. 109 may be taken concurrently.
Credits: 3.

PSYC 263 - Disabilities of Learning & Dev
Seminar in etiology, treatments, prevention of developmental and learning disabilities within framework of current service and educational practices. Effectiveness, ethical, legal, psychological issues examined. Prerequisite: One 100-level Psychology course or advanced standing in Psychology, Education, or Physical Therapy.
Credits: 3.

PSYC 265 - Infant Development
Biological, cognitive, and social aspects of infant development in context; opportunities to evaluate and design research and apply knowledge to parenting, prevention, and social policy. Prerequisite: PSYC 109, PSYC 161 which may be taken concurrently or comparable.
Credits: 3.

PSYC 266 - Communication & Children
Study of the role of communication, especially television, in cognitive and social development from preschool to adolescence. Relationship between television violence and abnormal behavior examined. Prerequisite: PSYC 109 or PSYC 161 or PSYC 163.
Credits: 3.

PSYC 268 - Psychology Adult Dev & Aging

support interventions. Prerequisites: 1, and Psychological development in the final third of the life span emphasizing theory and research concerning social, cognitive, perceptual, and mental health transitions and Sociology/Nursing/Early Childhood and Human Dev. 20 or Early Childhood and Human Dev. 195/295 or permission.

Credits: 3.

PSYC 269 - Cross-Cultural Psyc:Clin Persp

Introduction to issues posed for psychologists in their work with ALANA (African, Latino/a, Native and Asian American) and international populations. Critical appraisal of readings, research and case studies.

Credits: 3.

PSYC 295 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 0-3.

PSYC 296 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 1-6.

PSYC 301 - Faculty Seminar

Introduction to specialized areas of psychology.

Credits: 0.

PSYC 302 - Faculty Seminar

Introduction to specialized areas of psychology.

Credits: 0.

PSYC 305 - Seminar in Learning Theory

Credits: 3.

PSYC 332 - Cognition in Social Behavior

Permission.

Credits: 3.

PSYC 334 - Organizational Behav&Cultures

Examination of the impact of various organizational cultures upon leadership, personnel selection, group processes, motivation, entrepreneurship, decision making, conflict, negotiation strategies, and organizational development. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 340 - Adv Statistical Methods I

Statistical methods for evaluating psychological data. Emphasizes exploring data with respect to research hypotheses. Critical study of hypothesis tests on means, chi-square, and correlational techniques.

Credits: 3.

PSYC 341 - Adv Statistical Methods II

Continuation of PSYC 340. In-depth study of the analysis of variance and multiple regression. Further study of analysis and interpretation of data from the behavioral sciences. Prerequisite: PSYC 340.

Credits: 3.

PSYC 344 - Experimental Design

Credits: 3.

PSYC 347 - Measurement & Scaling

Traditional psychophysical methods, Thurstonian judgmental methods, recent topics in unidimensional scaling. Techniques, applications in multidimensional scaling. Relation of these to mental test theory, factor analysis, cluster analysis. Prerequisites: PSYC 340, PSYC 341.

Credits: 3.

PSYC 349 - Seminar in Psyc Research Meth

For advanced psychology Graduate students. Topics may include but are not limited to: factor analysis, discriminant function analysis, multivariate analysis of variance, advanced experimental design, computer application in data collection and analysis. Prerequisite: PSYC 341; or Instructor permission.

Credits: 3.

PSYC 350 - Family Therapy

Prerequisite:

Credits: 3.

PSYC 351 - Behavior Therapy: Adults

Review of literature relating to theory, practice, research. Emphasis on the evaluation of a variety of procedures applied to behavior disorders in adults. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 352 - Behavior Therapy: Children

Review of literature relating to theory, practice, research. Emphasis on the evaluation of a variety of procedures applied to behavior disorders in children. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 353 - Clinical Human Neuropsychology

PSYC 222, or equivalent.

Credits: 3.

PSYC 354 - Psychopathology I

An advanced course dealing with models of classification, diagnosis, epidemiology of behavior disorders in children. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 355 - Psychopathology II

An advanced course dealing with models of classification, diagnosis, epidemiology of behavior disorders in adults. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 357 - Cross Culture Clin Interv&Rsch

Issues for psychologists regarding clinical intervention and research with Black, Latino/a, Native and Asian Americans and international populations of color with an eye towards cultural competence. Prerequisites:

Credits: 3.

PSYC 359 - Interpersonal Psychotherapy

An examination of psychotherapy as an interpersonal process. Resistance, transference, and counter-transference examined as interpersonal interactions and related to interpersonal personality theory. Prerequisites: Advanced Graduate

standing; Instructor permission.
Credits: 3.

PSYC 361 - Advanced Personality Theory
Personality development from a psychoanalytic, humanistic, trait, and sociocultural perspective. Also, methods of personality measurement, such as scale construction and the analysis of fantasy and projective material. Prerequisite: Permission.
Credits: 3.

PSYC 362 - Community Clinical Psychology
Seminar examining community intervention strategies for psychological problems and health risk behaviors. Topics: history of community psychology, discussion of intervention programs, consultation issues, research. Prerequisite: Isntructor Permission.
Credits: 3.

PSYC 363 - Advanced Primary Prevention
Review of research literature on prevention of psychopathology and promotion of competence; development of model prevention programs; evaluation, ethical issues, and political issues. Prerequisite: Instructor Permission.
Credits: 3.

PSYC 364 - Professional Affairs & Ethics
The origins of professions and of psychology in particular. Accreditation, laws affecting psychology, organization of the profession, licensing certification, and the code of ethics for psychology. Prerequisite: Instructor Permission.
Credits: 3.

PSYC 366 - Advanced Developmental Psyc
Critical Analysis of selected topics in developmental psychology. Research, theory, applied, professional issues including, for example, moral development, infancy, early conceptual development, professional writing. Prerequisite: Graduate standing in Psychology. Repeatable course.
Credits: 3.

PSYC 369 - Health Psychology
Psychological aspects of the etiology, treatment, prevention of physical illness. Topics include: stress and disease, compliance, health care systems, coping with illness, positive health behavior. Prerequisite: Instructor Permission.
Credits: 3.

PSYC 370 - Adult Psychological Assessment
Intelligence, neuropsychology, interviewing, psychodiagnosis, objective and projective personality methods, behavioral assessment, report writing. Supervised assessment practicum (100 hours) in university and in-patient mental health settings. Prerequisite: Instructor Permission.
Credits: 3.

PSYC 371 - Child & Adolescent Psyc Assess
Interviewing, intelligence testing, behavioral assessment, social cognition, family environments, specific disorders of childhood. Supervised assessment practicum (100 hours) in in-patient and out-patient mental health settings and schools. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 372 - Psychological Intervention I

Introduction to psychotherapy, theories, and strategies. Skill building in case formulation, therapeutic goals, and effective intervention techniques. Supervised therapy practicum (100 hours) in university setting. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 373 - Psychological Intervention II

Theories and strategies of psychological intervention. Supervised service delivery (150 hours) at University Counseling and Testing Center including individual and group therapy and crisis intervention. Prerequisite: Instructor Permission.

Credits: 0.

PSYC 374 - Advanced Clinical Practicum

Year-long, 20 hours/week supervised service delivery (1,000 hours) involving psychological intervention and consultation. Training takes place in a variety of mental health agencies. Prerequisites: Second-year student or above (or equivalent) in Ph.D. program in Clinical Psychology and permission. (May be taken more than once.)

Credits: 1.

PSYC 375 - Internship in Clinical Psyc

Credits: 0.

PSYC 380 - Contemporary Topics

Selected topics in depth, emphasis on critical analysis of original literature. Recent topics: anxiety, behavioral pharmacology, biological bases of memory, depression, organizational behavior, psychotherapy research, primate behavior, skilled performance.

Credits: 3.

PSYC 381 - Clinical Research Seminar

Year-long seminar on methods and design in clinical research. Oral and written presentation of a research proposal and results. Required twice for clinical students. Prerequisite: Instructor Permission.

Credits: 3.

PSYC 382 - Adv Professional/Research Sem

Discussion of current research and student research presentation in areas of concentration ("clusters"). Prerequisite: Graduate standing in General/Experimental Program.

Credits: 1.

PSYC 385 - Advanced Readings & Research

Readings, with conferences, to provide graduate students with backgrounds and specialized knowledge relating to an area in which an appropriate course is not offered.

Credits: 1-3.

PSYC 391 - Master's Thesis Rsch

Credits: 1-18.

PSYC 395 - Special Topics

Credits: 1-12.

PSYC 491 - Doctoral Dissertation Research
Credits: 1-18.

Psychology (M. A.)

College: Graduate College
Department(s): Psychology

Overview

Additional clinical, research, and adjunct faculty supervise students in clinical and research placements.

The Ph. D. Program in General/Experimental psychology admits students in three broad areas of concentration ("clusters"): Biobehavioral Psychology; Developmental/Social Psychology; and Behavioral Psychopharmacology.

The Ph. D. program in Clinical Psychology places equal emphasis on research and clinical training. The clinical program is fully accredited by the American Psychological Association.

Further information about both programs can be obtained electronically, or by requesting a department graduate studies brochure from the Department of Psychology. Both contain details of requirements, funding opportunities, clinical and research facilities, specialty areas, ongoing research, and faculty, as well as general information about the University and the area.

Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted. The application deadline for admission is January 15.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Advancement to Candidacy for the Degree of Master of Arts

A major or its equivalent in undergraduate psychology including courses in statistics and

experimental psychology; satisfactory scores on the Graduate Record Examination, including the subject (advanced) subtest in Psychology.

Minimum Degree Requirements for the Degree of Master of Arts

Twenty-four hours of psychology courses and seminars, including Psychology 301, 302, 340, 341; Proseminar; thesis research for six credits. The requirements of the specific courses (301, 302, 340, 341) may be exempted by examination. There is no foreign language requirement.

Psychology (Ph. D.)

College: Graduate College
Department(s): Psychology

Overview

Additional clinical, research, and adjunct faculty supervise students in clinical and research placements.

The Ph. D. Program in General/Experimental psychology admits students in three broad areas of concentration ("clusters"): Biobehavioral Psychology; Developmental/Social Psychology; and Behavioral Psychopharmacology.

The Ph. D. program in Clinical Psychology places equal emphasis on research and clinical training. The clinical program is fully accredited by the American Psychological Association.

Further information about both programs can be obtained electronically, or by requesting a department graduate studies brochure from the Department of Psychology. Both contain details of requirements, funding opportunities, clinical and research facilities, specialty areas, ongoing research, and faculty, as well as general information about the University and the area.

Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted. The application deadline for admission is January 15.

General Requirements

- Graduate (Ph. D.)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A major or its equivalent in undergraduate psychology including courses in statistics and experimental psychology; satisfactory scores on the Graduate Record Examination, including the subject subtest in Psychology. A telephone interview is required of top applicants to the Clinical Program.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

For the General/Experimental Program, satisfactory completion of minimum degree requirements for Master of Arts degree or equivalent; for the Clinical Program, satisfactory performance of the Ph. D. comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Both the General/Experimental and the Clinical Program require a minimum of 75 credit hours. However, each program requires proficiency in several specific areas. In order to achieve such proficiency, most students must complete a total of 79 to 83 credit hours. A minimum of 20 credits must be accumulated in dissertation research and the remainder in course credits numbered in the 200 through 400 sequences of the psychology curriculum, or acceptable courses at the 200 or 300 level from other curricula. Detailed information on courses of study is available from the Department. Satisfactory performance on the department final oral examination. There is no foreign language requirement. Both programs have a required preliminary examination.

Departments and Programs

Public Administration Department

Colleges: Graduate College, Agriculture and Life Sciences

Faculty: Public Administration

Courses: Public Administration (PA)

Contact Information:

University of Vermont
Public Administration Department
103 Morrill Hall
146 University Place
University of Vermont
Burlington, VT 05405-0106

Phone: (802) 656-1012
Fax: (802) 656-1423
Email: mpa@uvm.edu
Web Site: http://www.uvm.edu/cdae/mpa/

Related Programs:

- Accelerated B. S./M. P. A. Program
- Community Development and Applied Economics

Academic Offerings

- Graduate Majors
  - Public Administration (M. P. A.)

Overview

The Master of Public Administration program is a professional masters degree program with perspectives from a variety of academic and professional disciplines. Our purpose is to further the student's ability to manage complex public and non-profit organizations and to work effectively in the public policy process. In addition to the core faculty, the program draws upon associated faculty from many departments and colleges across the university.

The MPA degree program is designed to:

1. Provide promising public and nonprofit sector managers with a quality educational experience covering the theories and practices of program planning and control, and the problems of policy making in an environment characterized by resource constraints and rapid social change.
2. Stimulate and focus scholarly research on the problems and issues of public organizations in Vermont, nationally, and internationally.
3. Facilitate mutually beneficial interaction within the community of scholars and practitioners of public administration.

Courses in Public Administration

PA 206 - Intro Cont Public Affairs

Contemporary policy issues including government and the economy, the role of leadership, ethical and moral issues in public policy, and other contemporary issues impacting society. Prerequisites: Economics 11, 12, or equivalent recommended.

Credits: 3.

PA 295 - Special Topics

Current issues and new developments in public policy and public administration. Prerequisite: Permission.

Credits: 1-6.

PA 296 - Special Topics

Current issues and new developments in public policy and public administration. Prerequisite: Permission.

Credits: 3.

PA 299 - Fund Quantitative & Econ Anyl

Credits: 3.

PA 301 - Fundamentals of Public Admin

Analysis of major elements of management in the public sector (organization, personnel, budgeting) with special attention to problems arising from political imperatives generated by a democratic society.

Credits: 3.

PA 302 - Public Sector Organizations

Examination of basic classical and contemporary theory, research on human relations, internal structures, environments, types, general properties of complex organizations and bureaucracies. (Summer cross-listing: Psychology 240).

Credits: 3.

PA 303 - Research Methods

Data analyses and communication of statistical information for management decision making. Methods of modeling relationships, comparing strategies, and assessing probabilities. Instruction in computer use. Additional lab required.

Credits: 3.

PA 305 - Public Budgeting&Pub Finance

A focus on the budget as the primary policy and planning document in public organizations.
Credits: 3.

PA 306 - Introduction to Public Policy
Study of stages in the policy process; development of public policy in the federal system; and policy analysis and evaluation at each stage in the policy process.
Credits: 3.

PA 307 - Administrative Ethics
Administrative behavior with a focus on ethical dilemmas that arise in the bureaucracy. An examination of a number of moral issues and ways to resolve them.
Credits: 3.

PA 308 - Decision Making Models
Credits: 3.

PA 311 - Policy Analysis&Program Eval
A seminar providing hands-on knowledge in policy analysis and program evaluation using case studies of current analysis projects and problems. Specific techniques include planning, survey administration, forecasting, cost benefit analysis, and impact assessment.
Credits: 3.

PA 312 - Mgmt in Hlth Services&Med Care
Addresses major issues and challenges faced by health services managers relating to established and evolving social, economic, and professional policies in a context of practical problem assessment and appropriate resolution.
Credits: 3.

PA 313 - Public Policy Implementation
A seminar considering aspects of the public policy implementation process from initiation to completion and evaluation with regards to system design, policy goals, communication, compliance, and political environment.
Credits: 3.

PA 314 - Administrative Law
Examines legal foundations of public administration focusing on legal issues of most importance to present or future administrators.
Credits: 3.

PA 315 - Hlth Srvc & Med Care in US
Defines the milieu of issues and challenges faced by managers in the health services setting.
Credits: 3.

PA 316 - Effective Mgmt Techniques
Concentration on leadership, the role of managers, and essential components of well-managed organizations in the public, nonprofit, and private sector.
Credits: 3.

PA 317 - Systems Anly & Strategic Mgmt
Students will be introduced to systems thinking and network dynamics with a particular focus on managing across organizational and sectoral boundaries, including public-private partnerships, intergovernmental arrangements, and

strategic alliances. Tools to undertake strategic analysis and planning will be explored.
Credits: 3.

PA 318 - Admin Theory & Practice
Extensive examination of literature pertaining to the practice and theory of public administration. Explores public/private partnerships, intergovernmental management, ethics, and administrators as agents for organizational change.
Credits: 3.

PA 319 - State Administration
Elements of public management at the state level i.e. the state/federal relationship regarding control; management within the force field of local conflict and cooperation; and management within the context of inter-agency conflict and cooperation. Cross-listed with: POLS 224.
Credits: 3.

PA 321 - Negotiation & Mediation
Explores the principles of today's negotiations and mediations through readings, heavy emphasis on practical exercises between students, and case analyses of actual negotiations. Prerequisite: Graduate standing.
Credits: 3.

PA 334 - Organizational Behav&Cultures
Credits: 3.

PA 380 - Internship
Supervised administrative experience culminating in a written report.
Credits: 3-6.

PA 391 - Master's Thesis Research
Thesis topic must be approved by faculty advisor.
Credits: 1-6.

PA 395 - Special Topics
For advanced students within areas of expertise of the faculty. Varied course offerings. Contemporary topics. Instructor Permission.
Credits: 1-3.

PA 397 - Readings & Research
Readings, with conferences, term paper, to provide graduate students with specialized knowledge in an area in which an appropriate course is not offered.
Credits: 3.

Public Administration (M. P. A.)

College: Graduate College
Department(s): Public Administration

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Public Administration

A sound academic record, including a baccalaureate degree from an accredited undergraduate institution, satisfactory scores on the general aptitude section of the Graduate Record Examination, three letters of recommendation attesting to the candidate's academic potential for graduate work and motivation for pursuing the MPA. Past experience in public service will be considered. Persons currently employed in administrative positions are encouraged to apply. In addition, a student must have completed these prerequisite courses: Economics, American Government and Statistics.

NOTE: The application deadlines for the MPA Program are February 1 and June 15 for summer/fall admission and November 15 for spring admission.

Requirements for Advancement to Candidacy for the Degree of Master of Public Administration

Successful completion of 36 credit hours, including core courses PA 301, 302, 303, 305 and 306, and an approved sequence of elective courses which may include up to nine credits of coursework from approved disciplines related to public administration. Pre-service students (those without substantial public administration experience) are required to complete an approved three-credit internship as part of their approved sequence of courses beyond the core courses.

Satisfactory completion of the written Comprehensive Examination, an evaluative device

and capstone experience, offered three times per year (March, August, and October) for students in their final semester of study in the UVM-MPA program.

Departments and Programs

Romance Languages Department

Colleges: Arts and Sciences

Faculty: French

Courses: French (FREN), German (GERM), Spanish (SPAN)

Contact Information:

University of Vermont
Romance Languages Department
571 Waterman Building
85 South Prospect St
Burlington, VT 05405-0160

Phone: (802) 656-3196
Fax: (802) 656-5773
Email: jaboyer@zoo.uvm.edu
Web Site: http://www.uvm.edu/~romlang/

Academic Offerings

- Graduate Degrees
  - Master of Arts (M. A.)
    - French
  - Master of Arts in Teaching (M. A. T.)
    - French

Courses in French

FREN 001 - Elementary I
Fundamentals of French composition, comprehension, pronunciation, speaking, reading, writing. Structure of the basic French sentence. No prior knowledge expected.
Credits: 4.

FREN 002 - Elementary II
Continuation of FREN 001. Prerequisite: FREN 001 or equivalent.
Credits: 4.

FREN 009 - Basic French Grammar Review
intermediate level. Considerable emphasis on written exercises.
Credits: 3.

FREN 051 - Intermed Rdg & Conversation I
Designed to help students move from a basic knowledge of French to the ability to read, speak, and understand French better. Some grammar review and short compositions. Prerequisite: FREN 002 or FREN 009 or equivalent.
Credits: 3.

FREN 052 - Intermed Rdg & Conversation II
Less stress
Credits: 3.

FREN 095 - Introductory Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

FREN 096 - Introductory Special Topics
See Schedule of Courses for specific titles.
Credits: 3.

FREN 101 - Writing Workshop
Improvement of functional skills: writing, listening, and speaking. Development of techniques to explain, elaborate, support opinions, convince, and persuade in both writing and speaking. Prerequisite: FREN 052 or equivalent.
Credits: 3.

FREN 104 - Contemporary France
Study of selected aspects of France today. Improvement of language skills;

emphasis on reading, FREN 101. writing, and analysis of a variety of materials (literature, journalism, images). Pre/co-requisite:
Credits: 3.

FREN 105 - French Culture
FREN 101.
Credits: 3.

FREN 107 - Focus on Oral Expression
Guided practice of oral-aural skills through vocabulary and pronunciation exercises, readings, and oral presentations. Writing exercises reinforce oral work. Prerequisite: FREN 052 or equivalent.
Credits: 3.

FREN 111 - French Lit in Context I
A study of significant texts in the history of French
Credits: 3.

FREN 112 - French Lit in Context II
Instructor permission only.
Credits: 3.

FREN 195 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

FREN 196 - Special Topics
See Schedule of Courses for specific titles.
Credits: 1-3.

FREN 197 - Readings & Research
Permission of Chair required.
Credits: 1-6.

FREN 198 - Readings & Research
Permission of Chair required.
Credits: 1-6.

FREN 201 - Adv Composition & Conversation
Course activities (discussions, exposes, written work, etc.) designed to lead to mastery of French oral and written expression. Prerequisite: 101. (Not offered for graduate credit.)
Credits: 3.

FREN 209 - Advanced Grammar
problems encountered by Anglophones in written and spoken French. Prerequisite: 101.
Credits: 3.

FREN 211 - History of French Language
The development of French through sound and structure, from late Latin through the 12th century. Prerequisite: FREN 101.
Credits: 3.

FREN 215 - Methods of Text Analysis
Introduction to procedures and terminology used in analysis of texts of various genres. Prerequisite: FREN 101.
Credits: 3.

FREN 216 - Stylistics

Study of idiomatic difficulties faced by people who learn

Credits: 3.

FREN 225 - Medieval French Literature

First semester: Old French language; 12th century epics, e.g. La Chanson de Roland, Breton lays; Marie de France. Prerequisite: Either FREN 111 or FREN 112 or both.

Credits: 3.

FREN 226 - Medieval French Literature

Second semester: Romances: Guillaume de Lorris and Jean de Meung; lyric poetry, Machaut; Pisan; Charles d'Orlians; farces and miracles. Prerequisite: Either FREN 111 or FREN 112 or both.

Credits: 3.

FREN 235 - Lit of French Renaissance

Readings in fiction, poetry, and essays: Rabelais, the lyric poets Ronsard, and Du Bellay, the tales of Marguerite de Navarre; Montaigne. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 245 - The Baroque Age, 1600-1650

The literature after France's civil wars up to the triumph of classicism: religious, lyric, baroque drama; Pascal. Prerequisite: Either FREN 111 or FREN 112 or both.

Credits: 3.

FREN 246 - 17th Century Prose

Creation of the modern novel, evolution of psychological and ethical writing. Topics include women writers, the moralistes, memoirs, relationships between sociopolitical structures and literary production. Prerequisite: Either FREN 111 or FREN 112 or both.

Credits: 3.

FREN 247 - 17th Century Theatre

Works of Corneille, Molihre, and Racine studied in the context of the evolution of 17th century thought. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 255 - 18th Century Literature

Writers of the early Enlightenment. Possible topics: the impact of the new science; the literary reflection of new social types; the "pursuit of happiness." Prerequisite: Either FREN 111 or FREN 112 or both.

Credits: 3.

FREN 256 - 18th C Literature

Rousseau, Diderot, Laclos, Sade: the generation before the Revolution. Possible topics: the attempts to define "natural man;" the relationship between the arts and morality, between liberty and libertinism. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 265 - Rom,Symb,Decadence:19th C Lit

Evolution of the idealist tradition: the Romantic movement (Chateaubriand, Sand, Hugo, Musset, Flaubert); the Symbolists (Baudelaire, Verlaine, Rimbaud); fin de sihcle Decadents (Huysmans). Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 266 - Rev&React in 19th C Narrative

Study of the representations of major social issues of the period, such as power, class, money, and women. Representative authors: Balzac, Flaubert, Sand, Stendhal, Zola. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 275 - 20th Century Literature

Selected topics dealing with poetry and/or narrative related either to an historical period or a literary movement.Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 276 - 20th C Literature

Selected topics dealing with poetry and/or narrative related either to an historical period or a literary movement. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 277 - Topics 20th C French Theatre

Subjects may include: le theatre traditionnel, le theatre "de l' absurde", le theatre de la marge, a combination of all of the above.

Credits: 3.

FREN 279 - Women's Autobiographies

Study of several autobiographies written by contemporary French/Francophone women. Representative authors include Colette, de Beauvoir, Sarraute, Duras, Ernaux, Martin. UG only.

Credits: 3.

FREN 285 - Quebec Literature I

A study of contemporary (1960-1985) major works of fiction, poetry, and drama. Authors studied include Anne Hebert, Michel Tremblay, Jacques Godbout, Gaston Miron. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 289 - African Lit: French Expression

Study of West African poetry, theatre, novel, and civilization as an expression of the Black experience in the language of the French colonizer. Prerequisites: Either 111 or 112 or both.

Credits: 3.

FREN 290 - Cntmp Fr Thght:Linguistic Modl

FREN 112 or both.

Credits: 3.

FREN 292 - Topics in French Culture

104 or 105 or permission.

Credits: 3.

FREN 293 - Quebec Culture

Sociocultural study of the Francophone culture of Canada. Prerequisite: One 100-level French course.

Credits: 3.

FREN 295 - Advanced Special Topics

Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

Credits: 3.

FREN 296 - Advanced Special Topics

Advanced courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.

Credits: 3.

FREN 297 - Advanced Readings & Research

Permission of Chair required.

Credits: 1-6.

FREN 298 - Advanced Readings & Research

Permission of Chair required.

Credits: 1-6.

FREN 391 - Master's Thesis Research

Credits: 1-18.

Courses in German (GERM)

GERM 202 - **Expository Writing**

Improvement of writing skills through work with authentic texts from different content areas (literature, media, science, business). Emphasis on stylistic development and sophisticated vocabulary-building. Prerequisite: Two 100-level courses.
Credits: 3.00

GERM 213 - **History of the German Language**

Historical and linguistic development of the German language from Indo-European to the present, emphasizing sound shifts, the 16th century, and the modern age. Prerequisite: GERM 155 or GERM 156; one other 100-level course.
Credits: 3.00

GERM 214 - **Middle Ages**

Analysis and discussion of several "Minnesang" poets (esp. Walther and Neidhart), the Nibelungenlied, the courtly epics Erec, Parzival, and Tristan, and the satirical epic Helmbrecht. Prerequisite: GERM 155 or GERM 156; one other 100-level course.
Credits: 3.00

GERM 225 - **Goethe**

Study of Goethe's accomplishments in poetry, drama, and the novel during major phases of his literary career: "Sturm und Drang," Classicism, and Romanticism. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 226 - **Schiller**

Major attention will be paid to Schiller's development as a dramatist (from Die Rauber to Wilhelm Tell) as well as to his contributions to German Classicism. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 237 - **19th-Century Prose**

Literary and stylistic analysis of prose works by Tieck, Kleist, Stifter, Gotthelf, Droste-Hulshoff, Storm, Keller, and Hauptmann with emphasis on Romanticism, Poetic Realism, and Naturalism. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 238 - **19th Century Drama**

Analysis of plays by Tieck, Kotzebue, Kleist, Buchner, Grillparzer, Nestroy, Hebbel, and Hauptmann. Consideration of traditional Viennese "Volkstheater" and the period's major literary movements. Prerequisite: GERM 155 or GERM 156 and one other 100-level course

Credits: 3.00

GERM 247 - **German Lit from 1890 to 1945**

Naturalism, Symbolism, Expressionism and subsequent trends through readings of authors such as Hauptmann, Rilke, Kaiser, Kafka, Mann, and Brecht. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 248 - **Contemporary German Literature**

Literary movements and their major representatives from 1945 to the present, including relevant sociopolitical, intellectual, and cultural aspects. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 251 - **German Folkore**

Verbal folklore genres (fairy tales, legends, folk songs, and proverbs) treated in their relation to literature, mass media, and popular culture. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 263 - **German Romanticism**

Study of major works by authors such as Friedrich Schlegel, Novalis, Brentano, Hoffmann, and Eichendorff in their literary, artistic, philosophical, and sociopolitical contexts. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 271 - **Proverbs**

Diachronic and synchronic survey of German proverbs, proverbial expressions, and wellerisms, emphasizing their use and function in literature, art, mass media, advertisements, and oral communication. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 273 - **German Intellectual Movements**

A survey of developments in art, music, philosophy, and social thought from the Enlightenment to 1945, with particular attention to their impact on German literature. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 275 - **Fin-de-Siecle**

Prevalent literary and intellectual movements at the turn of the 20th century in their historical, sociopolitical, and cultural contexts. Study of Nietzsche, Freud, Rilke, Hofmannsthal, Schnitzler, and Mann. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.

Credits: 3.00

GERM 276 - **Brecht & the Modern Drama**

Brecht's revolutionary concept of "epic theatre" in theory and practice and its influence on subsequent dramatists, including Durrenmatt, Frisch, Handke, Hochhuth, Muller, and Weiss. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 278 - **GDR Fiction**

GDR fiction in its literary, historical, and social contexts, with reference to major developments in the GDR from 1949-89. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 279 - **German Short Story after 1945**

Aesthetic and thematic evolution of the short story and its relation to historical, political, and cultural developments from 1945 to the present. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 281 - **Sem in Lit Genre,Period,Theme**

Study of a literary genre, period, or theme through close readings of representative texts supplemented by lectures and reports on sociocultural context. May be repeated. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 282 - **Sem on Particular Author**

Study of author(s) through close readings of representative texts supplemented by lectures and reports on the works' socio-cultural context. May be repeated. Prerequisite: GERM 155 or GERM 156 and one other 100-level course.
Credits: 3.00

GERM 295 - **Advanced Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

GERM 296 - **Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

GERM 391 - **Master's Thesis Research**

Credits: 6.00

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Courses in Spanish (SPAN)

SPAN 235 - Perform Early Cult'l Identity

A study of the most popular entertainment in Spain before 1700: theater. Classic plays explore cultural and personal identities in times of conflict and change. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 236 - Poetic Voices/Cultural Change

A topical approach to exploration of self and society in Spain's poetic voices before 1700. Verses range from humorous to amorous, from satirical to political. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 245 - Cervante's Voices & Portraits

Cervantes' innovative short fiction and theater are the media for exploring cultural change and the literary legacies of 16th-century Spain. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 246 - Cervante's Don Quixote

Study of the world's most widely published novel. Don Quixote's crazy adventures with the sword and the pen explore fiction, reality, and life itself." Prerequisite: 140.
Credits: 3.00

SPAN 281 - Contemp Spanish-Amer Fiction

A study of representative works by major authors tracing the development of narrative forms from their roots in the last century to the present. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 286 - Span-Am Lit of Social Protest

Readings of major texts. Topics might range from early protests against Spain, to resistance by repressed groups, to contemporary protests against imperialism. Prerequisite: 140.
Credits: 3.00

SPAN 291 - **Early Cultures of Spain**

A study of the Spanish cultures from earliest times through 1700, emphasizing major intellectual, political, and artistic developments. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 292 - **Modern Cultures of Spain**

A study of the cultures of Spain from the Enlightenment to the present, emphasizing the major intellectual, political, and artistic developments. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 293 - **Early Latin-American Cultures**

A study of colonial Latin American cultures from pre-Hispanic times through Independence. Emphasis on major intellectual, artistic, and cultural developments. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 295 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisite: SPAN 140.
Credits: 4.00

SPAN 296 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 297 - **Advanced Readings & Research**

Permission of Chair required. Prerequisite: SPAN 140.
Credits: 3.00

SPAN 298 - **Advanced Readings & Research**

Permission of Chair required. Prerequisite: SPAN 140.
Credits: 3.00

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French (M. A.)

College: Graduate College
Department(s): Romance Languages

Overview

Opportunities for thesis research in the literatures and cultures of France, Québec, and other regions of the Francophone world.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Arts

An undergraduate major in French or equivalent. Satisfactory scores on the general (aptitude) Graduate Record -Examinations.

Minimum Degree Requirements

Master of Arts

Twenty-four credit hours of course work, including the Graduate Humanities Seminar and EDSC 259 (Teaching Foreign Language in the Schools). In addition, six hours of directed research, with the following options:

Plan A: Thesis research (six hours)

Plan B: Two research papers (six hours)

Candidates must pass an examination in four areas of their study.

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French (M. A. T.)

College: Graduate College
Department(s): Romance Languages

Overview

Opportunities for thesis research in the literatures and cultures of France,Québec, and other regions of the Francophone world.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Arts in Teaching

An undergraduate major in French or equivalent. Satisfactory scores on the general (aptitude) Graduate Record -Examinations.

Minimum Degree Requirements

Master of Arts in Teaching

If you are already a licensed teacher: Twenty-one credit hours in French (including the Graduate Humanities Seminar) and a comprehensive examination, plus six credit hours in education courses.

If you do not presently have licensure: Twenty-one credit hours in French (including a 3-credit interdisciplinary Graduate Humanities Seminar) and a comprehensive examination. In addition, thirty hours of professional education course work, including a year's internship in a Professional Development School, production of a Licensure Portfolio, and Teacher Licensure.

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Departments and Programs

Social Work Department

Colleges: Education and Social Services, Graduate College

Faculty: Social Work

Courses: SociaWork (SWSS)

Contact Information:

University of Vermont
Social Work Department
85 So. Prospect Street
443 Waterman
University of Vermont
Burlington, VT 05405

Phone: (802) 656-8800
Fax: (802) 656-8565
Email:
Web Site: http://www.uvm.edu/~socwork/

Academic Offerings

- Graduate Degrees
  - Master of Social Work (M. S. W.)

Courses in Social Work

SWSS 002 - Foundations of Social Work

An introduction to the profession of social work, its functions, values, knowledge, and the problems it addresses.

Credits: 3.

SWSS 003 - Human Needs & Social Services

Students provide volunteer service in a human service agency, relate observations to theory about clients, agency structure, programs, and operations, and assess their commitment to the profession of social work. Prerequisite: SWSS 002 or Instructor permission.

Credits: 3.

SWSS 005 - Biosociopolitical Issues SW

work perspective. Outlines human body organ systems and extrapolates to the socio-political. Bioethical dilemmas, environmental racism, and multiple chemical sensitivity studied from a social

Credits: 3.

SWSS 007 - Quantitative Meth SW Research

Introduction to statistics and social work research methods. This course introduces students to quantitative methodology in research and practice.

Credits: 3.

SWSS 047 - Human Beh in the Soc Envr I

Introduction to life-span development from birth to death. There is a primary focus on the individual. Prerequisites: 2, 3, or instructor's permission.

Credits: 3.

SWSS 048 - Human Beh in the Soc Envr II

A systems approach to understanding various levels of social organization; for example, families, groups, organizations, and communities. Prerequisite: 47.

Credits: 3.

SWSS 055 - Special Topics

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Open to first-year students.

Credits: 1-6.

SWSS 164 - Intro Social Work Research

Introduction to models and methods of social research from a social work perspective. Prerequisite: SWSS 002, SWSS 003, SWSS 047, SWSS 048, or Instructor permission.

Credits: 3.

SWSS 165 - Iss & Pol in Social Welfare I

An introduction to economic, political, historical, and social forces that influence the development and implementation of social welfare policy. Prerequisite: SWSS 002, SWSS 003, SWSS 047, SWSS 048, or Instructor permission.

Credits: 3.

SWSS 166 - Iss & Pol in Social Welfare II

In-depth examination of social welfare policy and accompanying social services in the U.S.; major policy analysis models presented and used. Prerequisite: SWSS 165 or Instructor permission.

Credits: 3.

SWSS 167 - Racism & Contemporary Issues

Study of perception, conceptualization, and comprehension of racism. Strategies, techniques, and procedures to identify and decrease many facets of racism.

Credits: 3.

SWSS 168 - Social Work Intervention I

Social work theory and practice methods employed by social workers in providing services to individuals and small groups. Prerequisite: Social Work major, senior standing or permission.

Credits: 3.

SWSS 169 - Social Work Intervention II

Social work theory and practice methods employed by social workers in providing services to families, organizations, and communities. Prerequisites: Social Work major, 168, senior standing or permission.

Credits: 3.

SWSS 171 - Field Experience Seminar I

Weekly integrative seminar; discussion of practice within field agency. Prerequisite: Concurrent enrollment in 173/174.

Credits: 3.

SWSS 172 - Field Experience Seminar II

Weekly integrative seminar; discussion of practice within field agency. Prerequisite: Concurrent enrollment in 173/174.

Credits: 3.

SWSS 173 - Field Experience I

Field experience under BSW or MSW supervision in social service agencies four days each week. Taken concurrently with 171/172. Prerequisites: Social Work majors, senior standing.

Credits: 6.

SWSS 174 - Field Experience II

Field experience under BSW or MSW supervision in social service agencies four days each week. Taken concurrently with 171/172. Prerequisites: Social Work majors, senior standing.

Credits: 6.

SWSS 197 - Readings & Research

Prerequisite: Social Work major. Pre-arrangement only. Variable credit.
Credits: 1-4.

SWSS 198 - Readings & Research

Credits: 1-4.

SWSS 200 - Contemporary Issues

Content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Instructor Permission.
Credits: 1-6.

SWSS 212 - Social Work Practice I

permission.
Credits: 3.

SWSS 213 - Social Work Practice II

permission.
Credits: 3.

SWSS 216 - Th Found of Hum Beh&Soc Envr I

This course introduces students to the biological, psychological, cultural/social, and economic forces that influence human behavior and their implication for social work practice. Prerequisite: MSW standing; or Instructor permission.
Credits: 3.

SWSS 217 - Th Found Hum Beh&Soc Envr II

or Instructor permission.
Credits: 3.

SWSS 220 - Soc Welfare Pol & Services I

permission.
Credits: 3.

SWSS 221 - Soc Welfare Pol & Services II

Focus is on the analysis of the economic, political, and social forces that influence the development and implementation of social welfare policy. Prerequisite: SWSS 220; or Instructor permission.
Credits: 3.

SWSS 224 - Child Abuse & Neglect

An MSW foundation elective that considers child abuse and neglect from historical, cultural, sociopolitical and psychological perspectives and examines professional social work responses to them. Prerequisite: Matriculation in the foundation year of Graduate study in Social Work; or Instructor permission.
Credits: 3.

SWSS 225 - Transf Ourselves&Comm:SW Persp

An MSW foundation elective that examines systems of oppression and social work strategies to decrease biased practices and create more equitable communities and institutions. Prerequisite: Matriculation in the foundation year of graduate study in Social Work; or Instructor permission.
Credits: 3.

SWSS 226 - Assessment Theory Social Work

permission.

Credits: 3.

SWSS 227 - Found of Social Work Research

An introduction to qualitative and quantitative methods of applied social research including program evaluation and the evaluation of practice and application to social work is taught. Prerequisite: MSW standing or Instructor permission.
Credits: 3.

SWSS 228 - Aging:A Strength&Hum Right Per

practice from the perspectives of strengths, social justice,
Credits: 3.

SWSS 290 - Foundation Yr Field Practicum

Supervised field-based learning of 15-20 hours per week at non-profit agencies. Students learn the purposeful application of theory, ethics and skills of generalist social work. Prerequisite: Permission of Coordinator of Field Education.
Credits: 3-4.

SWSS 291 - Senior Seminar

Undergraduate only.
Credits: 3.

SWSS 295 - Lab Experience

Supervised field work designed to give students experience in specialized areas for their professional development. only.
Credits: 1-12.

SWSS 296 - Social Work in Global Context

Study of social work issues in different parts of the world. Located at the University of Lapland in Finland. Prerequisite: Background in human services or social work major; or MSW standing; permission of the Instructor.
Credits: 3.

SWSS 301 - Social Work in Health

Based on examinations of current trends with clients of multiple ages, needs, and cultural perspectives, this course examines social work roles in delivering health services. Prerequisites: Completion of foundation coursework; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 302 - Social Work in Mental Health

Advanced knowledge and skills in working with children with severe emotional disturbances and adults with persistent mental illness. Community-based services are emphasized. Prerequisites: Completion of foundation coursework; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 310 - Soc Work W/ Children & Fam I

Focus is on families whose major task is child rearing and child caring. Covers advanced knowledge, concepts, and methods of contemporary child/family services within a family-centered approach. Prerequisites: Completion of foundation course work; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 311 - Soc Work W/Children & Fam II

Focus is on families with adolescents, families with no children and families with

dependent adults. Advanced analysis of families from an adult member perspective and from a critical view of family ideology and myth. Prerequisites: Completion of foundation coursework; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 316 - Crit Appl of Hum Beh&Soc Envr

This course emphasizes advanced analyses of behavioral and social theories as related to social work practice in health and mental health and/or with children and families. Prerequisite: Completion of 216 and 217, MSW advanced standing or permission.
Credits: 3.

SWSS 320 - Adv Soc Welf Policy Anyl&Prac

In depth analysis of social welfare policy with application to children and families or health and mental health is required. There is an emphasis on the skills of the policy practitioner. Prerequisite: Completion of SWSS 220 and SWSS 221; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 327 - Adv Social Work Research

An analysis of social work research from methodological and theoretical perspectives is emphasized. The application of research to the student's concentration area is required. Prerequisites: Completion of SWSS 227; a basic statistics course; MSW advanced standing; or Instructor permission.
Credits: 3.

SWSS 330 - Assessment in Social Work

An advanced MSW concentration elective that analyzes competing and complementary assessment strategies and their implications in social work in health/mental health and with children and families. Prerequisite: Completion of MSW foundation course work; or Instructor permission.
Credits: 3.

SWSS 331 - Feminist Social Work Practice

in a global context and emphasizes professional activism and leadership. Prerequisite: Completion of MSW foundation course work; or Instructor permission.
Credits: 3.

SWSS 332 - SW w/Battered Women&Children

with battered women and their children and develops related recommendations. Prerequisite: Completion of MSW foundation course work; or Instructor permission.
Credits: 3.

SWSS 333 - Social Work with Groups

An advanced MSW concentration elective that integrates professional history, conceptual overviews and direct experience with methods for group work distinctive to social work practice. Prerequisite: Completion of MSW foundation course work or Instructor permission.
Credits: 3.

SWSS 380 - Prof Issues in Social Work

Designed to cover selected social work issues in depth. Major emphasis on intensive and critical analysis of the literature and practice in a given area. Prerequisite: Instructor Permission.
Credits: 2-4.

SWSS 390 - Concentration Year Field Pract

Supervised field-based learning of 15-20 hours per week. Students are placed in agencies to apply advanced social work practice related to their concentration. Prerequisite: Permission of Coordinator of Field Education.
Credits: 3-4.

SWSS 395 - Field Practicum

Prerequisite: Permission of Instructor. Variable credits.
Credits: 3-4.

SWSS 397 - Independent Study

Individual work on Social Work issue(s) selected by the student in consultation with a faculty member. Prerequisite: Instructor permission required.
Credits: 1-6.

SWSS 398 - Final Project

A written identification and analysis of a social work issue related to the student's concentration is prepared and presented. Prerequisite: Successful completion of foundation coursework and Instructor permission. Variable three credits. Total of three credits required. Fulfills Graduate College comprehensive examination requirement.
Credits: 1-3.

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Social Work (M. S. W.)

College: Graduate College
Department(s): SocialWork

Overview

The Master of Social Work Program prepares students for advanced practice which affirms diversity, reflects people's strengths and promotes social justice and human rights. The program emphasizes community and family-centered practice in a variety of professional roles and settings. An advanced standing option is available for qualified students who have earned a bachelor's degree from an accredited social work program. The Master of Social Work Program is fully accredited by the Council on Social Work Education.

Please request an M. S. W. Program Bulletin from the Department for more details and/or review our homepage. The first year curriculum has five components: human behavior and the social environment, social welfare policy and services, social work research, social work practice, and field practicum. The second year curriculum is built around either of two concentration areas: Social Work in Health/Mental Health or Social Work with Children and Families. Concentrations consist of two advanced practice courses, a field practicum and two concentration electives. Additionally, students take three courses which bridge both concentration areas: Advanced Social Welfare Policy Analysis and Practice, Critical Applications of Human Behavior and the Social Environment, and Advanced Social Work Research. The analytical paper/portfolio (SWSS 398) is a culminating experience which is evaluative, integrative, interpretive, and constructive. It requires students to demonstrate competency in written and oral expression; understanding of, and identification with, the program philosophy and social work values and ethics; and ability to think analytically, and self-critically in an area of concentration in social work. It also provides integration and closure to their educational experiences, and fulfills the Graduate College comprehensive examination requirement.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for theDegree of Master of Social Work

Prospective students must meet the following minimum requirements:

1. Earned a baccalaureate degree from an institution accredited by the Council on Postsecondary Accreditation.
2. Attained satisfactory scores on the Graduate Record Examination (GRE). A holistic view of candidates' qualifications for graduate social work education is utilized; therefore, no minimum score for admission has been set. Applicants must submit GRE scores prior to admission.
3. Earned a minimum grade-point average (GPA) of 2.5 (where 4.0=A) in undergraduate studies.
4. Earned a minimum grade-point average of 3.0 in any previous graduate work in Social Work.
5. Be in good standing from the last institution they attended.
6. Demonstrated achievement of designated liberal arts content in their undergraduate studies including some courses in each of the following areas: social sciences (defined as including sociology, political science, anthropology, economics, etc.); behavioral and life sciences (defined as including psychology, human biology, human ecology, etc.); and humanities (defined as including history, philosophy, English, literature, religion, etc.). Most specifically, students must have completed at least one course in human biology and one in statistics. If they have not done so at the time of admission, they must complete these two prerequisite courses prior to starting the first fall semester of study in the advanced practice concentration curriculum.
7. Submission of a resume with their application materials before consideration of their file.

In addition to the above, the typed statement of purpose and written references (at least one of which is an academic and one of whish is a human services reference) are also important sources of information regarding the qualifications and experiences of applicants. For the academic year 2001-2002, a non-refundable deposit of $200 is required of accepted candidates to hold their place in the upcoming class; the deposit is applied toward the cost of the program when students become officially enrolled. Applicants should contact the Department of Social Work (802-656-8800) to receive an MSW Program Bulletin.

Applicants with a Bachelor of Social Work degree from a program accredited by the Council on Social Work Education (CSWE) may apply for Advanced Standing to the MSW program. Students granted advanced standing may waive certain program (Foundation) requirements. Full-time advanced-standing students start their programs in

January of each year, while regular-track students start their programs in the fall semester. This option is not available to students entering the program during the 2001-2002 academic year.

Minimum Degree Requirements for the Degree of Master of Social Work

The Master of Social Work degree requires 60 credits of graduate study, unless students are admitted with Advanced Standing status. Advanced Standing status requires a minimum of 42 credits and is granted solely to students who have earned a Bachelor's degree in a program accredited, or acknowledged as being equivalent to a Bachelor's in Social work, by the Council on Social Work Education. Both groups of students must take all required and three of their nine elective credits in social work courses. At least six of these elective credits must be taken during the second half of the program. The policies and standards for maintaining program accreditation do not permit the granting of academic credit toward graduation for life experience.

Curriculum

Foundation Courses (30 Credits)

Course	Credits
SWSS 212: Social Work Practice I	3
SWSS 213: Social Work Practice II	3
SWSS 216: Theoretical Foundations of HBSE* I	3
SWSS 217: Theoretical Foundations of HBSE II	3
SWSS 220: Social Welfare Policies and Services I	3
SWSS 221: Social Welfare Policies and Services II	3
SWSS 227: Foundations of Social Work Research	3
SWSS 290: Field Practicum I	6
An approved elective**	3

*Human Behavior in the Social Environment
**Electives require advanced approval of faculty advisors.

Advanced Courses (30 Credits)

Course	Credits
SWSS 301: Social Work in Health (and)	3
SWSS 302: Social Work in Mental Health (or)	3
SWSS 302: Social Work in Mental Health (and)	3
SWSS 311: Social Work with Children and Families II	3
SWSS 316: Critical Applications of HBSE	
SWSS 320: Advanced Social Welfare Policy Analysis and Practice	3
SWSS 327: Advanced Social Work Research	3
SWSS 390: Field Practicum II	6

SWSS 398: Analytical Paper/Portfolio	3
Two approved electives**	6

** Electives require advanced approval of faculty advisors.

Department and Programs

Wildlife and Fisheries Biology Program

Colleges: The Rubenstein School of Environment and Natural Resources, Graduate College

Faculty: Wildlife and Fisheries Biology

Courses: Wildlife and Fisheries Biology (WFB)

Contact Information:

University of Vermont
The Rubenstein School of Environment and Natural Resources
Wildlife and Fisheries Biology Program
George D. Aiken Center
81 Carrigan Drive
Burlington, VT 05405

Phone: (802) 656-2691
Fax: (802) 656-8683
E-mail: David.Hirth@uvm.edu
Web Site: http://www.uvm.edu/envnr/?Page=undergrads/wlfbio.html

Academic Offerings

- Graduate Majors
  - Master of Science (M. S.)
    - Wildlife and Fisheries Biology

Overview

The areas of wildlife biology and fisheries biology deal with the management and conservation of animal populations that range from species that are common enough to be hunted/fished to species that are endangered. Management strategies may include manipulation of populations directly or indirectly through alteration of habitat. Courses emphasize applied ecology and provide hands-on experience in labs and field trips. All Wildlife and Fisheries Biology majors complete the same core of courses during the first year. As sophomores, students elect either the Wildlife Biology or the Fisheries Biology option. Required courses in the major satisfy educational requirements of the U.S. Office of Personnel Management for entry-level positions in these fields.

Courses in Wildlife & Fisheries Biology

WFB 074 - Wildlife Conservation

Historical and contemporary values of wildlife; impacts on habitats and populations; strategies for conservation, allocation, and use. Nonmajors only. Prerequisite: Basic understanding of biological terms and concepts.
Credits: 3.

WFB 130 - Ornithology

Taxonomy, classification, identification, morphology, physiology, behavior, and ecology of birds. Prerequisite: BIOL 001, BIOL 002, or equivalent.
Credits: 3.

WFB 131 - Field Ornithology

Identification and field studies of birds, emphasizing resident species. Two weeks in summer. Prerequisite: WFB 130 . Preference to WFB majors.
Credits: 2.

WFB 150 - Wldlf Habitat & Pop Measrmnt

Field methods for measuring habitat variables and estimating population parameters. One week in summer. Prerequisites: 131, Forestry 21 or Botany 109, Natural Resources 140.
Credits: 1.

WFB 161 - Fisheries Biology & Management

Introduction to freshwater fish, habitats, and life histories. Overview of fishery management techniques and principles, including sampling and assessment methods, stocking, population and habitat manipulation, and regulations. Prerequisites: Biology 1, 2 or equivalent.
Credits: 4.

WFB 174 - Prin of Wildlife Management

Application of ecology and sociology to the management of wildlife populations and habitat; integration of wildlife management with demands for other resources; consideration of game species, endangered species, and biological diversity. Prerequisites: Natural Resources 103 or Biology 102 or Botany 160.
Credits: 3.

WFB 175 - Wildlife and Society

Investigates how people's attitudes, institutions, policies, and behaviors have

affected wildlife across the North American landscape. Alternate years.
Credits: 3.

WFB 176 - Florida Ecology Field Trip

Major ecosystems and associated wildlife, ranging from north Florida flatwoods to south Florida Everglades. Field trip over spring recess. Prerequisite: WFB 130, WFB 174; Instructor permission. Alternate years.
Credits: 2.

WFB 177 - Texas Wildlife Field Trip

Major ecosystems and associated wildlife of south Texas, including Gulf coast, coastal prairies, lower Rio Grande Valley, and Chihuahuan desert. Field trip over spring recess. Prerequisite: WFB 130; Instructor permission. Alternate years.
Credits: 2.

WFB 185 - Special Topics

Credits: 1-6.

WFB 186 - Special Topics

Credits: .5-6.

WFB 187 - Undergrad Special Projects

Individual projects supervised by a faculty member. Projects may involve independent field, laboratory, or library investigations. Formal report required. Prerequisite: Junior standing; submission of a project prospectus for permission.
Credits: 1-5.

WFB 188 - Undergrad Special Projects

Individual projects supervised by a faculty member. Projects may involve independent field, laboratory, or library investigations. Formal report required. Prerequisite: Junior standing; submission of a project prospectus for permission.
Credits: 1-5.

WFB 191 - Wildlife & Fisheries Practicum

Supervised work experience in the wildlife and fisheries area. Prerequisite: Instructor permission. Credit as arranged.
Credits: 1-6.

WFB 232 - Ichthyology

graduate credit.
Credits: 3.

WFB 271 - Wetlands Wildlife

Breeding biology, behavior, habitat management, and population ecology of wetland wildlife with emphasis on waterfowl. Prerequisites: WFB 174, NR 103. Undergraduate/ graduate credit.
Credits: 2.

WFB 272 - Wetlands Wildlife Laboratory

Laboratory and field assessment of the ecology and management of wetland habitats and their associated wildlife populations. Prerequisites: Previous or concurrent enrollment in WFB 271 or NR 260. Undergraduate/graduate credit.
Credits: 1.

WFB 273 - Terrestrial Wildlife

Integration of ecological principles, wildlife biology, land use, and human dimensions in wildlife. Emphasis on development and maintenance of terrestrial

wildlife habitat, and population regulation of terrestrial species. Prerequisite: 174. Undergraduate/graduate credit.
Credits: 3.

WFB 274 - Terrestrial Wildlife Lab
Laboratory and field experience related to terrestrial species and management of their habitat. Field project required. Prerequisite: Previous or concurrent enrollment in 273.
Credits: 1.

WFB 275 - Wildlife Behavior
Behavior and social organization of game and nongame species as they pertain to population management. Prerequisites: One year of biology, an ecology course, 74 or 174 recommended. Undergraduate/graduate credit.
Credits: 3.

WFB 279 - Marine Ecology
credit.
Credits: 3.

WFB 285 - Advanced Special Topics
Credits: 1-6.

WFB 286 - Advanced Special Topics
Credits: 1-6.

WFB 287 - Advanced Special Projects
Advanced readings and discussions or special field and/or laboratory investigations dealing with a topic beyond the scope of existing formal courses. Prerequisite: Senior graduate credit.)
Credits: 1-6.

WFB 288 - Advanced Special Projects
Advanced readings and discussions or special field and/or laboratory investigations dealing with a topic beyond the scope of existing formal courses. Prerequisite: Senior standing or permission. Credit arranged. (Not offered for graduate credit.)
Credits: 1-6.

WFB 299 - Wildlife & Fisheries Honors
Honors project dealing with wildlife or fisheries biology. Prerequisite: By application only; see program chair.
Credits: 3-6.

WFB 311 - Ecology of Fishes
Structure of fish assemblages, zoogeography, morphology, life history strategies, bioenergetics, competition, predation, and fish effect on ecosystems. NR 140 or STAT 201; an ecology course.
Credits: 3.

WFB 352 - Population Dynamics & Modeling
Modeling and analysis of animal population dynamics, as influenced by environmental, ecological, and management factors; estimation of population size, density, survivorship, reproduction, and migration. Prerequisite: NR 140 or STAT 211; an ecology course.
Credits: 4.

WFB 387 - Graduate Special Problems

Advanced readings or special investigation dealing with a topic beyond the scope of existing formal courses or thesis Instructor Permission.

Credits: 1-6.

WFB 388 - Graduate Special Problems

Advanced readings or special investigation dealing with a topic beyond the scope of existing formal courses or thesis research, culminating in an acceptable paper. Prerequisite: Instructor Permission.

Credits: 1-3.

WFB 391 - Master's Thesis Research

Credit as arranged.

Credits: 1-18.

Wildlife and Fisheries Biology (M. S.)

College: Graduate College
Department(s): Wildlife and Fisheries Biology Program

Overview

The Master of Science program is designed to provide a vehicle for a wildlife or fisheries biologist to develop research abilities and pursue a specialized course of study. Current areas of research emphasis include applied avian ecology, behavioral ecology, big game management, nongame wildlife populations, and freshwater fisheries ecology.

General Requirements

- Graduate (Master's)

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Undergraduate degree in wildlife and fisheries biology or management or in the biological sciences. Satisfactory scores on the Graduate Record Examination, general (aptitude) section.

Minimum Degree Requirements for the Degree of Master of Science

The Wildlife and Fisheries Biology degree requires 15 to 24 credit hours of course work in wildlife and related fields, including NR 378, a comprehensive examination, six to 15 hours of thesis research, and an oral defense of the thesis. The Studies Committee may require additional undergraduate preparation without credit toward the degree in instances of perceived deficiency.

Graduate College

Academic Offerings

Graduate Degrees

- Master of Arts (M. A.)
  - English
  - French
  - Geography
  - German
  - Greek and Latin
  - History
  - Psychology [4]
- Master of Arts in Teaching (M. A. T.)
  - Biology
  - Botany
  - Chemistry
  - English
  - French
  - Geography
  - Geology
  - German
  - Greek and Latin
  - History
  - Mathematics
  - Physics
- Master of Business Administration (M. B. A.)
- Master of Education (M. Ed.)
  - Curriculum and Instruction
    - Middle Level Education Option (5-8)
    - Secondary Education Option (7-12)
  - Educational Leadership
  - Educational Studies
  - Higher Education and Student Affairs Administration

    - Interdisciplinary Major (Self-Designed)
    - Reading and Language Arts
    - Special Education
- Master of Physical Therapy (M. P. T.)
- Master of Public Administration (M. P. A.)
- Master of Science (M. S.)
    - Anatomy and Neurobiology [1]
    - Animal Science
    - Biochemistry
    - Biology
    - Biomedical Engineering
    - Biomedical Technology
    - Biostatistics
    - Botany
    - Cell and Molecular Biology
    - Chemistry
    - Civil and Environmental Engineering
    - Communication Sciences
    - Community Development and Applied Economics
    - Computer Science
    - Counseling
    - Electrical Engineering
    - Forestry
    - Geology
    - Historic Preservation
    - Materials Science
    - Mathematics
    - Mechanical Engineering
    - Microbiology and Molecular Genetics [2]
    - Molecular Physiology and Biophysics [3]
    - Movement Sciences and Rehabilitation
    - Natural Resource Planning
    - Nursing
    - Nutrition and Food Sciences
    - Pathology
    - Pharmacology
    - Physics
    - Plant and Soil Science
    - Statistics
    - Water Resources
    - Wildlife and Fisheries Biology
- Master of Science for Teachers (M. S. T.)
    - Biology
    - Botany
    - Chemistry
    - Geology

    - Mathematics
    - Physics
- Master of Social Work (M. S. W.)
- Doctor of Education (Ed. D.)
- Doctor of Philosophy (Ph. D.)
    - Anatomy and Neurobiology
    - Animal Science
    - Biochemistry
    - Biology
    - Botany
    - Cell and Molecular Biology
    - Chemistry
    - Civil and Environmental Engineering
    - Electrical Engineering
    - Materials Science
    - Mathematical Sciences
    - Mechanical Engineering
    - Microbiology and Molecular Genetics
    - Molecular Physiology and Biophysics
    - Natural Resources
    - Pharmacology
    - Plant and Soil Science
    - Psychology
- Postbaccalaureate Certificate in
  Art Education (K-12), Elementary Education (K-6), Middle-Level Education, Music Education (K-12), Physical Education (K-12), and Secondary Education.
- Post-Master's Certificate in
  Consulting Teacher/Learning Specialist, Counseling, Early Intervention, Educational Leadership, Individually Designed Major, Integration Specialist, Self-Designed, and Special Education.

Notes:

[1] The Master of Science degree require admittance to the Ph. D. program in Anatomy and Neurobiology.

[2] MMG normally accepts only applicants for the Ph. D. program. However, UVM undergraduate students may apply for the Accelerated Master's Program. Other students who wish to apply to the M.S. program should contact the individual faculty member with whom they wish to study.

[3] Except under special circumstances admission and award of financial support will be resricted to Ph. D. applicants.

[4] Applicants must apply for the Ph. D. degree only. Students whose goal is a terminal master's degree are not accepted.

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Courses approved for Graduate Credit: A to Z

The University reserves the right to change course offerings at any time.

- Detailed Information About University Courses

- Anatomy and Neurobiology (ANNB)
- Animal Sciences (ASCI)
- Anthropology (ANTH)
- Art (ART)
- Biochemistry (BIOC)
- Biology (BIOL)
- Biomedical Technology (BMED)
- Biostatistics (BIOS)
- Botany (BOT)
- Business Administration (BSAD)
- Cell and Molecular Biology (Interdisciplinary)
- Chemistry (CHEM)
- Civil and Environmental Engineering (CE)
- Classics (CLAS)
- Communication Sciences (CMSI)
- Community Development and Applied Economics (CDAE)
- Computer Science (CS)
- Education
    - Counseling (EDCO)
    - Early Childhood Special Education (ECSP)
    - Education (EDSS)
    - Elementary Education (EDEL)
    - Foundations (EDFS)
    - Health Education (EDHE)
    - Higher Education (EDHI)
    - Interdisciplinary Education (EDSS)
    - Library Science (EDLI)
    - Leadership and Policy Studies (EDLP)
    - Music Education (EDMU)

- Physical Education (EDPE)
- Secondary Education (EDSC)
- Special Education (EDSP)

- Electrical Engineering (EE)
- English (ENG)
- Environmental Studies (ENVS)
- French (FREN)
- Geography (GEOG)
- Geology (GEOL)
- German (GERM)
- Graduate College (GRAD)
- Historic Preservation (HP)
- History (HST)
- Human Development and Family Studies (HDFS)
- Humanities (HUMN)
- International Studies (IS)
- Materials Science (Multidisciplinary)
- Mathematics (MATH)
- Mechanical Engineering (ME)
- Microbiology and Molecular Genetics (MMG)
- Molecular Physiology and Biophysics (MPBP)
- Music (MUS)
- Natural Resources
  - Forestry (FOR)
  - Natural Resources (NR)
  - Recreation Management (RM)
  - Water Resources (WR)
  - Wildlife and Fisheries Biology (WFB)
- Nursing (GRNU)
- Nutrition and Food Sciences (NFS)
- Obstetrics and Gynecology (OBGY)
- Orthopaedic Surgery (ORTH)
- Pathology (PATH)
- Pharmacology (PHRM)
- Philosophy (PHIL)
- Physical Therapy
  - Physical Therapy (PT)
  - Movement Sciences and Rehabilitation (MVSR)
- Physics (PHYS)
- Plant and Soil Science (PSS)
- Psychology (PSYC)
- Public Administration (MPA)
- Religion (REL)
- Social Work (SWSS)
- Sociology (SOC)
- Spanish (SPAN)

- Statistics (STAT)
- Women's Studies (WST)

Courses of Instruction Details

The University reserves the right to change course offerings at any time.

- Browse and/or Search Courses

A student who lacks the stated prerequisites for a course may be permitted to enroll by the instructor. Such students must inform the instructor that they lack the prerequisites, and the instructor will make appropriate efforts to ascertain that they are properly qualified.

Courses are divided into three levels: introductory, intermediate, and advanced. Where appropriate, a department may limit enrollment in a particular course. Such limitations, other than class size, must be explicitly stated.

Courses numbered from 1 to 99 are introductory courses. Introductory courses emphasize basic concepts of the discipline. In general, they presuppose no previous college work in the subject. The only exceptions to this rule are those cases in which there is a two-semester introductory sequence. In such cases, the second-semester course may have the first-semester course as a prerequisite.

Note for graduate students: Under no circumstances will graduate credit be allowed for a course numbered below 100.

Courses numbered from 100 to 199 are intermediate courses. An intermediate course covers more advanced material than that treated in introductory courses. Students will be expected to be familiar with the basic concepts of the subject, and the course will present more difficult ideas. Intermediate courses will generally be more specialized than introductory courses. An intermediate course will always have a minimum prerequisite of three hours' prior study in the discipline or in another specified discipline.

Note for graduate students: Courses numbered 100 to 199 may not be taken for graduate credit except upon ther recommendation of a student's Studies Committee and with the authorization of the Dean of the Graduate College prior to enrollment. Authorization will be limited to one appropriate course (three credit hours) for a master's program and two appropriate courses (six credit hours) for a doctoral program. Graduate students may take additional 100-level courses beyond those values, but graduate credit

will not be allowed for such courses. Graduate programs designed for the Master of Science for Teachers degree (MST) are exempted from this rule. Nondegree students are not permitted to receive graduate credit for courses numbered 100 to 199.

Courses numbered 200 to 299 are advanced courses. An advanced course presents concepts, results, or arguments which are only accessible to students who have taken courses in the discipline (or, occasionally, in a related discipline) at the introductory and intermediate levels. Prior acquaintance with the basic concepts of the subject and with some special areas of the subject will be assumed. An advanced course will always have a minimum prerequisite of three hours of prior study at the intermediate level in the discipline, or in a related discipline, or some specified equivalent preparation.

Note for graduate students: Some, but not all, 200-level courses carry graduate credit. Graduate students should refer to the list of courses approved for graduate credit to identify these courses. To obtain graduate creidt, the graduate student generally is expected to meet higher qualitative and/or quantitative expectations than the undergraduate student. Seniors who wish to take a course for graduate credit must receive permission through the office of their dean (see Undergraduate Enrollment for Graduate Credit) prior to enrolling in the course.

Courses numbered 400 or above are limited to candidates for the degrees of Doctor of Education and Doctor of Philosophy; courses numbered 300 to 399 are generally limited to graduate students.

Some departments will make further subdivisions of courses at some levels.

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Approved Courses for Graduate Credit

Anatomy and Neurobiology (ANNB)

- 201 ANNB Human Gross Anatomy.
- 202 ANNB Human Neuroscience.
- 261 ANNB Neurobiology.
- 301 ANNB Medical Gross Anatomy.
- 302 ANNB Neuroscience.
- 306 ANNB Techniques in Neurobiology.
- 311 ANNB Medical Histology.
- 320 ANNB Developmental Neurobiology.
- 323 ANNB Neurochemistry.
- 325 ANNB Advanced Neuroanatomy.
- 342 ANNB Special Dissections in Gross Anatomy.
- 381 ANNB Seminar in Anatomy and Neurobiology.
- 382 ANNB Seminar in Anatomy and Neurobiology.
- 391 ANNB Master's Thesis Research.
- 395 ANNB Special Topics in Neuroscience.
- 396 ANNB Special Topics in Neuroscience.
- 491 ANNB Doctoral Dissertation Research.

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Approved Courses for Graduate Credit

Animal Sciences (ASCI)

- 205 ASCI Equine Reproduction and Management
- 215 ASCI Physiology of Reproduction and Lactation
- 216 ASCI Endocrinology
- 220 ASCI Lactation Physiology
- 230 ASCI Agricultural Policy and Ethics
- 263 ASCI Clinical Topics in Companion Animal Medicine
- 264 ASCI Clinical Topics in Livestock Medicine
- 272 ASCI Advanced Topic in Zoos, Exotics and Endangered Species
- 282 ASCI Animal Sciences Graduate Seminar
- 297 ASCI Special Problems in Animal Sciences
- 298 ASCI Special Problems in Animal Sciences
- 391 ASCI Master's Thesis Research
- 392 ASCI Independent Literature Research
- 491 ASCI Doctoral Dissertation Research

Approved Courses for Graduate Credit

Anthropology (ANTH)

- 200 ANTH Field Work in Archaeology
- 210 ANTH Archaeological Theory
- 220 ANTH Develop & Applied Anthropology
- 225 ANTH Anthropological Theory
- 228 ANTH Social Organization
- 278 ANTH Microethnography
- 283 ANTH Colonialism
- 290 ANTH Methods of Ethnographic Field Work
- 295 ANTH Advanced Special Topics
- 296 ANTH Advanced Special Topics
- 297 ANTH Advanced Readings and Research
- 298 ANTH Advanced Readings and Research

Approved Courses for Graduate Credit

Art (ART)

- 201 ART Arch, Landscape and History
- 282 ART Seminar in Western Art
- 295 ART Special Topics in Studio Art

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Approved Courses for Graduate Credit

Biochemistry (BIOC)

- 212 BIOC Biochemistry of Human Disease
- 213 BIOC Biomedical Biochemistry Laboratory
- 301 BIOC General Biochemistry
- 302 BIOC General Biochemistry
- 303 BIOC Biochemistry Laboratory
- 305 BIOC Medical Biochemistry
- 306 BIOC Medical Biochemistry
- 307 BIOC Special Topics Biochemistry
- 308 BIOC Special Topics Biochemistry
- 320 BIOC General Enzymology
- 331 BIOC Nucleic Acids
- 352 BIOC Protien: Nucleic Acid Interact
- 371 BIOC Physical Biochemistry
- 375 BIOC Cancer Biology
- 381 BIOC Seminar
- 391 BIOC Master's Thesis Research
- 392 BIOC Independent Literature Research
- 491 BIOC Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Biology (BIOL)

- 202 BIOL Quantitative Biology
- 203 BIOL Population Ecology
- 205 BIOL Advanced Genetics Laboratory
- 208 BIOL Morphology and Evolution of Insects
- 209 BIOL Field Zoology
- 212 BIOL Comparative Histology
- 217 BIOL Mammalogy
- 219 BIOL Comparative and Functional Vertebrate Anatomy
- 223 BIOL Developmental Biology
- 225 BIOL Physiological Ecology
- 238 BIOL Winter Ecology
- 246 BIOL Ecological Parasitology
- 254 BIOL Population Genetics
- 255 BIOL Comparative Reproductive Physiology
- 261 BIOL Neurobiology
- 263 BIOL Genetics of Cell Cycle Regulation
- 264 BIOL Community Ecology
- 265 BIOL Developmental Molecular Genetics
- 267 BIOL Molecular Endocrinology
- 270 BIOL Speciation and Phylogeny
- 281 BIOL Seminar
- 282 BIOL Eco Lunch
- 283 BIOL Ecology-Evolution Journal Club
- 284 BIOL Cell Lunch
- 295 BIOL Special Topics
- 296 BIOL Special Topics
- 301 BIOL Cell and Molecular Biology
- 302 BIOL Specialized Cells and Cell Processes
- 371 BIOL Graduate Colloquia
- 381 BIOL Special Topics
- 391 BIOL Master's Thesis Research

- 491 BIOL Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Biomedical Technology (BMED)

- 281 BMED Molecular Applications
- 293 BMED Research Concepts
- 229 BMT Seminar: Clinical Chemistry.
- 239 BMT Seminar: Hematology.
- 242 BMT Immunology.
- 244 BMT Immunology Laboratory.
- 249 BMT Seminar: Immunology.
- 259 BMT Seminar: Microbiology.
- 269 BMT Seminar: Immunohematology.
- 381 BMT Special Topics Seminar.
- 391 BMT Master's Thesis Research.
- 395 BMT Advanced Topics.

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Biostatistics (BIOS)

- 200 BIOS Medical Biostatistics and Epidemiology.
- 201 BIOS Statistical Analysis via Computer
- 202 BIOS Population Dynamics
- 211 BIOS Statistical Methods I
- 221 BIOS Statistical Methods II
- 223 BIOS Applied Multivariate Analysis
- 224 BIOS Statistics for Quality and Productivity
- 225 BIOS Applied Regression Analysis
- 229 BIOS Survival Analysis
- 231 BIOS Experimental Design
- 233 BIOS Surveys Sampling
- 235 BIOS Categorical Data Analysis
- 237 BIOS Nonparametric Statistical Methods
- 241 BIOS Statistical Inference
- 253 BIOS Applied Time Series and Forecasting
- 254 BIOS Sociology of Health and Medicine
- 261 BIOS Statistical Theory I
- 262 BIOS Statistical Theory II
- 308 BIOS Applied Biostatistics
- 352 BIOS Modeling and Estimation of Animal Populations
- 381 BIOS Statistical Research
- 385 BIOS Consulting Practicum
- 391 BIOS Master's Thesis Research
- 395 BIOS Advanced Topics in Biostatistics

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Botany (BOT)

- 205 BOT Mineral Nutrition of Plants
- 209 BOT Biology of Ferns
- 213 BOT Plant Communities
- 223 BOT Fundamentals of Field Science
- 226 BOT Environmental Problem Solving
- 229 BOT Water Relations of Plants
- 232 BOT Botany Field Trip
- 234 BOT Ecology of Freshwater Algae
- 241 BOT Tropical Plant Systematics
- 250 BOT Microtechnique
- 251 BOT Principles of Light Microscopy
- 252 BOT Molecular Genetics: Regulation of Gene Expression in Eukaryotes
- 254 BOT Genetics of Fungi
- 256 BOT Advanced Plant Genetics
- 257 BOT Physiology of the Plant Cell
- 258 BOT Biology of the Fungi
- 261 BOT Plant Growth and Development
- 281 BOT Botany Seminar
- 295 BOT Special Topics
- 301 BOT Cell and Molecular Biology
- 311 BOT Field Naturalist Practicum
- 381 BOT Selected Problems in Modern Botany
- 391 BOT Master's Thesis Research
- 392 BOT Master's Project Research
- 491 BOT Doctoral Dissertation Research

Approved Courses for Graduate Credit

Business Administration (BSAD)

- 222 BSAD Human Resource Management
- 226 BSAD Current Issues in Management and Organizational Theory
- 234 BSAD Canadian-U.S. Business Relations
- 251 BSAD Marketing Research
- 252 BSAD Marketing Research Practicum
- 258 BSAD International Market Analysis
- 260 BSAD Financial Statement Analysis
- 263 BSAD Accounting and the Environment
- 266 BSAD Advanced Accounting
- 267 BSAD Auditing
- 270 BSAD Quantitative Analysis for Managerial Decisions
- 282 BSAD Security Valuation and Portfolio Management
- 285 BSAD Options and Futures
- 293 BSAD Integrated Product Development
- 295 BSAD Special Topics
- 302 BSAD Business Economics
- 304 BSAD Managerial Economics
- 305 BSAD Fundamentals of Marketing Management
- 306 BSAD Fundamentals of Accounting
- 307 BSAD Organization and Management Studies
- 308 BSAD Corporate Finance
- 309 BSAD Fundamentals of Legal Environment of Business
- 331 BSAD Health Care Management
- 337 BSAD International Trade and Investment Policy
- 340 BSAD Production and Operations Management
- 341 BSAD Forecasting
- 345 BSAD Management Information Systems
- 346 BSAD Decision-Making Models
- 347 BSAD Analysis of Decision Support Systems
- 352 BSAD Business to Business Marketing
- 359 BSAD Marketing Policy

- 360 BSAD Contemporary Financial Accounting and Reporting
- 365 BSAD Management Accounting
- 375 BSAD Organization Theory
- 376 BSAD The Management of Change in Organizations
- 379 BSAD Strategic Management
- 380 BSAD Managerial Finance
- 394 BSAD Independent Readings and Research
- 395 BSAD Special Topics
- 396 BSAD Business Policy

Approved Courses for Graduate Credit

Cell and Molecular Biology (Interdisciplinary)

- 295 BIOL Special Topics
- 301 BIOL Cell and Molecular Biology
- 302 BIOL Specialized Cells and Cell Processes
- 381 BIOL Seminar
- 391 BIOL Master's Thesis Research
- 395 BIOL Special Topics
- 491 BIOL Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Chemistry (CHEM)

- 201 CHEM Advanced Chemistry Laboratory (1-6)
- 202 CHEM Advanced Chemistry Laboratory (0-6)
- 205 CHEM Biochemistry I
- 206 CHEM Biochemistry II
- 207 CHEM Biochemistry Lab
- 214 CHEM Polymer Chemistry
- 221 CHEM Instrumental Analysis
- 222 CHEM Advanced Analytical Chemistry
- 223 CHEM Mass Spectrometry
- 224 CHEM Chemical Separations
- 225 CHEM Electroanalytical Chemistry
- 226 CHEM Analytical Spectroscopy
- 227 CHEM Special Topics in Analytical Chemistry
- 228 CHEM Special Topics in Analytical Chemistry
- 231 CHEM Advanced Inorganic Chemistry
- 234 CHEM Organometallic Chemistry
- 236 CHEM Physical Inorganic Chemistry
- 237 CHEM Special Topics in Inorganic Chemistry
- 238 CHEM Special Topics in Inorganic Chemistry
- 241 CHEM Advanced Organic Chemistry
- 242 CHEM Advanced Organic Chemistry
- 251 CHEM Physical Organic Chemistry
- 257 CHEM Special Topics in Organic Chemistry
- 258 CHEM Special Topics in Organic Chemistry
- 262 CHEM Chemical Thermodynamics
- 263 CHEM Introduction to Quantum Mechanics
- 264 CHEM Fundamentals of Spectroscopy
- 265 CHEM Statistical Mechanics
- 267 CHEM Special Topics in Physical Chemistry
- 268 CHEM Special Topics in Physical Chemistry
- 285 CHEM Special Topics

- 286 CHEM Special Topics
- 342 CHEM Natural Products - The Alkaloids
- 344 CHEM Natural Products - The Terpenes
- 363 CHEM Quantum Chemistry
- 381 CHEM Seminar
- 382 CHEM Seminar
- 386 CHEM Methods of Chem Investigation
- 388 CHEM Research Problem Conception and Solution
- 391 CHEM Master's Thesis Research
- 395 CHEM Independent Literature Research Project
- 491 CHEM Doctoral Dissertation Research

Approved Courses for Graduate Credit

Civil and Environmental Engineering (CE)

- 210 CE Airphoto Interpretation
- 220 CE Introduction to Finite Element Analysis
- 226 CE Civil Engineering Systems Analysis
- 241 CE Traffic Operations & Design
- 248 CE Hazardous Waste Management Engineering
- 251 CE Environmental Facilities Design - Wastewater
- 252 CE Industrial Hygiene
- 253 CE Air Pollution
- 254 CE Environmental Quantitative Analysis
- 255 CE Physical/Chemical Processes for Water & Wastewater Treatment
- 256 CE Biological Processes for Water & Wastewater Treatment
- 259 CE Measurement of Airborne Contaminants
- 260 CE Hydrology
- 261 CE Open Channel Flow
- 265 CE Ground Water Hydrology
- 272 CE Structural Dynamics
- 280 CE Applied Soil Mechanics
- 282 CE Engineering Properties of Soils
- 283 CE Designing with Geosynthetics
- 290 CE Engineering Investigation
- 295 CE Special Topics
- 304 CE Advanced Engineering Analysis I
- 305 CE Advanced Engineering Analysis II
- 321 CE Engineering Computations on Advanced Architectures
- 360 CE Advanced Hydrology
- 365 CE Contaminant Hydrogeology & Remediation
- 366 CE Numerical Methods for Surface Water Processes
- 390 CE Advanced Topics in Civil and Environmental Engineering
- 391 CE Master's Thesis Research
- 395 CE Advanced Special Topics
- 491 CE Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Classics (CLAS)

- GREEK (GRK)
  - 201 GRK Greek Orators
  - 202 GRK Greek Comedy
  - 203 GRK Greek Historians
  - 204 GRK Greek Tragedy
  - 205 GRK Greek Philosophers
  - 206 GRK Greek Epic
  - 227 GRK Greek Lyric Poetry
  - 295 GRK Advanced Special Topics
  - 296 GRK Advanced Special Topics
- LATIN (LAT)
  - 203 LAT Republican Prose
  - 204 LAT Epic Poets
  - 227 LAT Roman Lyric Poets
  - 251 LAT Roman Letters
  - 252 LAT Comedy
  - 253 LAT Roman Oratory
  - 255 LAT Historians of the Empire
  - 256 LAT Satire
  - 271 LAT Silver Latin
  - 295 LAT Advanced Special Topics
  - 296 LAT Advanced Special Topics
- GREEK AND LATIN (GKLT)
  - 300 GKLT Proseminar
  - 381 GKLT Seminar
  - 391 GKLT Master's Thesis Research

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Approved Courses for Graduate Credit

Communication Sciences (CMSI)

- 208 CMSI Cognition and Language
- 215 CMSI Cognition and Aging
- 281 CMSI Cognitive Neuroscience
- 282 CMSI Medical Speech-Language Pathology
- 283 CMSI Swallowing Disorders
- 284 CMSI Augmentative Communication
- 285 CMSI Collaborative Intervention within School Settings
- 287 CMSI Early Language and Communication Intervention
- 291 CMSI Clinical Study
- 292 CMSI Clinical Study
- 293 CMSI Seminar
- 294 CMSI Seminar
- 299 CMSI Autism Spectrum Disorders
- 310 CMSI Clinical Preparation and Management
- 311 CMSI Interdisciplinary Leadership Training for Health Professionals: Research Seminar I
- 312 CMSI Interdisciplinary Leadership Training for Health Professionals: Research Seminar II
- 371 CMSI Audiological Assessment for Speech-Language Pathologists
- 372 CMSI Management and Habilitation of Children with Hearing Impairment
- 380 CMSI Research Methods in Communication Disorders
- 381 CMSI Advanced Readings
- 382 CMSI Advanced Readings
- 383 CMSI Seminar in Language/Learning Disabilities
- 384 CMSI Articulation-Phonological Disorders
- 385 CMSI Voice Disorders
- 386 CMSI Adult Neuropathologies
- 387 CMSI Language Disorders
- 388 CMSI Stuttering
- 389 CMSI Adult Aphasia
- 391 CMSI Master's Thesis Research

- 392 CMSI Non-Thesis Research

Approved Courses for Graduate Credit

Community Development and Applied Economics (CDAE)

- 205 CDAE Rural Communities in Modern Society
- 207 CDAE Markets, Food, and Consumers
- 208 CDAE Agricultural Policy and Ethics
- 218 CDAE Community Leadership, Organization, and Institutional Development
- 237 CDAE Economics of Sustainable Agriculture
- 253 CDAE Macroeconomics for Applied Economists
- 254 CDAE Microeconomics for Applied Economists
- 264 CDAE Risk Analysis and Forecasting Procedures
- 265 CDAE Decision Making for Agricultural and Resource Entrepreneurs
- 266 CDAE Decision Making for Agricultural and Resource Entrepreneurs
- 267 CDAE Strategic Planning for Agricultural and Resource Entrepreneurs
- 272 CDAE International Economic Development
- 273 CDAE Project Development and Planning
- 287 CDAE Spatial Analysis
- 295 CDAE Special Topics
- 351 CDAE Research Methods
- 354 CDAE Advanced Microeconomics
- 391 CDAE Master's Thesis Research
- 392 CDAE Graduate Seminars
- 395 CDAE Special Topics

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Computer Science (CS)

- 201 CS Operating System
- 202 CS Compiler Construction
- 204 CS Database Systems
- 205 CS Software Engineering
- 222 CS Computer Architecture
- 224 CS Analysis of Algorithms
- 243 CS Theory of Computation
- 251 CS Artificial Intelligence
- 256 CS Neural Computation
- 260 CS Parallel Algorithms
- 265 CS Computer Networks
- 266 CS Network Security and Cryptography
- 274 CS Computer Graphics
- 294 CS Independent Readings and Research
- 295 CS Special Topics in Computer Science
- 303 CS Advanced Topics in Programing Environments and Languages
- 316 CS Advanced Topics in Computational Science
- 321 CS Advanced Topics in Computer Architecture
- 331 CS Advanced Topics in Database and Knowledge Base Systems
- 346 CS Advanced Topics in Theory of Computation
- 351 CS Advanced Topics in Pattern Analysis and Artificial Intelligence
- 361 CS Advanced Topics in Systems Software
- 363 CS Advanced Topics in Computer System Performance
- 365 CS Advanced Topics in Network Design and Analysis
- 374 CS Advanced Topics in Computer Graphics and Visualization
- 381 CS Seminar
- 391 CS Master's Thesis Research
- 394 CS Independent Study
- 395 CS Advanced Topics in Computer Science

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Approved Courses for Graduate Credit

Counseling (EDCO)

- 220 EDCO Developmental Perspectives in Counseling
- 291 EDCO Special Topics in Counseling
- 310 EDCO Counseling Strategies for Teachers
- 340 EDCO Developmental Guidance in Schools
- 344 EDCO Counseling Children & Adolescent
- 350 EDCO Professional Issues in Counseling
- 351 EDCO Using Tests in Counseling
- 361 EDCO The Practice of Mental Health Counseling
- 363 EDCO School Counseling Practicum
- 364 EDCO Internship in School Counseling
- 374 EDCO Counseling Theory and Practice
- 375 EDCO Laboratory Experience in Counseling
- 376 EDCO Chemical Dependency: Etiology & Treatment
- 377 EDCO Diversity Issues in Counseling
- 378 EDCO Diagnosis and Treatment Planning with Children an Adolescents
- 379 EDCO Diagnosis and Treatment Planning with Adults
- 380 EDCO Professional Problems in Counseling
- 381 EDCO Counseling for Career and Lifestyle Development
- 383 EDCO Mental Health Counseling Practicum
- 384 EDCO Internship in Mental Health Counseling
- 386 EDCO Organizational Development for Counseling and Related Services
- 387 EDCO Therapeutic Psychopharmacology for Counselors
- 388 EDCO Family Counseling: Systems
- 389 EDCO Family Counseling: Interventions
- 390 EDCO Advanced Counseling Seminar
- 391 EDCO Master's Thesis Research
- 392 EDCO Group Dynamics: Theory and Experience
- 393 EDCO Advanced Group Counseling
- 394 EDCO Special Topics in Counseling
- 397 EDCO Independent Study in Counseling
- 399 EDCO Program Completion Seminar

Approved Courses for Graduate Credit

Early Childhood Special Education (ECSP)

- 200 ECSP Contemporary Issues
- 310 ECSP Curriculum and Technology in Special Education
- 311 ECSP Curriculum and Technology in Special Education
- 386 ECSP Teaching Internship: Management of Learning Environments for the Disabled

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Approved Courses for Graduate Credit

Education (EDSS)

- 200 EDSS Contemporary Issues
- 211 EDSS Educational Measurements
- 215 EDSS The Gifted Child
- 238 EDSS Teaching with a Global Perspective
- 245 EDSS Applications of Microcomputers in Elementary and Secondary School Curricula
- 248 EDSS Educational Media
- 261 EDSS Current Directions in Curriculum and Instruction
- 295 EDSS Laboratory Experience in Education
- 309 EDSS Interdisciplinary Seminar: Social Policy, Education, Social Services
- 313 EDSS Statistical Methods in Education and Social Services
- 319 EDSS Internship for Specialized Personnel in Education
- 321 EDSS School Improvement: Theory and Practice
- 333 EDSS Curriculum Concepts, Planning and Development
- 336 EDSS Professional Writing
- 343 EDSS The Study of Teaching
- 363 EDSS Seminar in the Analysis of Curriculum and Instruction
- 349 EDSS Quasi-Experimentation in Education and Social Services
- 380 EDSS Professional Problems in Education
- 382 EDSS Teaching Internships
- 387 EDSS Collaborative Consultation
- 391 EDSS Master's Thesis Research
- 397 EDSS Problems in Education

Approved Courses for Graduate Credit

Elementary Education (EDEL)

- 200 EDEL Contemporary Issues
- 222 EDEL Cultivating Children's Literacy in the Elementary/Middle School Classroom
- 234 EDEL Literature and Language for Children and Youth
- 236 EDEL Multicultural Children's Literature
- 241 EDEL Science for the Elementary School
- 244 EDEL Social Studies in the Elementary School
- 256 EDEL Methods and Materials in Elementary School Mathematics
- 270 EDEL Kindergarten Methods and Organization
- 295 EDEL Laboratory Experience in Education
- 271 EDEL Kindergarten Education with Laboratory Experiences
- 319 EDEL Internship for Specialized Personnel in Education
- 375 EDEL Literacy Assessment: Understanding Individual Differences.
- 376 EDEL Laboratory Experiences in Reading and Related Language Instruction
- 378 EDEL Advanced Study and Research in Reading and Related Language Arts
- 379 EDEL Seminar in Reading Instruction
- 380 EDEL Professional Problems in Education
- 382 EDEL Teaching Internship
- 391 EDEL Master's Thesis Research
- 397 EDEL Problems in Education

Approved Courses for Graduate Credit

Foundations (EDFS)

- 200 EDFS Contemporary Issues
- 203 EDFS Social, Historical and Philosophical Foundations of Education
- 204 EDFS Seminar in Educational History
- 205 EDFS History of American Education
- 206 EDFS Comparative Education
- 209 EDFS Introduction to Research Methods in Education and Social Services
- 255 EDFS School as a Social Institution
- 295 EDFS Laboratory Experience in Education
- 302 EDFS Philosophy of Education
- 303 EDFS The Ethics of Helping Relationships
- 304 EDFS Religion, Spirituality, and Education
- 309 EDFS Scholarly Personal Narrative Writing for Education and Social Services
- 314 EDFS Modes of Inquiry
- 322 EDFS The Challenge of Multiculturalism for Education and Social Institutions
- 347 EDFS Qualitative Research Methods
- 348 EDFS Analyzing and Writing Qualitative Research
- 352 EDFS Aesthetic Education and Social Justice
- 354 EDFS Anthropological Perspectives on Education and Social Services
- 369 EDFS Ethics in Educational and Social Services Administration
- 377 EDFS Seminar in Educational Psychology
- 380 EDFS Professional Problems in Education
- 391 EDFS Master's Thesis Research
- 397 EDFS Problems in Education
- 455 EDFS Social Processes and Institutional Change

Approved Courses for Graduate Credit

Health Education (EDHE)

- 200 EDHE Contemporary Issues
- 208 EDHE School Health Programs
- 211 EDHE Community Health Education
- 220 EDHE Stress Management for Health Professionals
- 295 EDHE Laboratory Experience in Education
- 319 EDHE Internship for Specialized Personnel in Education
- 380 EDHE Professional Problems in Education
- 382 EDHE Teaching Internship
- 391 EDHE Master's Thesis Research
- 397 EDHE Problems in Education

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Higher Education (EDHI)

- 200 EDHI Contemporary Issues
- 295 EDHI Laboratory Experience in Education
- 297 EDHI Learning Module
- 319 EDHI Internship for Specialized Personnel in Education
- 332 EDHI Adult Development and Education
- 360 EDHI Higher Education in America
- 361 EDHI The (Un)Changing Academy
- 362 EDHI College Students in America
- 375 EDHI Cultural Pluralism in Higher Education
- 380 EDHI Professional Problems in Education
- 383 EDHI Higher Education Administration and Organization
- 385 EDHI Student Affairs Profession
- 387 EDHI Seminar in Higher Education
- 391 EDHI Master's Thesis Research
- 395 EDHI Laboratory Experience
- 396 EDHI Capstone Seminar: Ethics, Values, and Meaning in Higher Education Administration
- 397 EDHI Problems in Higher Education
- 491 EDHI Dissertation Research

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Interdisciplinary Education

- 200 EDSS Contemporary Issues
- 295 EDSS Laboratory Experience in Education
- 319 EDSS Internship for Specialized Personnel in Education
- 380 EDSS Professional Problems in Education
- 382 EDSS Teaching Internship
- 391 EDSS Master's Thesis Research
- 397 EDSS Problems in Education

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Library Science (EDLI)

- 200 EDLI Contemporary Issues
- 272 EDLI Managing School Library Media Centers
- 273 EDLI Organizing School Library Media Center Collections
- 274 EDLI Designing Instruction for School Library Media Centers
- 275 EDLI Developing School Library Media Center Collections
- 276 EDLI Information Sources and Services for School Library Media Centers
- 277 EDLI Information Technologies for School Library Media Centers
- 295 EDLI Laboratory Experience in Education
- 319 EDLI Internship for Specialized Personnel in Education
- 380 EDLI Professional Problems in Education
- 391 EDLI Master's Thesis Research
- 397 EDLI Problems in Education

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Leadership and Policy Studies (EDLP)

- 200 EDLP Contemporary Issues
- 264 EDLP Evaluation in Education and Social Services
- 266 EDLP Educational Finance
- 268 EDLP Educational Law
- 280 EDLP School Business Management
- 291 EDLP Special Topics in Organizational and Human Resource Development
- 295 EDLP Laboratory Experience in Education
- 319 EDLP Internship for Specialized Personnel in Education
- 332 EDLP Seminar in Administration and Planning
- 334 EDLP Effecting and Managing Change in Educational and Social-Service Organizations
- 335 EDLP Staff Evaluation and Development
- 336 EDLP Curriculum Management in Educational and Social Service Organizations
- 337 EDLP Political Processes in Education and Social Service Organizations
- 352 EDLP Analysis of Educational and Social Service Organizations
- 353 EDLP Seminar in Organizational Leadership
- 354 EDLP General and Social Systems Theory
- 355 EDLP System Analysis and Planning
- 356 EDLP Seminar in Futurism and Planning
- 357 EDLP Seminar in Futurism and Planning
- 358 EDLP Seminar in Community Education
- 367 EDLP Human Behavior in Education Systems
- 372 EDLP Leadership and the Creative Imagination
- 380 EDLP Professional Problems in Education
- 386 EDLP Organization and Human Resource Development
- 387 EDLP Collaborative Consultation
- 391 EDLP Master's Thesis Research
- 397 EDLP Problems in Education
- 409 EDLP Applied Educational Research
- 431 EDLP Advanced Seminar in Organizational Leadership

- 432 EDLP Advanced Seminar in Organizational Change and Human Resource Development
- 437 EDLP Seminar on Education Policy
- 491 EDLP Doctoral Dissertation Research

Approved Courses for Graduate Credit

Music Education (EDMU)

- 240 EDMU Musical Creativity in the General Music Class
- 243 EDMU Recent Trends in Music Education
- 253 EDMU Practicum in Music Education
- 290 EDMU Basic Concepts in Music Education
- 390 EDMU Organization and Administration of Music Education

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Approved Courses for Graduate Credit

Physical Education (EDPE)

- 200 EDPE Contemporary Issues
- 201 EDPE Administration of Athletic Program
- 203 EDPE Principles of Physical Education
- 220 EDPE Sport in Society
- 240 EDPE Principles of Motor Learning and Human Performance
- 241 EDPE Seminar in Physical Education and Athletics
- 253 EDPE Curriculum Design in Health and Physical Education
- 260 EDPE Adaptive Physical Education
- 295 EDPE Laboratory Experience in Education
- 319 EDPE Internship for Specialized Personnel in Education
- 380 EDPE Professional Problems in Education
- 382 EDPE Teaching Internships
- 391 EDPE Master's Thesis Research
- 397 EDPE Problems in Education

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Secondary Education (EDSC)

- 200 EDSC Contemporary Issues
- 207 EDSC Adolescent Learning from a Behavioral and Cognitive Perspective
- 209 EDSC Practicum in Teaching
- 215 EDSC Reading in the Secondary School
- 216 EDSC General Methods for Secondary Teachers
- 217 EDSC Secondary School Curriculum
- 223 EDSC Reading Programs in Secondary Schools and Colleges
- 225 EDSC Teaching Social Studies in Secondary Schools
- 226 EDSC Teaching Internship
- 227 EDSC Teaching Science in Secondary Schools
- 228 EDSC Literature in the Junior-Senior High School Curriculum
- 229 EDSC Communicative Arts in Secondary Schools
- 230 EDSC Teaching for Results
- 240 EDSC Teaching English in Secondary School
- 257 EDSC Teaching Mathematics in Secondary Schools
- 259 EDSC Teaching Foreign Language in the School
- 282 EDSC Seminar for Prospective Teachers of English
- 294 EDSC Seminar for Prospective Teachers of Communications
- 295 EDSC Laboratory Experience in Education
- 319 EDSC Internship for Specialized Personnel in Education
- 380 EDSC Professional Problems in Education
- 391 EDSC Master's Thesis Research
- 397 EDSC Problems in Education

Approved Courses for Graduate Credit

Special Education (EDSP)

- 200 EDSP Contemporary Issues
- 201 EDSP Foundations of Special Education
- 207 EDSP Cooperative Learning
- 216 EDSP Meeting the Curriculum and Instructional Needs of All Students
- 217 EDSP Instruction for Individuals with Significant Disabilities
- 221 EDSP Family Centered Services for Children with Special Needs
- 224 EDSP Meeting the Instructional Needs of All Students
- 228 EDSP Advanced Instruction for Individuals with Severe Disabilities
- 275 EDSP Developing Vocational Instruction for Students with Special Needs
- 280 EDSP Assessment in Special Education
- 290 EDSP Meeting the Curriculum Needs of All Students
- 295 EDSP Laboratory Experience in Education
- 296 EDSP Special Education Practica for Classroom Teachers
- 297 EDSP Curriculum for Individuals with Disabilities
- 298 EDSP Special Education Practicum
- 301 EDSP History and Systems of Services for Individuals with Disabilities
- 302 EDSP Students with Significant Disabilities
- 305 EDSP Resource Development and Collaborative Teaming
- 306 EDSP Survey and Assessment of Emotional and Behavioral Disorders of Childhood and Adolescence
- 307 EDSP Prevention and Intervention Strategies for Students
- 310 EDSP Curriculum and Technology in Special Education
- 311 EDSP Curriculum and Technology in Special Education
- 312 EDSP Advanced Behavior Principles in Special Education
- 313 EDSP Advanced Behavior Principles in Special Education
- 316 EDSP Research Seminar in Special Education
- 317 EDSP Design and Evaluation of Education for Individuals with Severe Disabilities
- 319 EDSP Internship for Specialized Personnel in Education
- 320 EDSP Laboratory Experience in Education
- 322 EDSP Internship in Special Education: The Triadic Model of Consultation

- 323 EDSP Internship in Special Education: Systems Development
- 380 EDSP Professional Problems in Education
- 382 EDSP Teaching Internships
- 384 EDSP Teaching-Internship in Special Education: Course Development and Implementation
- 385 EDSP Teaching Internship: Advanced Systems Development and Management in Special Education
- 386 EDSP Teaching Internship: Management of Learning Environments for the Disabled
- 387 EDSP Collaborative Consultation
- 391 EDSP Master's Thesis Research
- 397 EDSP Problems in Education

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Approved Courses for Graduate Credit

Electrical Engineering (EE)

- 201 EE Linear System Theory
- 209 EE Transient Phenomena
- 210 EE Introduction to Control Systems
- 221 EE Principles of VLSI Digital Circuit Design
- 222 EE Principles of VLSI Analog Circuit Design
- 224 EE Principles of VLSI System Design
- 227 EE Biomedical Measurements, Instrumentation, and Systems
- 228 EE Sensors
- 231 EE Digital Computer Design I
- 232 EE Digital Computer Design II
- 233 EE Microprocessor-Based Systems and Applications
- 241 EE Electromagnetic Theory I
- 242 EE Electromagnetic Theory II
- 245 EE Lasers and Electro-Optical Devices
- 246 EE Engineering Optics
- 247 EE Physical Optics I
- 248 EE Physical Optics II
- 250 EE Test Engineering
- 251 EE Digital System Testing and Testable Design
- 261 EE Solid State Materials and Devices I
- 262 EE Solid State Materials and Devices II
- 266 EE Science and Technology of Integrated Circuits
- 270 EE Probability Theory and Stochastic Processes
- 271 EE Least Squares Estimation and Filtering
- 272 EE Information Theory. Three hours.
- 274 EE Introduction to Wavelets and Filter Banks
- 275 EE Digital Signal Processing and Filtering
- 276 EE Image Processing and Coding
- 277 EE Image Analysis and Pattern Recognition
- 281 EE Seminar
- 282 EE Seminar

- 283 EE Seminar
- 284 EE Seminar
- 285 EE Engineering Design Analysis and Synthesis
- 295 EE Special Topics
- 310 EE Digital Control Systems
- 312 EE Introduction to Optimal Control Systems
- 314 EE Nonlinear System Theory
- 315 EE Nonlinear System Theory
- 317 EE Theory of Optimum Control Systems
- 318 EE Theory of Optimum Control Systems
- 319 EE Special Topics in Control System Theory
- 320 EE Special Topics in Control System Theory
- 338 EE Semiconductor Device Modeling and Simulation
- 340 EE Special Topics in Electromagnetic Field Theory
- 341 EE Special Topics in Electromagnetic Field Theory
- 345 EE Electromagnetic Antennas and Propagation
- 352 EE Advanced Semiconductor Device Physics and Design
- 354 EE MOS Analog Integrated Circuit Design
- 365 EE Optical Properties of Solids
- 366 EE Solid State and Semiconductor Theory I
- 367 EE Solid State and Semiconductor Theory II
- 373 EE Digital Communication
- 374 EE Digital Communication
- 378 EE Special Topics in Statistical Communication and Related Fields
- 391 EE Master's Thesis Research
- 395 EE Advanced Special Topics
- 491 EE Doctoral Dissertation Research

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English (ENG)

- 201 ENG Seminar in English Language or Critical Theory
- 202 ENG Seminar in English Language or Critical Theory
- 211 ENG Seminar in Composition and Rhetoric.
- 212 ENG Seminar in Composition and Rhetoric.
- 221 ENG Seminar in Literature to 1800.
- 222 ENG Seminar in Literature to 1800.
- 241 ENG Seminar in 19th Century Literature.
- 242 ENG Seminar in 19th Century Literature.
- 251 ENG Seminar in 20th Century Literature.
- 252 ENG Seminar in 20th Century Literature.
- 281 ENG Seminar in Literary Themes, Genres, and Folklore.
- 282 ENG Seminar in Literary Themes, Genres, and Folklore.
- 290 ENG Seminar for Prospective Teachers of English
- 295 ENG Advanced Special Topics
- 296 ENG Advanced Special Topics
- 320 ENG Seminar: Major Author
- 330 ENG Seminar: Literary Period
- 340 ENG Studies in Rhetoric and Composition
- 350 ENG Survey of Literary Theory and Criticism
- 360 ENG Seminar: Special Topics
- 370 ENG Principles of Literary Research
- 391 ENG Master's Thesis Research
- 392 ENG Seminar Paper Review
- 397 ENG Special Readings and Research

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Environmental Studies (ENVS)

- 291 ENVS Special Topics. Credit as arranged
- 293 ENVS Environmental Law
- 294 ENVS Environmental Education
- 295 ENVS Advanced Seminar

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Approved Courses for Graduate Credit

French (FREN)

- French Language
  - 209 FREN Advanced Grammar
  - 211 FREN History of the French Language
  - 215 FREN Methods of Text Analysis
  - 216 FREN Stylistics
- French and Francophone Literature and Culture
  - 225 FREN Medieval French Literature
  - 226 FREN Medieval French Literature
  - 235 FREN Literature of the French Renaissance
  - 245 FREN The Baroque Age, 1600-1650
  - 246 FREN Seventeenth Century Prose
  - 247 FREN Seventeenth Century Theatre
  - 255 FREN 18th Century Literature
  - 256 FREN 18th Century Literature
  - 265 FREN Romanticism, Symbolism, Decadence in 19th Century Literature
  - 266 FREN Revolution and Reaction in 19th Century Narrative
  - 275 FREN 20th Century Literature
  - 276 FREN 20th Century Literature
  - 277 FREN Topics in 20th Century French Theatre
  - 285 FREN Quebec Literature I
  - 289 FREN African Literature of French Expression
  - 290 FREN Contemporary French Thought: The Linguistic Model
  - 292 FREN Topics in French Culture
  - 293 FREN Quebec Culture
  - 295 FREN Advanced Special Topics
  - 296 FREN Advanced Special Topics
  - 297 FREN Advanced Readings and Research
  - 298 FREN Advanced Readings and Research
  - 391 FREN Master's Thesis Research

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Geography (GEOG)

- 202 GEOG Research Methods
- 203 GEOG Contemporary Geographic Thought in Context
- 204 GEOG Spatial Analysis
- 245 GEOG Advanced Topics in Human-Environment Interactions
- 246 GEOG Advanced Topics in Climate and Water Resources
- 272 GEOG Advanced Topics in Space, Power and Identity
- 273 GEOG Advanced Topics in Political Economy and Ecology
- 274 GEOG Advanced Topics in Critical Urban and Social Geographies
- 281 GEOG Advanced Topics in GIS and Remote Sensing
- 295 GEOG Advanced Special Topics
- 296 GEOG Advanced Special Topics
- 297 GEOG Readings and Research
- 298 GEOG Readings and Research
- 300 GEOG Graduate Tutorial
- 391 GEOG Master's Thesis Research

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Geology (GEOL)

- 201 GEOL Advanced Field Geology
- 230 GEOL Advanced Igneous and Metamorphic Petrology
- 233 GEOL Environmental Isotope Geochemistry
- 234 GEOL Global Biogeochemical Cycles
- 235 GEOL Geochemistry of Natural Waters
- 240 GEOL Tectonics
- 241 GEOL Clastic Depositional Systems
- 243 GEOL Clastic Petrology Laboratory
- 245 GEOL Carbonate Depositional Environments
- 247 GEOL Carbonate Petrology Laboratory
- 255 GEOL Geohydrology
- 260 GEOL Structural Geology
- 272 GEOL Regional Geology
- 273 GEOL Geology of the Appalachians
- 278 GEOL Principles of Aquatic Systems
- 295 GEOL Special Topics
- 296 GEOL Special Topics
- 301 GEOL Introduction to Graduate Studies in Geology
- 302 GEOL Introduction to Graduate Studies in Geology
- 350 GEOL Paleogeography
- 351 GEOL Surface Processes and Quaternary Geology Seminar
- 352 GEOL Environmental Geology Seminar
- 353 GEOL Critical Writing in Earth and Environmental Science
- 360 GEOL Structural Analysis of Deformed Rocks
- 361 GEOL Advanced Structural Geology
- 371 GEOL Advanced Readings
- 391 GEOL Master's Thesis Research

Approved Courses for Graduate Credit

German (GERM)

- 201 GERM Methods of Research and Bibliography
- 202 GERM Expository Writing
- 213 GERM History of the German Language
- 214 GERM Middle Ages
- 225 GERM Goethe
- 226 GERM Schiller
- 237 GERM 19th Century Prose
- 238 GERM 19th Century Drama
- 247 GERM German Literature from 1890 to 1945
- 248 GERM Contemporary German Literature
- 251 GERM German Folklore
- 252 GERM Faust
- 263 GERM German Romanticism
- 264 GERM German Lyric Poetry
- 271 GERM Proverbs
- 273 GERM German Intellectual Movements
- 275 GERM Fin de Siecle
- 276 GERM Brecht and the Modern Drama
- 278 GERM GDR Fiction
- 279 GERM The German Short Story After 1945
- 281 GERM Seminar on Literary Genre, Period, or Theme
- 282 GERM Seminar on a Particular Author or Authors
- 295 GERM Advanced Special Topics
- 296 GERM Advanced Special Topics
- 391 GERM Master's Thesis Research

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Approved Courses for Graduate Credit

Graduate College (GRAD)

- 385 GRAD Master's Language Examination
- 395 GRAD Special Topics
- 397 GRAD Master's Comprehensive Examination
- 485 GRAD Doctoral Language Examination
- 497 GRAD Doctoral Comprehensive Examination
- 499 GRAD Dissertation Defense
- 900 GRAD Continuous Registration Fee

Approved Courses for Graduate Credit

Historic Preservation (HP)

- 200 HP History of American Architecture
- 201 HP History on the Land
- 204 HP Development Economics
- 202 HP Special Topics
- 205 HP Historic Preservation Law
- 206 HP Researching Historic Structures and Sites
- 302 HP Community Preservation Project
- 303 HP Internship
- 304 HP Seminar in Contemporary Preservation Planning and Policy
- 305 HP Historic Preservation Practice Methods
- 306 HP Architectural Conservation I
- 307 HP Architectural Conservation II
- 391 HP Master's Thesis Research
- 395 HP Special Topics
- 397 HP Special Readings and Research

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History (HST)

- 201 HST History on the Land
- 209 HST Seminar in Global History
- 210 HST Seminar in Global History
- 221 HST Seminar in Ancient History
- 222 HST Seminar in Ancient History
- 224 HST Seminar in Medieval Europe
- 225 HST Seminar in Early Modern Europe
- 226 HST Seminar in Modern Europe
- 227 HST Seminar in Modern Europe
- 228 HST Seminar on Popular Culture
- 237 HST Seminar in Russian History before 1917
- 238 HST Seminar in Soviet History
- 240 HST Comparative Slavery: An Historical Perspective
- 241 HST Seminar in African History
- 250 HST Seminar in East Asian History
- 252 HST Seminar on China
- 262 HST Seminar in Caribbean & Latin American History
- 265 HST Seminar in Canadian History
- 271 HST Seminar in U.S. Social History
- 272 HST Seminar in U.S. Social History
- 273 HST Seminar in Modern U.S. History
- 274 HST Seminar in Modern U.S. History
- 284 HST Seminar in Vermont History
- 285 HST Seminar in History of Science
- 287 HST Seminar in Historiography
- 295 HST Special Topics Seminar
- 296 HST Special Topics Seminar
- 300 HST Graduate Tutorial
- 301 HST Introduction to Graduate Study in History
- 351 HST Proseminar in American Cultural History
- 391 HST Master's Thesis Research

- 397 HST Special Readings and Research

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Approved Courses for Graduate Credit

Human Development and Family Studies (HDFS)

- 260 HDFS Family Ecosystem
- 263 HDFS Advanced Child Development
- 264 HDFS Contemporary Issues in Parenting
- 265 HDFS Teaching Human Development
- 266 HDFS Seminar in Human Development
- 267 HDFS Advanced Seminar in Sexual Identities
- 268 HDFS Seminar in Close Relationships
- 281 HDFS Infancy
- 282 HDFS Seminar in Physical Development and Health in Later Life
- 283 HDFS Personal and Family Development in Later Life
- 284 HDFS Public Policy and Programs for Elders
- 291 HDFS Special Problems
- 295 HDFS Special Topics
- 296 HDFS Field Experience

Approved Courses for Graduate Credit

Humanities (HUMN)

- 300 HUMN Modern Literary Theory
- 301 HUMN Humanities Graduate Seminar

Approved Courses for Graduate Credit

International Studies (IS)

- 297 IS Advanced Readings and Research
- 298 IS Advanced Readings and Research

Approved Courses for Graduate Credit

Materials Science (Multidisciplinary)

- 391 MATS Master's Thesis Research.
- 491 MATS Doctoral Dissertation Research.

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Approved Courses for Graduate Credit

Mathematics (MATH)

- 207 MATH Probability Theory
- 221 MATH Deterministic Models in Operations Research
- 222 MATH Stochastic Models in Operations Research
- 224 MATH Analysis of Algorithms
- 230 MATH Ordinary Differential Equations
- 236 MATH Calculus of Variations
- 237 MATH Introduction to Numerical Analysis
- 238 MATH Numerical Differential Equations
- 240 MATH Fourier Series and Integral Transforms
- 241 MATH Analysis in Several Real Variables I
- 242 MATH Analysis in Several Real Variables II
- 243 MATH Theory of Computation
- 251 MATH Abstract Algebra I
- 252 MATH Abstract Algebra II
- 255 MATH Elementary Number Theory
- 257 MATH Topics in Group Theory
- 260 MATH Foundations of Geometry
- 264 MATH Vector Analysis
- 268 MATH Mathematical Biology and Ecology
- 271 MATH Applied Mathematics for Engineers and Scientists
- 272 MATH Applied Analysis
- 273 MATH Combinatorial Graph Theory
- 274 MATH Numerical Linear Algebra
- 275 MATH Advanced Engineering Analysis I
- 276 MATH Advanced Engineering Analysis II
- 295 MATH Special Topics
- 330 MATH Advanced Ordinary Differential Equations
- 331 MATH Theory of Functions of Complex Variables
- 332 MATH Approximation Theory
- 333 MATH Theory of Functions of Real Variables
- 335 MATH Advanced Real Analysis

- 336 MATH Advanced Real Analysis
- 339 MATH Partial Differential Equations
- 351 MATH Topics in Algebra
- 353 MATH Math Point Set Topology
- 354 MATH Algebraic Topology
- 373 MATH Topics in Combinatorics
- 382 MATH Seminar
- 391 MATH Master's Thesis Research
- 395 MATH Special Topics
- 491 MATH Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Mechanical Engineering (ME)

- 203 ME Machinery Analysis and Synthesis
- 207 ME Biomechanics I
- 208 ME Biomechanics II
- 209 ME Biofluid Dynamics
- 234 ME Mechanical Vibrations
- 235 ME Turbomachinery Vibration Analysis and Testing
- 241 ME Combustion Processes
- 242 ME Advanced Engineering Thermodynamics I
- 243 ME Inviscid Flow
- 244 ME Introduction to Turbomachinery Analysis
- 245 ME Advanced Heat Transfer I
- 246 ME Centrifugal Compressors
- 247 ME Centrifugal Pumps
- 248 ME Turbomachinery Special Topics
- 249 ME Computational Fluids Engineering
- 252 ME Mechanical Behavior of Materials
- 253 ME Corrosion of Materials
- 255 ME Advanced Engineering Materials
- 257 ME Composite Materials
- 265 ME Integrated Product Development
- 270 ME Structual Dynamics
- 281 ME Seminar
- 282 ME Seminar
- 283 ME Laboratory Techniques for Turbomachinery Development
- 295 ME Special Topics
- 301 ME Introduction to Biomedical Engineering
- 304 ME Advanced Engineering Analysis I
- 305 ME Advanced Engineering Analysis II
- 320 ME Special Problems in Elasticity
- 321 ME Special Problems in Fluid Mechanics
- 322 ME Special Problems in Dynamics

- 323 ME Special Problems in Thermodynamics
- 324 ME Special Problems in Heat Transfer
- 325 ME Special Problems in Materials
- 330 ME Matrix Methods in Structural Dynamics
- 332 ME Engineering Elasticity
- 333 ME Stress Analysis (Theory and Experiment)
- 336 ME Continuum Mechanics
- 338 ME Advanced Dynamics
- 342 ME Advanced Combustion
- 343 ME Advanced Fluid Dynamics
- 344 ME Advanced Engineering Thermodynamics II
- 345 ME Advanced Heat Transfer II
- 346 ME Advanced Gas Dynamics
- 371 ME Advanced Engineering Design Analysis and Synthesis
- 372 ME Systems Engineering
- 373 ME Integrated Mechanism Design Analysis
- 391 ME Master's Thesis Research
- 395 ME Advanced Special Topics
- 491 ME Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Microbiology and Molecular Genetics (MMG)

- 201 MMG Molecular Cloning Lab
- 203 MMG Mammalian Cell Culture in Molecular Biology
- 211 MMG Prokaryotic Molecular Genetics
- 220 MMG Environmental Microbiology
- 222 MMG Clinical Microbiology
- 223 MMG Immunology
- 225 MMG Eukaryotic Virology
- 231 MMG Bioinformatics
- 295 MMG Special Topics
- 302 MMG Medical Microbiology
- 310 MMG Graduate Seminar
- 312 MMG Yeast Molecular Genetics
- 320 MMG Cellular Microbiology
- 332 MMG Critical Reading
- 352 MMG Protein: Nucleic Acid Interactions
- 391 MMG Master's Thesis Research
- 491 MMG Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Molecular Physiology and Biophysics (MPBP)

- 301 MPBP Medical Physiology and Biophysics
- 302 MPBP Neuroscience
- 303 MPBP Special Topics in Physiology
- 308 MPBP Biometrics and Applied Statistics
- 310 MPBP Molecular Basis of Biological Motility
- 313 MPBP Seminar on Endocrine Physiology
- 323 MPBP Principles and Elements of Biomedical Instrumentation
- 381 MPBP Seminar
- 391 MPBP Master's Thesis Research
- 491 MPBP Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Music (MUS)

- 211 MUS Seminar in Music Literature
- 212 MUS Seminar in Music Literature
- 213 MUS Seminar in Music Literature
- 214 MUS Seminar in Music Literature
- 215 MUS Seminar in Music Literature
- 216 MUS Bibliography Seminar
- 231 MUS Advanced Theory
- 232 MUS Advanced Theory
- 233 MUS Arranging
- 234 MUS Orchestration
- 235 MUS Fugal Composition
- 237 MUS Composition
- 238 MUS Composition
- 240 MUS Seminar in Musical Analysis
- 259 MUS Conducting
- 265 MUS Vermont Wind Ensemble
- 281 MUS Kodaly Institute
- 297 MUS Advanced Readings and Research
- 298 MUS Advanced Readings and Research

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Approved Courses for Graduate Credit

Forestry (FOR)

- 205 FOR Mineral Nutrition of Plants
- 222 FOR Advanced Silviculture
- 225 FOR Tree Structure and Function
- 228 FOR Ecosystem Ecology
- 231 FOR Integrated Forest Protection
- 242 FOR Advance Forest Biometry
- 272 FOR Sustainable Management of Forest Ecosystems
- 285 FOR Advanced Special Topics
- 382 FOR Seminar in Research Planning
- 385 FOR Selected Problems in Forestry
- 391 FOR Master's Thesis Research
- 392 FOR Master's Project Research

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Approved Courses for Graduate Credit

Natural Resources (NR)

- 220 NR Landscape Ecology
- 235 NR Legal Aspects of Planning and Zoning
- 240 NR Wilderness and Wilderness Management
- 244 NR Quantitative Assessments of Natural Resources
- 250 NR Limnology
- 252 NR Visual Resource Planning and Management
- 255 NR Field Methods in Water Resources
- 260 NR Wetlands Ecology and Management
- 261 NR Wetlands Ecology Laboratory
- 262 NR International Problems in Natural Resource Management
- 270 NR Toxic and Hazardous Substances in Surface Waters
- 275 NR Natural Resource Planning: Theory and Methods
- 276 NR Water Quality Analysis and Interpretation
- 278 NR Principles of Aquatic Systems
- 279 NR Watershed Management Hydrology
- 280 NR Stream Ecology
- 285 NR Advanced Special Topics in Natural Resource Planning
- 360 NR Environmental Sociology
- 361 NR Politics of Landscape, Place, and Nature
- 370 NR Special Topics in Aquatic Toxicology
- 375 NR Natural Resource Planning: Laboratory
- 378 NR Integrating Analyses of Natural Resource Issues
- 380 NR Seminars in Natural Resources
- 382 NR Seminar in Research Planning
- 384 NR Independent Studies in Natural Resources
- 385 NR Special Topics in Natural Resources
- 391 NR Master's Thesis Research
- 392 NR Master's Project Research
- 491 NR Doctoral Dissertation Research

Approved Courses for Graduate Credit

Recreation Management (RM)

- 235 RM Outdoor Recreation Planning
- 240 RM Wilderness and Wilderness Management
- 255 RM Environmental Interpretation

Approved Courses for Graduate Credit

Water Resources (WR)

- 391 WR Master's Thesis Research

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Approved Courses for Graduate Credit

Wildlife and Fisheries Biology (WFB)

- 232 WFB Ichthyology
- 271 WFB Wetlands Wildlife
- 273 WFB Terrestrial Wildlife
- 274 WFB Terrestrial Wildlife Laboratory
- 275 WFB Wildlife Behavior
- 279 WFB Marine Ecology
- 285 WFB Advanced Special Topics
- 286 WFB Advanced Special Topics
- 311 WFB Ecology of Fishes
- 352 WFB Population Dynamics and Modeling
- 387 WFB Graduate Special Problems
- 388 WFB Graduate Special Problems
- 391 WFB Master's Thesis Research

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Approved Courses for Graduate Credit

Nursing (GRNU)

- 296 GRNU Special Topics in Graduate Nursing
- 300 GRNU Nursing Research - Application of Quantitative Methods
- 305 GRNU Pathophysiology
- 306 GRNU Pharmacotherapeutics I
- 307 GRNU Pharmacotherapeutics II
- 308 GRNU Family Focused Advanced Practice Nursing
- 310 GRNU Nursing Theory
- 315 GRNU Nursing Issues and Health Care Trends
- 318 GRNU Health Care Environ & Finance
- 320 GRNU Nursing Research: Application of Qualitative Methods
- 324 GRNU Nurse as Administrator - Theory
- 326 GRNU Nurse as Administrator: Practicum
- 328 GRNU Curriculum and Instruction in Nursing
- 330 GRNU Theory and Practicum in Adult Health Nursing I
- 331 GRNU Theory and Practicum in Adult Health Nursing II
- 332 GRNU Theory and Practicum in Adult Health Nursing III
- 333 GRNU Advanced Health Assessment
- 340 GRNU Theory and Practicum in Advanced Population-Focused Nursing I
- 341 GRNU Theory and Practicum in Advanced Population-Focused Nursing II
- 342 GRNU Theory and Practicum in Advanced Population-Focused Nursing III
- 348 GRNU Practicum in Nursing Education
- 350 GRNU Theory and Practicum of the Primary Care of Children
- 351 GRNU Assessment and Health Maintenance of Adults: Practicum
- 352 GRNU Theory and Practicum of the Primary Care of Women (FNP)
- 353 GRNU Theory and Practicum of the Primary Care of Women (ANP)
- 354 GRNU Theory and Practicum of the Primary Care of Families I
- 355 GRNU Theory and Practicum of the Primary Care of Families II (FNP)
- 356 GRNU Theory and Practicum Care of Families II (ANP)
- 357 GRNU Advanced Nursing Practice of Older Adults
- 358 GRNU Practicum of Primary Care of Adults (Special Populations)
- 359 GRNU Primary Care in a Family Practice Setting: Clinical Integration

- 362 GRNU Theory & Practicum in Nursing Administration
- 372 GRNU Theory & Practicum in Nursing Education
- 390 GRNU Master's Project
- 391 GRNU Master's Thesis Research
- 395 GRNU Independent Study in Graduate Nursing
- 396 GRNU Special Topics in Graduate Nursing

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Approved Courses for Graduate Credit

Nutrition and Food Sciences (NFS)

- 201 NFS Fermented Dairy Foods
- 203 NFS Food Microbiology
- 206 NFS Principles of Food Engineering
- 208 NFS Sensory Evaluation of Foods
- 222 NFS Curriculum Development in the Human Sciences
- 223 NFS Methods of Education in the Human Services
- 224 NFS Evaluation Techniques in the Human Sciences
- 238 NFS Food Service Systems Management
- 243 NFS Advance Nutrition
- 253 NFS Food Safety and Regulation
- 260 NFS Diet and Disease
- 261 NFS Clinical Nutrition
- 262 NFS Community Nutrition
- 263 NFS Nutritional Biochemistry
- 295 NFS Special Topics Lectures
- 296 NFS Field Experience
- 350 NFS Nutrition and Food Sciences Seminar
- 360 NFS Research Methods in Nutrition and Food Sciences
- 391 NFS Master's Thesis Research

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Approved Courses for Graduate Credit

Obstetrics and Gynecology (OBGY)

- 295 OBGY Special Topics

Approved Courses for Graduate Credit

Orthopaedic Surgery (ORTH)

- 291 ORTH Research in Orthopaedics and Rehabilitation
- 292 ORTH Research in Orthopaedics and Rehabilitation
- 381 ORTH Readings and Research in Musculoskeletal Biomechanics
- 382 ORTH Readings and Research in Musculoskeletal Biomechanics
- 383 ORTH Readings and Research in Musculoskeletal Biomechanics
- 384 ORTH Readings and Research in Musculoskeletal Biomechanics

Approved Courses for Graduate Credit

Pathology (PATH)

- 295 PATH Special Topics
- 301 PATH General Pathology
- 302 PATH Systemic Pathology
- 305 PATH Molecular Mechanisms of Environmental Disease
- 306 PATH Lab - Pathology of Environmental Disease
- 375 PATH Special Topics in Molecular Pathobiology
- 391 PATH Master's Thesis Research
- 395 PATH Special Topics in Pathology: Immunopathology

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Approved Courses for Graduate Credit

Pharmacology (PHRM)

- 272 PHRM Toxicology
- 290 PHRM Topics in Molecular and Cellular Pharmacology
- 301 PHRM Medical Pharmacology
- 302 PHRM Pharmacological Techniques
- 303 PHRM Pharmacological Techniques
- 328 PHRM Introduction to Medicinal Chemistry
- 372 PHRM Special Topics
- 373 PHRM Readings in Pharmacology
- 381 PHRM Seminar
- 391 PHRM Master's Thesis Research
- 491 PHRM Doctoral Dissertation Research

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Approved Courses for Graduate Credit

Philosophy (PHIL)

- 201 PHIL Theory of Knowledge
- 202 PHIL Metaphysics
- 210 PHIL Philosophy of Mind
- 217 PHIL Philosophy of Language
- 221 PHIL Topics in Chinese Philosophy
- 235 PHIL Topics in the Philosophy of Religion
- 240 PHIL Contemporary Ethical Theory
- 241 PHIL Contemporary Social and Political Philosophy
- 242 PHIL Justice and Equality
- 260 PHIL Topics in Continental Philosophy
- 265 PHIL American Philosophy
- 271 PHIL Seminar: Major Philosophical Author of School
- 272 PHIL Seminar: Major Philosophical Author or School
- 295 PHIL Advanced Special Topics
- 296 PHIL Advanced Special Topics
- 297 PHIL Readings and Research
- 298 PHIL Readings and Research

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Approved Courses for Graduate Credit

Physical Therapy (PT)

- 201 PT Clinical Science & Practice Seminar
- 202 PT Cinical Science and Practice Seminar II
- 211 PT Clinical Skills Laboratory I
- 212 PT Clinical Skills Labs II
- 221 PT Tutorial I - Clinical Care Issues I
- 222 PT Tutorials II
- 232 PT Clinical Education I
- 255 PT Professional Abilities Assessment
- 315 PT Clinical Skills Laboratory III
- 316 PT Clinical Skills Laboratory IV
- 317 PT Clinical Skills Laboratory V
- 323 PT Tutorial III
- 324 PT Tutorial IV
- 325 PT Tutorials V
- 333 PT Clinical Education II
- 334 PT Clinical Education III
- 335 PT Clinical Education IV
- 336 PT Clinical Education V
- 341 PT Clinical Science and Practice and Seminar III
- 342 PT Clinical Science and Practice Seminar IV
- 343 PT Clinical Science and Practice Seminar V

Approved Courses for Graduate Credit

Movement Sciences and Rehabilitation (MVSR)

- 300 MVSR Research Tutorial
- 304 MVSR Professional Practice Practicum
- 311 MVSR Motor Function and Dysfunction: Muscle
- 312 MVSR Motor Function: Connective Tissue
- 313 MVSR Motor Function and Dysfunction: Energetics & Clinical Application of Exercise Physiology
- 314 MVSR Motor Function and Dysfunction: Movement Science
- 381 MVSR Special Topics Seminar
- 391 MVSR Master's Thesis Research
- 397 MVSR Special Readings and Research

Approved Courses for Graduate Credit

Physics (PHYS)

- 201 PHYS Experimental Physics
- 202 PHYS Experimental Physics
- 211 PHYS Mechanics
- 213 PHYS Electricity and Magnetism
- 214 PHYS Electromagnetism
- 222 PHYS Biological Physics
- 242 PHYS Introduction to Solid State Physics
- 257 PHYS Modern Astrophysics
- 258 PHYS Relativity
- 264 PHYS Nuclear and Elementary Particle Physics
- 265 PHYS Thermal Physics
- 273 PHYS Quantum Mechanics I
- 295 PHYS Special Topics
- 296 PHYS Special Topics
- 301 PHYS Mathematical Physics
- 305 PHYS Teaching of College Physics
- 311 PHYS Advanced Dynamics
- 313 PHYS Electromagnetic Theory
- 321 PHYS Seminar in Theoretical Physics
- 323 PHYS Seminar in Contemporary Physics
- 331 PHYS Seminar in Biological Physics
- 341 PHYS Solid State Physics
- 342 PHYS Solid State Physics
- 351 PHYS Seminar in Physics of Materials
- 362 PHYS Quantum Mechanics II
- 381 PHYS Problems in Engineering Physics
- 382 PHYS Problems in Engineering Physics
- 391 PHYS Master's Thesis Research

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Approved Courses for Graduate Credit

Plant and Soil Science (PSS)

- 205 PSS Mineral Nutrition of Plants
- 210 PSS Ecological Soil Management
- 215 PSS Weed/Crop Ecology
- 217 PSS Pasture Production and Management
- 221 PSS Tree Fruit Culture
- 232 PSS Biological Control
- 261 PSS Soil Morphology Classification and Land Use
- 264 PSS Chemistry of Soil and Water
- 266 PSS Soil Water Movement
- 269 PSS Soil and Water Pollution and Bioremediation
- 281 PSS Seminar
- 297 PSS Special Topics
- 301 PSS Plant Science Colloquium
- 302 PSS Soil Science Colloquium
- 381 PSS Graduate Special Topics
- 391 PSS Master's Thesis Research
- 491 PSS Doctoral Dissertation Research

Approved Courses for Graduate Credit

Psychology (PSYC)

- 205 PSYC Learning
- 206 PSYC Motivation
- 207 PSYC Thinking
- 208 PSYC Cognition and Language
- 210 PSYC Principles of Human Perception
- 215 PSYC Cognition and Aging
- 220 PSYC Animal Behavior
- 221 PSYC Physiological Psychology I
- 222 PSYC Selected Topics in Behavioral Neuroscience
- 223 PSYC Psychopharmacology
- 230 PSYC Advanced Social Psychology
- 231 PSYC Psychology of Women
- 233 PSYC Psychology of Experience and Creativity Enhancement
- 234 PSYC Psychology of Social and Environmental Change
- 236 PSYC Theories of Human Communication
- 237 PSYC Cross-Cultural Communication
- 240 PSYC Organizational Psychology
- 241 PSYC Organizational Psychology: Global, Cultural, and Local Forces
- 250 PSYC Introduction to Clinical Psychology
- 251 PSYC Behavior Disorders of Childhood
- 253 PSYC Introduction to Behavior Modification
- 257 PSYC Personality
- 258 PSYC Workshop in Primary Prevention
- 259 PSYC Chemical Dependency: Etiology and Treatment
- 261 PSYC Cognitive Development
- 262 PSYC Social Development
- 263 PSYC Disabilities of Learning and Development
- 265 PSYC Infant Development
- 266 PSYC Communication and Children
- 268 PSYC Psychology of Adult Development and Aging
- 269 PSYC Cross-Cultural Psyc: Clin Persp

- 295 PSYC Advanced Special Topics
- 296 PSYC Advanced Special Topics
- 301 PSYC Faculty Seminar
- 302 PSYC Faculty Seminar
- 305 PSYC Seminar in Learning Theory
- 308 PSYC Seminar in Operant Conditioning
- 310 PSYC Seminar in Perception
- 315 PSYC Seminar in Alcohol and Behavior
- 326 PSYC Central Processes: Cortical Mechanisms
- 332 PSYC Interpersonal Processes: Cognition in Social Behavior
- 333 PSYC Interpersonal Processes: Motivation in Human Interaction
- 334 PSYC Organizational Behaviors and Cultures
- 340 PSYC Advanced Statistical Methods I
- 341 PSYC Advanced Statistical Methods II
- 344 PSYC Experimental Design
- 347 PSYC Measurement and Scaling
- 349 PSYC Seminar in Psychology Research Methodology
- 350 PSYC Family Therapy
- 351 PSYC Behavior Therapy: Adults
- 352 PSYC Behavior Therapy: Children
- 353 PSYC Introduction to Clinical Human Neuropsychology
- 354 PSYC Psychopathology I
- 355 PSYC Psychopathology II
- 356 PSYC Mental Retardation
- 357 PSYC Cross Cultural Clinical Intervention and Research
- 358 PSYC Feminist Therapy
- 359 PSYC Interpersonal Psychotherapy
- 360 PSYC Methods and Models of Clinical Prediction
- 361 PSYC Advanced Personality Theory
- 362 PSYC Community Clinical Psychology
- 363 PSYC Advanced Primary Prevention
- 364 PSYC Professional Affairs and Ethics
- 365 PSYC Group Therapy
- 366 PSYC Seminar in Advanced Developmental Psychology
- 367 PSYC Human Sexual Behavior
- 368 PSYC Psychology and Law
- 369 PSYC Health Psychology
- 370 PSYC Adult Psychological Assessment
- 371 PSYC Child and Adolescent Psychological Assessment
- 372 PSYC Psychological Intervention I
- 373 PSYC Psychological Intervention II
- 374 PSYC Advanced Clinical Practicum
- 375 PSYC Internship in Clinical Psychology
- 380 PSYC Contemporary Topics including Proseminar
- 381 PSYC Clinical Research Seminar
- 382 PSYC Advanced Professional Research Seminar

- 385 PSYC Advanced Readings and Research
- 391 PSYC Master's Thesis Research
- 491 PSYC Doctoral Dissertation Research

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Public Administration (MPA)

- 206 PA Introduction to Contemporary Public Affairs
- 295 PA Intermediate Special Topics
- 296 PA Intermediate Special Topics
- 299 PA Fund Quantitative & Econ Anyl
- 301 PA Fundamentals of Public Administration
- 302 PA Public Sector Organizations
- 303 PA Research Methods
- 305 PA Public Budgeting and Finance
- 306 PA Introduction to Public Policy
- 307 PA Administrative Ethics
- 308 PA Decision Making Models
- 311 PA Policy Analysis and Planning
- 312 PA Management in Health Services and Medical Care
- 313 PA Public Policy Implementation
- 314 PA Administrative Law
- 315 PA Health Services and Medical Care in the United States
- 316 PA Effective Management Techniques
- 317 PA Systems Anly & Strategic Mgmt
- 318 PA Administrative Theory and Practice
- 319 PA State Administration
- 321 PA Negotiation and Mediation
- 334 PA Organizational Behav & Cultures
- 380 PA Internship
- 391 PA Master's Thesis Research
- 395 PA Special Topics
- 397 PA Readings and Research

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Religion (REL)

- 291 REL Topics in the History and Phenomenology of Religion
- 292 REL Topics in the History and Phenomenology of Religion

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Social Work (SWSS)

- 200 SWSS Contemporary Issues
- 212 SWSS Social Work Practice I
- 213 SWSS Social Work Practice II
- 216 SWSS Theoretical Foundations of Human Behavior and the Social Environment I (HBSE)
- 217 SWSS Theoretical Foundations of Human Behavior and the Social Environment II (HBSE)
- 220 SWSS Social Welfare Policies and Services I
- 221 SWSS Social Welfare Policies and Services II
- 224 SWSS Child Abuse and Neglect
- 225 SWSS Transforming Ourselves and Our Communities: Social Work Perspectives
- 226 SWSS Assessment Theories in Social Work
- 227 SWSS Foundations of Social Work Research
- 228 SWSS Aging: A Strengths and Human Rights Perspective
- 290 SWSS Foundation Year Field Practicum
- 296 SWSS Social Work in A Global Context
- 301 SWSS Social Work in Health
- 302 SWSS Social Work in Mental Health
- 310 SWSS Social Work with Children and Families I
- 311 SWSS Social Work with Children and Families II
- 316 SWSS Critical Applications of Human Behavior and the Social Environment
- 320 SWSS Advanced Social Welfare Policy Analysis and Practice
- 327 SWSS Advanced Social Work Research
- 330 SWSS Assessment Theories in Social Work
- 331 SWSS Feminist Social Work Practice
- 332 SWSS Social Work with Battered Women and their Children
- 333 SWSS Social Work with Groups
- 380 SWSS Professional Issues in Social Work
- 390 SWSS Concentration Year Field Practicum
- 395 SWSS Advanced Special Topics

- 397 SWSS Independent Study in Social Work
- 398 SWSS Final Project

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Approved Courses for Graduate Credit

Sociology (SOC)

- 202 SOC Population Dynamics
- 205 SOC Rural Communities in Modern Society
- 206 SOC Urban Communities in Modern Society
- 207 SOC Community Organization and Development
- 209 SOC Small Groups
- 211 SOC Social Movements and Collective Behavior
- 213 SOC Women in Development in Third World Countries
- 214 SOC Delinquency
- 216 SOC Criminal Justice
- 217 SOC Corrections
- 219 SOC Race Relations
- 221 SOC Aging and Social Change
- 222 SOC Aging and Ethical Issues
- 225 SOC Organizations in Modern Society
- 229 SOC The Family as a Social Institution
- 232 SOC Social Class and Mobility
- 239 SOC Women and Public Policy in Vermont
- 240 SOC Political Sociology
- 243 SOC Mass Media in Modern Society
- 250 SOC The Sociology of Culture
- 254 SOC Sociology of Health and Medicine
- 255 SOC Sociology of Mental Health
- 258 SOC Sociology of Law
- 272 SOC Sociology of African Societies
- 274 SOC Research Seminar
- 275 SOC Methods of Data Analysis in Social Research
- 279 SOC Contemporary Sociological Theory
- 281 SOC Seminar
- 282 SOC Seminar
- 288 SOC Seminar: Research and Methods of Teaching Sociology
- 289 SOC Seminar: Research and Methods of Teaching Sociology

- 295 SOC Special Topics
- 296 SOC Special Topics
- 297 SOC Readings and Research
- 298 SOC Readings and Research

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Spanish (SPAN)

- 235 SPAN Golden Age Drama and Prose
- 236 SPAN Golden Age Poetry
- 245 SPAN Cervantes
- 246 SPAN Cervantes
- 265 SPAN 19th Century Spanish Literature
- 281 SPAN Spanish-American Prose Fiction of the 20th Century
- 285 SPAN Spanish-Americal Literature of Social Protest
- 286 SPAN Spanish-American Literature of Social Protest
- 291 SPAN Civilization of Spain
- 292 SPAN Civilization of Spain
- 293 SPAN Latin American Civilization
- 295 SPAN Advanced Special Topics
- 296 SPAN Advanced Special Topics
- 297 SPAN Advanced Readings
- 298 SPAN Advanced Readings

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Statistics (STAT)

- 200 STAT Medical Biostatistics and Epidemiology
- 201 STAT Statistical Analysis Via Computer
- 211 STAT Statistical Methods I
- 221 STAT Statistical Methods II
- 223 STAT Applied Multivariate Analysis
- 224 STAT Statistics for Quality and Productivity
- 225 STAT Applied Regression Analysis
- 227 STAT Statistical Methods for the Behavioral Sciences
- 229 STAT Survival Analysis
- 231 STAT Experimental Design
- 233 STAT Survey Sampling
- 235 STAT Categorical Data Analysis
- 237 STAT Nonparametric Statistical Methods
- 241 STAT Statistical Inference
- 251 STAT Probability Theory
- 252 STAT Applied Models
- 253 STAT Applied Time Series and Forecasting
- 256 STAT Neural Computation
- 261 STAT Statistical Theory I
- 262 STAT Statistical Theory II
- 265 STAT Integrated Product Development
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- 271 STAT Least Squares Estimation and Filtering of Time Series
- 281 STAT Statistics Practicum
- 295 STAT Special Topics in Statistics
- 308 STAT Applied Biostatistics
- 313 STAT Statistical Analysis for Management
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Courses in Art (ART)

ART 001 - **Drawing**
Introductory study of visual experience through drawing and its transformation of the three-dimensional visual world onto a two-dimensional surface. Emphasis varies with instructor.
Credits: 3.00

ART 002 - **Two-Dimensional Studies**
A studio course exploring through classroom projects how we perceive space and how we work with materials and concepts to organize two-dimensional surfaces.
Credits: 3.00

ART 003 - **Three-Dimensional Studies**
Introductory study of the manipulation of actual space in diverse media. Emphasis varies with instructor.
Credits: 3.00

ART 004 - **Intro to Film/Video Production**
Introductory study of the principles and properties of four-dimensional media, including the mechanical and electronic phenomena behind the creation of a moving image.
Credits: 3.00

ART 005 - **Western Art:Ancient - Medieval**
Introduction to the visual arts, primarily painting, sculpture, and architecture in the Western world from prehistoric through Gothic.
Credits: 3.00

ART 006 - **Western Art:Renaissance-Modern**
Introduction to the visual arts, primarily painting, sculpture, and architecture in the Western world from Renaissance to present. Prerequisite: It is recommended that ART 005 be taken before ART 006.
Credits: 3.00

ART 008 - **Asian Art**
Introduction to the artistic traditions and major architectural monuments of India, China, Japan, and Southeast Asia.

Credits: 3.00

ART 011 - **Introduction to Fine Metals**

Emphasizes design in the third dimension. Basic metal fabrication techniques, soldering, forming, forging, fusing, and casting. Drawing required. Fall semester only.
Credits: 3.00

ART 095 - **Intro Special Topics**

See Schedule of Courses for specific titles.
Credits: 4.00

ART 096 - **Introduction to Special Topics**

Introductory courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 3.00

ART 111 - **Fine Metals**

Continuation of three-dimensional fabrication with work in chasing, repousse, casting, stone setting, and more complex methods of construction. Design and drawing required. Prerequisite: ART 011. Fall semester only. Credits 0 to 3.
Credits: 3.00

ART 113 - **Clay: Hand Building**

Investigation of surfaces and three-dimensional forms. Focus on variety of construction methods, surface treatment, and firing techniques. Related clay and glaze technology. Prerequisites: ART 001 or ART 002, and ART 003.
Credits: 3.00

ART 114 - **Clay: Wheel Throwing**

Development of throwing skills and the capacity to create a range of forms. Investigation of surface treatment techniques such as slip painting and glazing. Low-fire and stoneware firing. Related clay and glaze technology. Prerequisites: ART 001 or ART 002, and ART 003.
Credits: 3.00

ART 115 - **Intermediate Drawing**

Intense investigation of drawing and elements related to the discipline. The figure used to introduce drawing exercises dealing with contour, gesture, color, and compositional geometry. Prerequisite: ART 001 and ART 002.
Credits: 3.00

ART 116 - **Drawing From the Figure**

Drawing from the model, emphasizing in-depth studies in different media. Prerequisite: ART 001 and ART 002.
Credits: 3.00

ART 121 - **Painting**

Painting as an investigation of color, space, and visual perception using traditional motifs and exploring individually developed directions. Prerequisites: 1, 2.
Credits: 3.00

ART 131 - **Printmaking: Etching**

Basic procedures in zinc plate printing, stressing design and technical control of aquatint, etching, drypoint and embossment. Prerequisites: ART 001 and ART 002. Offered alternate semesters. Credits 3.
Credits: 3.00

ART 132 - **Printmaking: Silkscreen**

Basic procedures in stencil printing, stressing design and technical control of stencil cutting, glue and tusche resist and photo-silkscreening. Prerequisites: ART 001 and ART 002. Offered alternate semesters.
Credits: 3.00

ART 133 - **Printmaking: Lithography**

Basic procedures in planographic printing from stone, stressing design and technical competence. Intensity of investigation varies with individual student. Prerequisites: ART 001 and ART 002.
Credits: 3.00

ART 137 - **Photography**

Photographic processes as methods of seeing, emphasizing visual discovery through informed manipulation of materials. Students explore light, camera, photosensitive materials relating to photographic realities. Prerequisite: one of the following: ART 001, ART 002, ART 004.
Credits: 3.00

ART 138 - **Color Photography**

Exploration of color films, cameras, and color printing processes as a means for recording, enhancing and expressing students' subjective experiences. Prerequisite: one of the following: ART 001, ART 002, ART 004. Credits 3.
Credits: 3.00

ART 139 - **Animation**

Techniques of single frame filmmaking, including drawing on film, producing a flipbook, animating a repetitive form, a two-dimensional sequence, and a three-dimensional sequence. Prerequisite: any two of the following: ART 001, ART 002, ART 003, ART 004.
Credits: 3.00

ART 140 - **Hist of Optical Media as Art**

Theory and development of the art of "optical media:" photography, film, and video. Emphasis on discovery and explication of technical, aesthetic, and expressive properties. Prerequisite: one of the following: ART 006, FILM 005, FILM 006.
Credits: 3.00

ART 141 - **Sculpture**

Exploration of manipulative materials. Prerequisite: ART 003.
Credits: 3.00

ART 142 - **Art from Scraps**

Students explore in a series of projects how discarded objects and materials from everyday life, the "found object" tradition, can become materials for sculpture.

Prerequisite: ART 002 and ART 003.
Credits: 3.00

ART 143 - **Intermed Film/Video Production**

Exploration of the principles and properties of sound and moving image through projects in synchronous sound mediamaking and live studio production. Prerequisite: ART 004 and either ART 001, ART 002, or ART 003, or instructor permission.
Credits: 3.00

ART 144 - **Digital Art**

Exploration of the computer as an artistic medium, focusing on a variety of approaches for creating and displaying imagery. Prerequisite: ART 002.
Credits: 3.00

ART 145 - **Graphic Design**

The application of graphic design principles to practical problems, including the impact of popular design on society, and the exploration of visual elements in contemporary printing processes. Prerequisite: ART 001 or ART 002.
Credits: 3.00

ART 146 - **Egypt & the Ancient Near East**

The development of sculpture, painting, and architecture in Mesopotamia and Egypt 3000-300 B.C. Prerequisite: ART 005.
Credits: 3.00

ART 147 - **Visual Environment**

Exploration of public spaces, structures, architectural detail, landscaping, roadways, lighting, etc. Field trips; meetings with planners and architects; projects. Prerequisites: ART 001, ART 002, or ART 003.
Credits: 3.00

ART 148 - **Greek Art**

Development of painting, sculpture, architecture, and related arts in Greek lands 3000-30 B.C. Prerequisite: ART 005.
Credits: 3.00

ART 149 - **Roman Art**

Examination of the artistic experiments made by Roman painters, sculptors, and architects from 3rd century B.C. to 5th century A.D. Prerequisite: ART 005.
Credits: 3.00

ART 155 - **Topics in Medieval Art**

Selected aspects of European art from the end of the Roman Empire through the Gothic period. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: ART 005.
Credits: 3.00

ART 158 - **Northern European 1400-1600**

Netherlandish and German art of the period. Special attention to Jan van Eyck, Rogier van der Weyden, Hugo van der Goes, Durer, Bosch, and Bruegel. Prerequisite: ART 005.

Credits: 3.00

ART 161 - **Italian Renaissance Painting**

Painting in Italy from Gothic innovations of Giotto and Duccio through establishment of 15th-century Renaissance style to the High Renaissance works of Leonardo da Vinci, Raphael, Michelangelo and Titian. The development of Venetian painting. Prerequisite: ART 005.
Credits: 3.00

ART 164 - **Italian Renaissance Sculpture**

Sculpture in Italy from its Gothic sources through the Renaissance. Special attention to Ghiberti, Donatello, and Michelangelo. Prerequisite: ART 005.
Credits: 3.00

ART 165 - **Topics European Art 1600-1800**

Selected aspects of the painting, sculpture, and architecture of the Baroque, Rococo, and/or Neo-Classical periods. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: ART 006.
Credits: 3.00

ART 170 - **Topics in Modern Art**

Selected aspects of the painting, sculpture, and architecture of Europe and North America during the 19th and 20th centuries. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: ART 006.
Credits: 3.00

ART 172 - **19th-Century European Painting**

Examination of major movements in European painting from Neo-Classicism and Romanticism through Post-Impressionism. Prerequisite: ART 006.
Credits: 3.00

ART 174 - **20th-Century Art**

A survey of movements and new media in European and American painting, sculpture, mixed media, performance, and the influences of film and photography on traditional media. Prerequisites: three hours of art history and preferably ART 172 or ART 181. Alternate years.
Credits: 3.00

ART 177 - **19th&20th Cent Arch & Design**

The theory and practice of building and design from the early 19th century to the recent past. Prerequisites: ART 006 or a course in Historic Preservation.
Credits: 3.00

ART 179 - **Issues in Contempory Art**

A study of selected examples of recent and current art and/or architecture. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: three hours of Art History.
Credits: 3.00

ART 180 - **N. American Art 1600-1900**

Painting, sculpture, and architecture in the U.S. and Canada from colonial

beginnings (Hispanic, Franco, Anglo) to WWI. Emphasis on the development of nationalist sensibilities as they emerge from European sources. Prerequisites: ART 006 or International Studies 91 (Canada).
Credits: 3.00

ART 185 - **Japanese Art**
Architecture, sculpture, painting, prints, and decorative arts and their relationship to Japanese culture. Prerequisites: three hours in art history or one of the following Asian Studies courses: GEOG 058, HST 151, REL 021, REL 132, REL 141. Alternate years.
Credits: 3.00

ART 187 - **Chinese Painting**
History of Chinese painting, emphasizing the landscape painting of the 11th to 17th centuries. Prerequisite: Six hours in art history, three at the 100 level or instructor's permission. Alternate years.
Credits: 3.00

ART 188 - **Indian Painting**
Mural, manuscript, and miniature painting from India from the 5th to 19th centuries. Topics to include: courtly and religious patronage and regional styles. Prerequisites: Three hours of art history or instructor's permission.
Credits: 3.00

ART 189 - **Topics in Non-Western Art**
Selected aspects of the art of an area not covered in our regular European, American, and Asian courses. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: three hours in Art History.
Credits: 3.00

ART 190 - **Internship:Art History**
Prerequisites: junior standing, six hours of 100-level course work in appropriate field, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).
Credits: 3.00

ART 191 - **Internship: Field Experience**
Prerequisites: junior standing, six hours of 100-level courses in appropriate field, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).
Credits: 3.00

ART 192 - **Inter Spec Topics in Asian Art**
See Schedule of Courses for specific titles. Prerequisite: three hours in Art History or Asian Studies.
Credits: 3.00

ART 195 - **Intermediate Special Topics**
Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles. Credits 1-4.

Credits: 4.00

ART 196 - **Intermediate Special Topics**

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 3.00

ART 197 - **Rdgs & Rsch:Tutorial in Studio**

Independent/individual research in studio art. Prerequisites: junior standing, six hours of studio art courses at 100 level, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration).
Credits: 3.00

ART 198 - **Readings & Research**

Prerequisite: departmental permission.
Credits: 3.00

ART 199 - **Topics:Gender,Race,Ethn in Art**

Study of selected aspects of gender, "race," or ethnicity in art, and/or of the contributions of women or ethnically diverse people to the visual arts. Material and emphasis vary with instructor. May be repeated for credit with instructor's permission. Prerequisite: three hours in Art History.
Credits: 3.00

ART 201 - **Arch, Landscape & History**

(See Historic Preservation 201.) Prerequisites: six hours advanced studies in art and architecture, permission. UG only.
Credits: 3.00

ART 213 - **Advanced Ceramics**

Advanced investigations of methods exploring content, form, surface, and color of ceramics and elements related to the discipline. Prerequisite: ART 113 or ART 114.
Credits: 3.00

ART 215 - **Advanced Drawing**

Intense investigation of drawing and elements that relate to that discipline. Emphasis on conceptual method, contemporary techniques, and both objective and non-objective source material. Prerequisite: ART 115 or ART 116.
Credits: 3.00

ART 221 - **Advanced Painting**

Advanced explorations of painting emphasizing issues of scale, materials, and techniques both traditional and contemporary, and their relationship to both the discipline and current issues. Prerequisites: ART 121.
Credits: 3.00

ART 237 - **Advanced Photography**

Continuation of 137, further exploring the implications of photography and encouraging students to use the medium to better understand their relationships to the world. Prerequisite: ART 137 or ART 138.
Credits: 3.00

ART 241 - **Advanced Sculpture**

Advanced investigation of sculpture. Students work on individual projects under supervision of instructor. Periodic group discussion and analyses of work in progress. Prerequisite: ART 141.
Credits: 3.00

ART 244 - **Advanced Digital Art**

Advanced exploration of the computer as an artistic medium for creating imagery. Focus on using the computer to animate images and integrate sound. Emphasis on conceptual issues in digital art. Prerequisite: ART 144.
Credits: 3.00

ART 281 - **Advanced Studies in Studio Art**

Work in close consultation with faculty sponsor on a specific and advanced project. Prerequisites: senior standing, major or qualified minor in studio art, departmental permission (a contract must be obtained from and returned to the Department of Art during preregistration), six hours of 100-level courses in topic of contract.
Credits: 3.00

ART 282 - **Seminar in Western Art**

Selected topics in Western Art. See Schedule of Courses for specific offerings each semester. Prerequisites: six hours of 100-level Art History courses, including three hours in the area of the seminar; junior or senior standing. UG only.
Credits: 3.00

ART 283 - **Advanced Seminar in Studio Art**

Advanced seminar for senior studio art majors covering a range of topics. Prerequisites: senior standing, major in studio art, instructor's permission. (Not offered for graduate credit.)
Credits: 3.00

ART 285 - **Seminar in Asian Art**

Prerequisites: One of the following: ART 008, ART 185, ART 187, ART 188, or ART 196 (Asian); three additional hours of 100-level courses either in art history or Asian Studies.
Credits: 3.00

ART 295 - **Special Topics in Studio Art**

Advanced work in existing departmental offerings. Prerequisite: instructor's permission only. UG only.
Credits: 3.00

ART 296 - **Adv Special Topics:Art History**

See Schedule of Courses for specific titles.
Credits: 3.00

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Courses in Biostatistics (BIOS)

BIOS 200 - **Med Biostatistics&Epidemiology**

Introductory design and analysis of medical studies. Epidemiological concepts, case-control and cohort studies. Clinical trials. Students evaluate statistical aspects of published health science studies. Prerequisite: Statistics 141 or 143 or 211. Three hours. Cross-listing: Statistics 200.
Credits: 3.00

BIOS 221 - **Statistical Methods II**

Multiple regression and correlation. Basic experimental design. Analysis of variance (fixed random and mixed models). Analysis of covariance. Computer software usage. Cross-listed with: STAT 221.
Credits: 3.00

BIOS 223 - **Applied Multivariate Analysis**

Multivariate normal distribution. Inference for mean vectors and covariance matrices. Multivariate analysis of variance (MANOVA), discrimination and classification, principal components, factor analysis. Prerequisite: Any 200-level Statistics course; STAT 221 or STAT 225 recommended; matrix algebra recommended. Cross-listed with: STAT 223.
Credits: 3.00

BIOS 231 - **Experimental Design**

Randomization, complete and incomplete blocks, cross-overs, Latin squares, covariance analysis, factorial experiments, confounding, fractional factorials, nesting, split plots, repeated measures, mixed models, response surfact optimization. Prerequisites: 211; 221 recommended. Cross-listing: STAT 231.
Credits: 3.00

BIOS 391 - **Master's Thesis Research**

Credit as arranged.
Credits: 1.00 to 12.00

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Courses in Counseling (EDCO)

EDCO 220 - **Developmental Persp in Counsel**

Survey of major and emerging theories of human development and application of theoretical concepts to self and others from a counseling perspective. Prerequisite: Graduate standing; others by Instructor permission.
Credits: 3.00

EDCO 291 - **Special Topics in Counseling**

Special issues in counseling, administration and planning, social work or higher education not appropriate to content of existing courses. Courses reflect the social services orientation of the Department of Integrated Professional Studies.
Credits: 3.00

EDCO 310 - **Counseling Strats for Teachers**

Counseling strategies appropriate for use in the classroom for class management assessment and utilization of different learning styles, and promotion of positive behavior change. Prerequisite: permission.
Credits: 3.00

EDCO 340 - **Development Guidance in Schls**

An introduction to the role of the school counselor including developmental guidance program planning and implementation, consultation, crisis intervention, parent education and ethical issues. Prerequisite: Counseling majors or Instructor permission.
Credits: 3.00

EDCO 344 - **Counseling Children&Adolescent**

Students learn theories and will practice counseling children and adolescents: assessment intervention planning, and play therapy, client-centered, behavioral, cognitive, Adlerian, brief and narrative approaches. Prerequisites: EDCO 374-Counseling Theory and Practice, EDCO 375-Laboratory Experience in Counseling, Counseling Majors or permission.
Credits: 3.00

EDCO 350 - **Prof Issues in Counseling**

A seminar in which professional, ethical, and legal issues facing counselors in schools and mental health settings are addressed through reading, research,

presentation, and discussion. Prerequisite: Graduate standing or Instructor permission.
Credits: 3.00

EDCO 351 - **Using Tests in Counseling**
Exploration of tests and testing process used in counseling and school settings. Includes necessary statistics. Experience in taking, administering, interpreting various tests; study projects for application to any setting. Prerequisites: Graduate standing or permission.
Credits: 3.00

EDCO 361 - **Practice of Mental Hlth Cnslng**
Introduction to issues, needs, models and sociopolitical factors present in community and private-practice mental health counseling, with an emphasis on prevention and wellness. Prerequisite: Graduate standing or Instructor permission.
Credits: 3.00

EDCO 363 - **School Counseling Practicum**
Introductory supervised experience in counseling in a school field setting. Includes 100 hours working as a counselor with a minimum of 40 hours of direct counseling experience. Prerequisites: Counseling Majors or Permission.
Credits: 3.00

EDCO 364 - **Internship School Counseling**
Supervised counseling experience in a school counseling setting with direct client work. Prerequisite: Counseling majors or Instructor permission.
Credits: 1.00 to 8.00

EDCO 374 - **Counseling Theory & Practice**
Theoretical and practical approach to understanding the counseling process. Refinement of personal philosophy, theory of counseling, and implementation in practice. Prerequisite: Graduate standing or Instructor permission.
Credits: 3.00

EDCO 375 - **Lab Experience in Counseling**
Students learn and practice basic counseling skills and techniques. Videotaped practice sessions are supervised by course instructor. Prerequisite: EDCO 374. Counseling majors only.
Credits: 3.00

EDCO 376 - **Chem Dependency:Etiology&Trtmt**
Development (self, family, trauma) and resolution of chemical dependency. Cognitive-behavioral, psychoanalytic, systemic and eclectic orientations. Experiential psychotherapy technique and project required. Prerequisites Graduate standing or permission.
Credits: 3.00

EDCO 377 - **Diversity Issues in Counseling**
Students examine personal, cultural, political, and social factors affecting a diverse range of people with focus on developing appropriate and effective counseling skills. Prerequisite: Instructor permission.

Credits: 3.00

EDCO 378 - **Diagnose&Treat Plan/Child&Adol**

Etiology and diagnosis of mental disorders in children and adolescents according to DSM. Includes intake, evaluation, treatment planning, and clinical documentation skills. Prerequisite: Counseling majors or Instructor permission.
Credits: 3.00

EDCO 379 - **Diagnose&Treat Plan w/Adults**

Etiology and diagnosis of mental disorders in adults according to DMS. Includes intake, evaluation, treatment planning, and clinical documentation skills. Prerequisite: Counseling majors or Instructor permission.
Credits: 3.00

EDCO 381 - **Counsel/Career&Lifestyle Dev**

An exploration of the theories, assessment instruments, counseling techniques, and issues most relevant in counseling for career and lifestyle development. Prerequisite: EDCO 374, EDCO 375; Graduate standing or Instructor permission.
Credits: 3.00

EDCO 383 - **Mental Health Counseling Pract**

Introductory supervised experience in counseling in a mental health field setting. Includes 100 hours working as a counselor with a minimum of 40 hours of direct counseling experience. Prerequisite: Counseling majors or Instructor permission.
Credits: 1.00

EDCO 384 - **Intern:Mental Hlth Counseling**

Supervised counseling experience in a mental health counseling setting with direct client work. Prerequisite: Counseling majors or Instructor permission.
Credits: 3.00

EDCO 387 - **Therapeutic Psychopharmacology**

Introduction to neuroanatomy, neurophysiology, and pharmacology as they pertain to mental health counseling. Course also covers commonly prescribed medications, ethical issues and the referral process. Prerequisite: EDCO 360 or program permission.
Credits: 3.00

EDCO 388 - **Family Counseling: Systems**

Theory and process of counseling with families, including family theory and current family therapy orientations and intervention skills. Includes practice of counseling interventions. Prerequisites: 220, 374, permission.
Credits: 3.00

EDCO 389 - **Family Counseling:Interventns**

Supervised practice in family counseling. Prerequisites: 388, permission.
Credits: 3.00

EDCO 390 - **Advanced Counseling Seminar**

Analysis and practice of advanced counseling skills with focus on new developments. Emphasis on integration of theory and technique into a consistent counseling model. Prerequisites: EDCO 374, EDCO 375, and Instructor

permission.
Credits: 3.00

EDCO 391 - **Master's Thesis Research**

Thesis topic must be approved by a faculty committee.
Credits: 1.00 to 18.00

EDCO 392 - **Group Dynamics:Theory & Exp**

Encounter group experiences for prospective counselors providing increased awareness of self and models relating to others. Theory, practice of group dynamics. Prerequisites: Graduate standing and permission.
Credits: 3.00

EDCO 393 - **Adv Group Counseling**

Group leadership skills are developed, practiced, and refined through in-class experiences that focus on feedback exchange, group techniques, ethical issues, and group theory. Prerequisites: 220, 374, 375, 392 and permission.
Credits: 3.00

EDCO 394 - **Special Topics in Counseling**

Special issues in counseling, administration and planning, social work, higher education not appropriate to content of existing courses. Prerequisite: Instructor permission. Variable credit.
Credits: 3.00

EDCO 397 - **Independent Study**

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 3.00

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Courses in Higher Education (EDHI)

EDHI 055 - **Special Topics**
Credits: 3.00

EDHI 200 - **Contemporary Issues**
Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Prerequisite: Twelve hours in Education and related areas.
Credits: 3.00

EDHI 202 - **Human Rel in Univ Res Halls**
Emphasis on human relations, group dynamics, advising models, student development theory, organizational development, and contemporary student issues in a residential environment. Prerequisite: Residence hall staff. (Not offered for graduate credit.)
Credits: 1.00

EDHI 213 - **Ldr:Theories,Styles&Realities**
Introductory course in leadership development designed for student leaders. Includes study of planning, time management, organizational theory, communication skills, group process, team building. (Not offered for graduate credit.)
Credits: 2.00

EDHI 214 - **Adv Seminar in Leadership**
Focuses on student leaders' experiences and how those experiences relate to activities beyond the University setting.
Credits: 2.00

EDHI 297 - **Special Topics**
Learning modules may vary each semester as the need to address topics arises. Learning modules are five week classes.
Credits: 1.00

EDHI 319 - **Internship**
Students will undertake an approved internship in an institution which reflects the particular area of interest and needs of the student. Prerequisite: Instructor

permission.
Credits: 1.00 to 6.00

EDHI 332 - **Adult Development & Education**
Critical examination of research on adult learners in higher education, development theory, and reentry issues facing older students. Analysis and application of proposals for new adult-oriented educational programs.
Credits: 3.00

EDHI 360 - **Higher Education in America**
Critical, contemporary overview of the American university. Implications of conflicting value philosophies for theory, practice of higher education.
Credits: 3.00

EDHI 361 - **The (Un)Changing Academy**
This course examines the historical trends that have shaped higher education and the tensions around stability and change affecting colleges and universities. Prerequisite: Graduate standing.
Credits: 3.00

EDHI 362 - **The American College Student**
Examination of the diversity of college students today, and the developmental issues arising during the college experience.
Credits: 3.00

EDHI 375 - **Cultural Pluralism Higher Ed**
This course explores cultural pluralism philosophies, racial identity development, racial incidences, and educational practices related to racism and diversity for implementation in higher education. Prerequisite: Graduate standing.
Credits: 3.00

EDHI 380 - **Professional Problems in Educ**
Designed to cover selected educational problems in depth. The major emphasis will be on intensive and critical analysis of the literature and practice in a given area.
Credits: 3.00

EDHI 383 - **Higher Ed Admin & Organization**
Introduction to concepts of administration and organization as applied to contemporary higher education setting. Characteristics of organizations, dynamic elements of administration, and theories and processes of change.
Credits: 3.00

EDHI 385 - **Student Affairs Profession**
Overview of the work of the student affairs profession, including philosophical base, historical development, current practices, and future trends. Prerequisite: Enrollment open only to Higher Education and Student Affairs students.
Credits: 3.00

EDHI 387 - **Seminar in Higher Education**
Designed for graduate students concentrating in programs in Higher Education. Analysis and discussion of current issues and problems in higher education.

Credits: 3.00

EDHI 391 - **Master's Thesis Research**

Thesis topic must be approved by a faculty committee.
Credits: 3.00

EDHI 395 - **Lab Experience in Education**

Practica internships, offered in various University departments and offices, enable students to integrate conceptual knowledge with professional practices.
Prerequisite: Graduate standing in HESA.
Credits: 2.00

EDHI 396 - **Capstone:Eth,Val&Mean/High Ed**

An applied student affairs seminar featuring ethical problem-solving, appreciation of religious pluralism, and approaches to facilitating the search for moral and spiritual meaning in the American university.
Credits: 3.00

EDHI 397 - **Problems in Education**

Individual work on a research problem selected by the student in consultation with a staff member. Prerequisite: Twelve hours in education and related areas; endorsement by a sponsoring faculty member.
Credits: 3.00

EDHI 491 - **Doctoral Dissertation Research**

Credits: 1.00 to 12.00

Courses in Environmental Studies (ENVS)

ENVS 001 - Intro to Environmental Studies

Survey of environmental studies examining ecological, socioeconomic, aesthetic, and technological influences determining quality of life on earth. Prerequisite: First-year/Sophomore standing or Instructor permission.
Credits: 4.00

ENVS 002 - Internat'l Environmental Stds

A multidisciplinary analysis of the interaction of global and local variables in understanding and solving pervasive environmental problems. Prerequisite: First-year or sophomore standing.
Credits: 4.00

ENVS 007 - Environmental Awareness

Selected current environmental issues from evolving political, religious, scientific, and social perspectives. For non-majors. Cannot receive credit for both ENVS 001 and ENVS 007
Credits: 3.00

ENVS 095 - Special Topics

Introductory courses of current areas of interest which vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural areas management.
Credits: 4.00

ENVS 096 - Special Topics

Credits: 3.00

ENVS 100 - Environmental Theory

Comparative analysis of emerging concepts of human/environment relationships; the history, philosophy, and theoretical framework of environmental studies. Prerequisites: 1,2.
Credits: 3.00

ENVS 151 - Intermed Environmental Studies

Individual investigation of interdisciplinary areas of environmental studies with emphasis on academic and career choices and preparation for senior

thesis/project. Prerequisites: Major in Environmental Studies; 1, 2; permission.
Credits: 3.00

ENVS 152 - **Environment Information Skills**

This course focuses on the complexities of conducting environmental research in a networked information age by teaching information concepts, skills, and broad ranging resources. Prerequisite: ENVS 151, or concurrently enrolled in ENVS 151.
Credits: 1.00

ENVS 156 - **Permaculture**

Cross-listed with: PSS 156. Design of agriculturally productive environments that have the diversity, stability, and resilience of the natural biosphere to harmoniously integrate landscape and people. Prerequisite: Three hours basic biological or ecological science, or permission.
Credits: 3.00

ENVS 173 - **Landscape Natural History**

This field-based course examines patterns and processes on local landscapes from an interdisciplinary perspective, with an emphasis on geology, soil science, plant ecology, and ecosystem geography. Prerequisites: ENVS 001; Sophomore standing.
Credits: 3.00

ENVS 174 - **Nat Areas Conservation&Steward**

Examines land protection and stewardship efforts of conservation organizations and public agencies. Builds on principles of conservation biology to understand issues in conserving and managing natural areas. Prerequisites: ENVS 001, NR 001, or Instructor permission.
Credits: 3.00

ENVS 177 - **Intro to Landscape Restoration**

Introduction to the history, philosophical foundations, and approaches to restoration of natural landscapes damaged by human activity and neglect. Case studies of selected local sites. Prerequisite: ENVS 001, NR 001, or Instructor permission.
Credits: 3.00

ENVS 178 - **Environmental Ethics**

Current approaches and problems in environmental ethics drawing on philosophy and case studies in animal rights, land ethics, deep ecology, wilderness protection, and human rights. Prerequisite: One environmental course; Junior standing.
Credits: 3.00

ENVS 179 - **Ecofeminism**

(Cross-listed with Women's Studies 179.) Investigation of the parallel dominations of women and nature, through analysis and reflection on ecofeminist theory, activism, and spirituality. Prerequisites: ENVS 001, ENVS 002 or WST 073, sophomore standing.
Credits: 3.00

ENVS 180 - **Radical Environmentalism**

Survey of radical environmental philosophy and activism from a liberation ethics perspective. Includes deep ecology, ecofeminism, environmental justice, and ecological resistance movements around the world. Prerequisite: ENVS 001, ENVS 002; Sophomore standing.
Credits: 3.00

ENVS 181 - **Strategic Environmental Ldshrp**

Theory and analysis of strategic environmental leadership as it varies with culture, ethnicity, and gender. Prerequisites: 1, 2, junior standing, permission of instructor.
Credits: 3.00

ENVS 182 - **Religion and Ecology**

Exploration of the greening of major world religious traditions in both practice and philosophy. Includes institutional, activist, and lifestyle initiatives in ecological spirituality. Prerequisites: ENVS 001 or ENVS 002; or NR 002, REL 020 or REL 021 preferred; Sophomore standing.
Credits: 3.00

ENVS 190 - **Environmental Skills**

Workshops to develop applied skills useful for environmental work and/or research. Topics vary by semester. Prerequisite: ENVS 001, ENVS 002.
Credits: 3.00

ENVS 191 - **Environmental Practicum**

Individual readings and research, internship, or field-based learning experience under direction of a faculty member or environmental practitioner. Credit arranged. Prerequisite: Permission of course coordinator.
Credits: 1.00

ENVS 195 - **Special Topics**

Intermediate courses of current areas of interest which vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. Prerequisite: One environmental course; Sophomore standing.
Credits: 6.00

ENVS 196 - **Special Topics**

Intermediate courses of current areas of interest which vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. Prerequisite: One environmental course; Sophomore standing.
Credits: 3.00

ENVS 197 - **Student Designed Course**

Course Student-taught courses beyond the scope of existing formal courses in environmental studies. Developed according to Program guidelines, with sponsorship by interested faculty. Prerequisites: 1, 2, permission.
Credits: 3.00

ENVS 201 - **Research Methods**

Planning, design, and methods for the required senior thesis or project. Includes

literature review and proposal writing. Prerequisites: 151, junior standing. (Not offered for graduate credit.)
Credits: 3.00

ENVS 202 - **Senior Project and Thesis**
Senior level project or thesis under faculty direction. Prerequisites: 201, permission of Environmental Program. Credits arranged. (Not offered for graduate credit.)
Credits: 6.00

ENVS 203 - **Honors Thesis**
Undergraduates only.
Credits: 1.00 to 9.00

ENVS 204 - **Seminar Environmental Studies**
Review and discussion of current environmental research and literature. Prerequisites: 1, 2, junior or senior standing. (Not offered for graduate credit.)
Credits: 3.00

ENVS 284 - **Teaching Assistantship**
Students gain practical teaching experience through assisting with instruction, evaluation, and reflection. Tasks may include: leading discussion sessions, grading, and developing course materials. Prerequisites: Senior standing or permission of instructor, concurrent teaching assistant in ENVS course. Variable credit. May be repeated. UG only.
Credits: 1.00 to 2.00

ENVS 289 - **Environmental Economics**
Application of economic theory and methods to environmental problems and policies. Includes cost-benefit analysis and economic incentives as tools for environmental problem solving. Prerequisites: 1, three hours intermediate economics. For students in Arts and Sciences: Economics 11-12, intermediate course in ENVS. UG only.
Credits: 3.00

ENVS 290 - **Environmental Policy**
Public policy dimensions of natural resource management and environmental protection; U.S. historical context; policy analyses of contemporary issues; administration of environmental resource institutions. Prerequisites: Six hours of intermediate or advanced courses in ENVS or related areas. UG only.
Credits: 3.00

ENVS 291 - **Advanced Environmental Pract**
Individual readings and research, internship, or field-based learning experience at the advanced level, under direction of faculty member or environmental practitioner. Prerequisite: ENVS 001, ENVS 002; Senior/Graduate standing.
Credits: 3.00

ENVS 293 - **Environmental Law**
Principles of environmental law, including legal research methods, threshold issues, case law, trial procedure, and international comparisons in aspects of air,

land, and water law. Prerequisite: Junior standing.
Credits: 3.00

ENVS 294 - **Environmental Education**

Philosophy, concepts, and strategies of environmental education, emphasizing integration of environmental concerns into formal and nonformal educational programs for youth and adults. Prerequisite: Six hours of intermediate or advanced courses in Environmental Studies or related areas.
Credits: 3.00

ENVS 295 - **Advanced Special Topics**

Advanced courses of current areas of interest which may vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. Prerequisite: One environmental course at 100 level; Junior standing.
Credits: 6.00

ENVS 296 - **Advanced Special Topics**

Advanced courses of current areas of interest which may vary each semester. Topics have included environmental health, energy, regional planning, international studies, literature, ethics, and natural area management. Prerequisites: One environmental course at 100 level, junior standing. UG only.
Credits: 4.00

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Courses in Graduate (GRAD)

GRAD 353 - **Medical Cell & Molecular Biol**
Credits: 4.00

GRAD 354 - **Medical Human Structure & Func**
Credits: 8.00

GRAD 385 - **Master's Language Examination**
Required for all master's degree students during semester in which examination will be completed.
Credits: 0.00

GRAD 395 - **Advanced Special Topics**
Credits: 1.00

GRAD 397 - **Master's Comprehensive Exam**
Required for all master's degree students during semester in which comprehensive will be completed.
Credits: 0.00

GRAD 399 - **Thesis Defense**
Required for all master's degree candidates during semester in which defense is scheduled.
Credits: 0.00

GRAD 485 - **Doctoral Language Examination**
Required for all doctoral degree students during semester in which examination will be completed.
Credits: 0.00

GRAD 497 - **Doctoral Comprehensive Exam**
Required for all doctoral degree students during semester in which comprehensive will be completed.
Credits: 0.00

GRAD 499 - **Dissertation Defense**
Required for all doctoral degree candidates during semester in which defense is scheduled.
Credits: 0.00

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Courses in Human Development & Fam Stdies (HDFS)

HDFS 001 - Int Hum Dev&Fam Std&Acad Serv

Seminar designed to introduce concepts and practices of Human Development and Family Studies through integrating academic service-learning in developmental settings with critical thinking about development. Prerequisite: Majors only.

Credits: 4.00

HDFS 005 - Human Development

A comprehensive survey of life span individual and family development within social and historical context.

Credits: 3.00

HDFS 020 - Aging:Change & Adaptation

Individual and social meanings of aging and old age; physical, physiological, psychological, and sociological changes accompanying aging; individual, family, community, and societal adaptations to aging. Cross-listed with NURS 020 and SOC 020.

Credits: 3.00

HDFS 055 - Special Topics I

Credits: 6.00

HDFS 060 - Family Context of Development

Developmental ecological approach to analysis of the family as a system in which individuals develop.

Credits: 3.00

HDFS 065 - Human Relationships&Sexuality

Sexual responsibility and the biological, social, psychological growth, and development of human beings in terms of sex role identity.

Credits: 3.00

HDFS 152 - Biology of Aging

Cross-listed with: NURS 100.

Credits: 3.00

HDFS 161 - Social Context of Development

Developmental ecological approach to analysis of social institutions as influences on human development. Focus on education, community, health care, and social services. Pre/co-requisite: HDFS 060.
Credits: 3.00

HDFS 167 - **Sexual Identities**
Exploration of diverse lesbian, gay, bisexual, and/or transgender identities, families, and communities, and their current personal, social, and cultural meanings and contexts. Prerequisites: Three hours in Human Development or related field; sophomore standing.
Credits: 3.00

HDFS 195 - **Special Topics**
Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. Prerequisite: Varies with course.
Credits: 3.00

HDFS 197 - **Readings & Research**
Credits: 3.00

HDFS 200 - **Contemporary Issues**
Undergraduates only.
Credits: 3.00

HDFS 260 - **Family Ecosystem**
Family viewed in and as an environment for human development. The family ecological approach applied to practical family concerns. Prerequisites: Senior standing or instructor's permission.
Credits: 3.00

HDFS 263 - **Advanced Child Development**
Survey of professional literature in child development with special emphasis on influence of early life experiences throughout the life cycle.
Credits: 3.00

HDFS 264 - **Contemporary Issues Parenting**
Contemporary cultural factors that influence adult lifestyles and their relationship to successful parenting. Prerequisites: Nine hours in Human Development or instructor's permission. May be taken more than once.
Credits: 3.00

HDFS 266 - **Seminar in Human Development**
Intensive study of issues in human development and their application in a wide variety of professional areas. May be taken more than once up to a maximum of 12 hours. Prerequisite: Junior standing; nine hours in Human Development & Family Studies or Instructor permission.
Credits: 3.00

HDFS 267 - **Adv Seminar Sexual Identities**
Intensive study of lesbian, gay, bisexual, and/or transgender identities, families, and communities in diverse individual, social, political, and cultural contexts.

Prerequisite: Junior standing; nine hours in Human Development & Family Studies or Instructor permission.
Credits: 3.00

HDFS 268 - **Sem In Close Relationships**

Causal conditions influencing formation, maintenance, and dissolution of intimate adult relationships. Draws on theory and students' personal experiences to explicate the nature of close relationships in contemporary American society. Prerequisite: Junior standing; nine hours in Human Development & Family Studies or Instructor permission. Offered in alternate years.
Credits: 3.00

HDFS 291 - **Special Problems**

Reading, discussion, and special field and/or laboratory investigations. Prerequisite: Department permission. Students may enroll more than once up to twelve hours.
Credits: 1.00 to 6.00

HDFS 295 - **Special Topics**

Lectures, laboratories, readings, or projects relating to contemporary areas of study. Enrollment may be more than once, accumulation up to 12 hours. Prerequisite: Departmental permission.
Credits: 3.00

HDFS 296 - **Field Experience**

Professionally-oriented field experience under joint supervision by faculty and community representative, credit arranged up to 15 hours. Prerequisite: Department permission.
Credits: 6.00

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Courses in Humanities (HUMN)

HUMN 095 - **Special Topics**
Credits: 4.00

HUMN 096 - **Special Topics**
Credits: 3.00

HUMN 195 - **Special Topics**
Intermediate courses or seminars on topics beyond the scope of existing offerings. See Schedule of Courses for specific titles.
Credits: 3.00

HUMN 196 - **Special Topics**
Credits: 5.00

HUMN 295 - **Advanced Special Topics**
Credits: 3.00

HUMN 300 - **Modern Literary Theory**
A survey of modern literary theory, including Slavic and Anglo-American formalism, marxism, feminism, structuralism, hermeneutics, deconstruction, and new historicism. Prerequisites: Graduate standing at UVM; or an A.B. in some humanities discipline; Insturctor permission. Alternate years.
Credits: 3.00

HUMN 301 - **Humanities Graduate Seminar**
Varying interdisciplinary topics for humanities graduate students. Prerequisites: Graduate standing at UVM; or an A.B. in some humanities discipline; Instructor permission.
Credits: 3.00

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Courses in Molecular Physiology & Biophys (MPBP)

MPBP 191 - **Undergraduate Research**

Individual laboratory research under guidance of faculty member. Prerequisite: Department permission.
Credits: 3.00 or 6.00

MPBP 201 - **Human Physiology & Exercise**

A comprehensive, in-depth presentation of the scientific basis of human function. Primarily for Physical Therapy students; a limited number of others may be admitted with permission. Prerequisites: Chemistry 23 and 42 or equivalent, two semesters general physics, one semester mathematics, permission. UG only.
Credits: 3.00

MPBP 202 - **Human Physiology & Exercise**

A comprehensive, in-depth presentation of the scientific basis of human function. Primarily for Physical Therapy students; a limited number of others may be admitted with permission. Prerequisites: Chemistry 23 and 42 or equivalent, two semesters general physics, one semester mathematics, permission. UG only.
Credits: 3.00

MPBP 301 - **Medical Physiology**

Function in the whole human organism, and at the cellular, tissue, and organ levels, considered biologically and physically. Prerequisite: Permission of department chair.
Credits: 8.00

MPBP 302 - **Neuroscience**

A correlated presentation of the neuroanatomy and neurophysiology of mammalian CNS. Same course as Anatomy 302. Prerequisite: Permission. Anatomy and Physiology staff.
Credits: 4.00

MPBP 303 - **Special Topics**

Topics of current interest to the individual faculty will be covered in depth during individual, 6-week long minicourses of one credit hour each, offered in succession throughout the calendar year. Each topic will be repeated approximately every two years. Format will include lectures, reports, and directed readings. Prerequisites:

301; permission of individual faculty.
Credits: 1.00

MPBP 308 - **Biometrics & Applied Statistic**
Introduction to the rational use and evaluation of statistical methods in planning experiments and interpreting biological data. Biometrics laboratory included. Course limited to 12 students. Prerequisites: Math. 110 or equivalent, and permission. Fall.
Credits: 5.00

MPBP 310 - **Molecular Basis Biol Motility**
Molecular basis of muscle contraction, and cellular motility. Topics include: muscle energetics and mechanics, biochemistry of motility, and regulation of contractile proteins. Lectures and conferences. Prerequisites: MPBP 301; BIOC 301, BIOC 302; Instructor permission. Alternate years.
Credits: 3.00

MPBP 323 - **Prin&Elem Biomed Instrumntatn**
Laboratory skills for modern molecular physiology. Topics: basic electrophysics; transducers; molecular concepts and manipulation; the computer as a laboratory instrument. Lectures and laboratory. Prerequisite: Permission. Alternate years.
Credits: 4.00

MPBP 381 - **Seminar**
Presentation and discussion by advanced students, staff, and invited speakers, of current topics in physiology. No credit will be given, but students are expected to participate.
Credits: 1.00

MPBP 391 - **Master's Thesis Research**
Credits: 1.00 to 18.00

MPBP 491 - **Doctoral Dissertation Research**
Credits: 1.00 to 18.00

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Courses in Music (MUS)

MUS 001 - **Intro Music Listening**
A concise view of Western music from plainsong to the present. Involves both classroom and outside listening. Non-majors only.
Credits: 3.00

MUS 002 - **Intro to Performance Study**
Group lessons at elementary level in various instruments and voice. Lab fee. May be repeated for credit.
Credits: 1.00

MUS 003 - **Intro Music Theory**
Rudiments of notation, rhythm, melody, harmony, scales, form, and terminology. Non-majors only.
Credits: 3.00

MUS 004 - **The Experience of Music**
Explores the phenomenon "music" through aural examination of its composite elements: melody, rhythm, harmony, texture, form. Musical examples drawn from Western and non-Western folk, art, and popular musical repertories. Prerequisite: Nonmajors only.
Credits: 3.00

MUS 005 - **Performance Study**
Group lessons in piano. Prerequisites: Ability to read music or proficiency on another instrument or voice.
Credits: 1.00

MUS 006 - **Performance Study**
Group lessons in piano. Prerequisites: Ability to read music or proficiency on another instrument or voice.
Credits: 1.00

MUS 007 - **Performance Study**
Group lessons in piano. Prerequisites: Ability to read music or proficiency on another instrument or voice.
Credits: 1.00

MUS 008 - **Performance Study**

Group lessons in piano. Prerequisites: Ability to read music or proficiency on another instrument or voice.
Credits: 1.00

MUS 011 - **Survey of Western Music**

Historical study of development of Western music. First semester: Earliest times through the baroque. Second semester: Classical period to the present. Involves both classroom and outside listening.
Credits: 3.00

MUS 012 - **Survey of Western Music**

Historical study of development of Western music. First semester: Earliest times through the baroque. Second semester: Classical period to the present. Involves both
Credits: 3.00

MUS 015 - **World Music Cultures**

Survey of non-Western and non-European music primarily of the geographic areas of Australia, Indonesia, China, Japan, India, Black Africa, and Native American Indians.
Credits: 3.00

MUS 031 - **Basic Musicianship**

Study of melody and elementary harmony, melodic and rhythmic dictation, sight singing. Prerequisites: Basic piano facility or concurrent enrollment in Music 5-6, Group Piano; 31 for 32 or instructor's permission.
Credits: 3.00

MUS 032 - **Basic Musicianship**

Study of melody and elementary harmony, melodic and rhythmic dictation, sight singing. Prerequisites: Basic piano facility or concurrent enrollment in Music 5-6, Group Piano; 31 for 32 or instructor's permission.
Credits: 3.00

MUS 041 - **Basic Electronic Music**

Emphasis on understanding and working with digital electronic sounds through MIDI, using synthesizers, computers, sequencing software and tape recorders, including a history of electronic music. Prerequisite: Basic music literacy.
Credits: 3.00

MUS 042 - **History of Jazz**

Survey of New Orleans, Chicago, Swing, bebop, cool, funky, and free jazz styles through the work of important soloists and bands, 1915-1965.
Credits: 3.00

MUS 044 - **The Blues & Related Traditions**

Survey of performers, musical procedures, technical means, and traditional lyrics of songsters, jug bands, gospel, barrel house piano, and important blues styles to about 1955.
Credits: 3.00

MUS 051 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00 to 2.00

MUS 052 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 053 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 054 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 055 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 056 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 057 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 058 - **Private Lessons**

Private instruction in an instrument or voice for nonmajors. Subject to availability of staff. Lab fee required. Contact department office for placement. Not open for credit to music majors or minors.
Credits: 1.00

MUS 081 - **Brass Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.

Credits: 1.00

MUS 082 - **Brass Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 083 - **String Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 084 - **String Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 085 - **Voice Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 088 - **Woodwind Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 089 - **Percussion Class**

Pedagogy Classes Primarily for Education majors; others accepted with departmental permission.
Credits: 1.00

MUS 095 - **Special Topics**

Credits: 3.00

MUS 096 - **Special Topics**

Credits: 3.00

MUS 112 - **Contemporary Music**

Development and style characteristics of 20th century music from the late romanticists to the experimentalists. Both European and American composers presented. Prerequisites: 1, 3, 11, 12, or permission, ability to read music. Offered in alternate years.
Credits: 3.00

MUS 113 - **Medieval, Renaissance**

Chronological, analytical study of music literature from approximately 600-1600: Gregorian chant, Notre Dame, Burgundian, English, and Netherlands schools. Prerequisites: 1, 3, 11, 12, or permission, ability to read music. Offered in alternate years.
Credits: 3.00

MUS 114 - **Baroque Music**

Chronological, analytical study of music literature from approximately 1600-1750: Roman and Venetian schools, beginnings of opera, culminating in works of Handel and J.S. Bach. Prerequisites: 1, 3, 11, 12, or permission, ability to read music. Offered in alternate years.
Credits: 3.00

MUS 115 - **Genre or Specific Area Courses**
American music; ethnomusicology. Prerequisites: Three hours from 1, 3, 4, 11, 12, or permission.
Credits: 3.00

MUS 123 - **Theory&Practice Jazz Improv I**
Repertoire, idiomatic usage, aural skills, theoretical constructs, and strategies for the jazz improvisor. Prerequisites: Intermediate instrumental skill, ability to read music, previous study of traditional music theory.
Credits: 3.00

MUS 131 - **Int Theory:Music of Tonal Era**
Era Contrapuntal and harmonic dictation; counterpoint, harmony, and form analysis. Prerequisites: 31, 32; 131 for 132, or instructor's permission. Concurrent enrollment in 133, 134.
Credits: 3.00

MUS 132 - **Int Theory:Music of Tonal Era**
Era Contrapuntal and harmonic dictation; counterpoint, harmony, and form analysis. Prerequisites: 31, 32; 131 for 132, or instructor's permission. Concurrent enrollment in 133, 134.
Credits: 3.00

MUS 133 - **Intermediate Theory Lab**
Sight singing, keyboard, score reading. Concurrent enrollment in 131, 132.
Credits: 1.00

MUS 134 - **Intermediate Theory Lab**
Sight singing, keyboard, score reading. Concurrent enrollment in 131, 132.
Credits: 1.00

MUS 151 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00

MUS 152 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 153 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 154 - **Private Lessons**

Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 155 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 156 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 157 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 158 - **Private Lessons**
Private instruction in an instrument or voice for music majors and minors at the first-year and sophomore levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 161 - **Band**
Large Ensembles Attendance at all rehearsals and public performances is required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 162 - **Choir**
Large Ensembles Attendance at all rehearsals and public performances is required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 163 - **Choral Union**
Large Ensembles Attendance at all rehearsals and public performances is required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 164 - **Orchestra**
Large Ensembles Attendance at all rehearsals and public performances is required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 165 - **Vermont Wind Ensemble**
Prerequisite: Concurrent enrollment in 161.
Credits: 1.00

MUS 171 - **Accompanying**
Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 174 - **Catamount Singers**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 175 - **Opera Workshop**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 176 - **Percussion Ensemble**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 177 - **Small Ensemble**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 178 - **Jazz Ensemble**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 179 - **Trombone Choir**

Small Ensembles Study and performance of masterworks for small groups. Attendance at all rehearsals and public performances required. Outside practice required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 181 - **Music for Elementary Teachers**

Development of musical skills, understandings, and attitudes pertinent to teaching of music in elementary classroom. Prerequisite: Junior standing.
Credits: 3.00

MUS 195 - **Special Topics**

Prerequisites: Junior or senior standing; Music 11, 12, 131, 132, 133, 134.
Credits: 3.00

MUS 196 - **Special Topics**

Prerequisites: Junior or senior standing; Music 11, 12, 131, 132, 133, 134.
Credits: 3.00

MUS 214 - **Seminar in Music Literature**

Seminars will treat in detail topics surveyed in intermediate level music literature sequence. Subject matter determined by instructor. Prerequisites: 11, 12; 111 for

211, 112 for 212, 113 for 213, 114 for 214; 115 for 215. Offered on irregular basis as required by major enrollment.
Credits: 3.00

MUS 215 - **Seminar in Music Literature**
Seminars will treat in detail topics surveyed in intermediate level music literature sequence. Subject matter determined by instructor. Prerequisites: 11, 12; 111 for 211, 112 for 212, 113 for 213, 114 for 214; 115 for 215. Offered on irregular basis as required by major enrollment.
Credits: 3.00

MUS 231 - **Adv Theory:20th Century Music**
Techniques and form analysis of post-tonal contemporary music. Prerequisites: 132, 134, or instructor's permission.
Credits: 3.00

MUS 232 - **Adv Theory: Counterpoint**
Analysis of contrapuntal forms and techniques. Music principally of 16th-18th centuries. Prerequisites: 132, 134, or instructor's permission.
Credits: 3.00

MUS 233 - **Arranging**
Characteristics of instruments; arranging for ensembles. Prerequisite: 132 or instructor's permission.
Credits: 3.00

MUS 234 - **Orchestration**
Studies in orchestral scoring. Prerequisite: 233 or instructor's permission.
Credits: 3.00

MUS 235 - **Fugal Composition**
Study of representative baroque, classical, and contemporary fugal procedures through analysis and composition. Prerequisites: 231 or instructor's permission.
Credits: 3.00

MUS 237 - **Composition**
Creative work in free composition with instruction according to needs and capabilities of individual student. Prerequisite: 231, 235, or instructor's permission. May be repeated for credit.
Credits: 3.00

MUS 238 - **Composition**
Creative work in free composition with instruction according to needs and capabilities of individual student. Prerequisite: 231, 235, or instructor's permission. May be repeated for credit.
Credits: 3.00

MUS 240 - **Seminar:Musical Analysis**
Advanced study of musical forms. Comparison of standard approaches to harmonic, motivic, and rhythmic analysis. Prerequisites: 235, instructor's permission.
Credits: 3.00

MUS 241 - **Senior Project in Music Theory**

Advanced study focusing on a theoretical topic under direction of assigned staff member. Prerequisite: Senior standing as Theory major.
Credits: 3.00

MUS 251 - **Private Lessons**

Private instruction in an instrument or voice for majors at junior and senior levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 252 - **Private Lessons**

Private instruction in an instrument or voice for majors at junior and senior levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 253 - **Private Lessons**

Private instruction in an instrument or voice for majors at junior and senior levels. Lab fee required.
Credits: 1.00 to 4.00

MUS 256 - **Perform Study:Senior Recital**

Private instruction in voice or an instrument in the semester of senior recital. Lab fee required.
Credits: 1.00 to 5.00

MUS 257 - **Performance Pedagogy**

Methods of teaching voice, strings, woodwinds, brass, percussion, or keyboard instruments including repertoire suitable for use at various levels of ability. Significant literature of all historical periods in major field. Prerequisites: Senior standing in performance, consent of instructor. (Not offered for graduate credit.)
Credits: 3.00

MUS 259 - **Conducting**

Technique of the baton, score reading, laboratory practice. Preparation and performance of selected scores, including rehearsal procedures. Selected students may conduct University major ensembles. Prerequisites: 132, 134.
Credits: 3.00

MUS 265 - **Vermont Wind Ensemble**

Study and performance of masterworks for wind ensemble and concert band. Attendance at all rehearsals and concerts required. Prerequisite: Audition. May be repeated for credit.
Credits: 1.00

MUS 281 - **Elem Music Ed Methods**

(Same as Education EDMU 281). Prerequisite: Junior standing in Music Education.
Credits: 3.00

MUS 282 - **Sec Music Ed Methods**

Methods and materials in the teaching of vocal and instrumental music in secondary schools. Five hours classroom observation per week required.

Prerequisite: Junior standing in Music Education.
Credits: 3.00

MUS 295 - **Special Topics**

UG only.
Credits: 3.00

MUS 297 - **Advanced Readings & Research**

Studies in comparison or related special topic under direction of assigned staff member.
Credits: 3.00

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Courses in Recreation Management (RM)

RM 001 - **Intro to Recreation Management**

Introduction to the broad field of outdoor recreation and tourism, including history, philosophy, current issues, career opportunities, and the Recreation Management Program.
Credits: 1.00

RM 030 - **US National Parks**

The natural beauty and unique phenomena of our National Parks are emphasized. Historical development and current problems are cited. Credit not granted for both 30 and Natural Resources 2.
Credits: 3.00

RM 050 - **Tourism Planning**

Examination of tourism including its economic, environmental, and social effects. Emphasis on planning to maintain the integrity of tourist regions.
Credits: 3.00

RM 138 - **Park & Recreation Design**

Recreation design methodology applied to the design of public and private recreational facilities.
Credits: 4.00

RM 152 - **Forest Resource Values**

Cross-listed with Forestry 152.
Credits: 3.00

RM 153 - **Recreation Admin & Operations**

Administration and operation of outdoor recreation agencies and businesses. Special emphasis on recreation administrative structures, personnel management, and maintenance of parks and outdoor recreation areas. Prerequisites: Junior or senior standing.
Credits: 3.00

RM 157 - **Ski Area Management**

An analysis of current management problems affecting private ski areas in Vermont and the Northeast. Prerequisites: Junior or senior standing. Alternate

years.
Credits: 4.00

RM 158 - **Resort Mgmt & Marketing**

Study of the management of year-round resort facilities. Emphasis on resort marketing, internal support functions, and associated recreational facilities. Prerequisites: Junior or senior standing.
Credits: 3.00

RM 160 - **Parks & People I**

A Living/Learning Center Program. Consideration of impacts of recreation on the environment. Discussion of the operation of the Vermont State Park System. Credit for 160 will not be granted until 161 has been successfully completed.
Credits: 1.00

RM 161 - **Parks & People II**

A Living/Learning Center Program. Consideration of impacts of recreation on the environment. Discussion of the operation of the Vermont State Park System. Credit for 160 will not be granted until 161 has been successfully completed.
Credits: 1.50

RM 188 - **Special Topics**

Independent study. Prerequisites: Junior standing, permission.
Credits: 3.00

RM 191 - **Rec Management Practicum**

Supervised field experience in national, state, urban, or private park and recreation operations. Prerequisite: Junior or senior standing in Recreation Management.
Credits: 1.00 to 6.00

RM 230 - **Ecotourism**

Study of nature-based travel emphasizing international destinations. Examination of ecotourism as a tool for preservation and economic development. Prerequisites: Junior or senior standing (Not offered for graduate credit.)
Credits: 3.00

RM 235 - **Outdoor Recreation Planning**

Planning large land areas for outdoor recreation use. Emphasis on the planning process relative to the leisure time use of natural resources. Prerequisites: Advanced standing in Recreation Management or permission. UG only.
Credits: 4.00

RM 240 - **Park and Wilderness Management**

History, philosophy, and management of wilderness, national parks, and related areas. Prerequisite: Junior or senior standing in Recreation Management.
Credits: 3.00

RM 255 - **Environmental Interpretation**

Philosophy, principles, and techniques of communicating environmental values, natural history processes, and cultural features to recreation visitors through the use of interpretive media. Prerequisite: Advanced standing in Recreation Management or permission.

Credits: 4.00

RM 258 - **Entrepreneurship Rec&Tourism**

Study of entrepreneurial theories, concepts, and practices and their application to recreation and tourism. Emphasis on preparation of individual business plans. Prerequisites: Junior or senior standing in Recreation Management or permission. (Not offered for graduate credit.)
Credits: 3.00

RM 299 - **Recreation Management Honors**

Honors project dealing with management of outdoor recreation and tourism. Prerequisite: By application only; see program chair. UG only.
Credits: 3.00

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Courses in Water Resources (WR)

WR 391 - Master Thesis Rsch

Credit as arranged.

Credits: 1.00 to 12.00

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Courses in Obstetrics & Gynecology (OBGY)

OBGY 295 - Special Topics

Lectures, readings and discussion for advanced students within areas of expertise of faculty and staff. Prerequisite: Permission of the Instructor.
Credits: 3.00

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Courses in Orthopedic Surgery (ORTH)

ORTH 291 - **Rsch in Orth & Rehab**

Work on research problem under the direction of a faculty member. Review of literature, preparation of manuscript. Prerequisite: Instructor Permission. In collaboration with clinical faculty of the Department.
Credits: 3.00

ORTH 292 - **Special Topics:Orthopaedics**

Work on research problem under the direction of a faculty member. Review of literature, preparation of manuscript. Prerequisite: Instructor Permission. In collaboration with clinical faculty of the Department.
Credits: 3.00

ORTH 382 - **Rdgs & Rsch:Musc Biomechanics**

Intended for Graduate Students doing thesis or dissertation work in biomechanics. Class will meet to discuss current journal articles and literature reviews prepared by students. Prerequisite: Instructor Permission.
Credits: 1.00

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Courses in Philosophy (PHIL)

PHIL 001 - **Intro Phil: Selected Problems**
Introduction to philosophy through such fundamental problems as the existence of God, the basis of morality, and the possibility of knowledge. Contemporary and historical readings. Credit not given for more than one of 1, 3, and 4.
Credits: 3.00

PHIL 003 - **Intro Philosophy: East & West**
Introduction to the historical dialetic of philosophy by comparisons and contrasts between Chinese and Western traditions of philosophy. Credit not given for more than one of 1, 3, and 4. Offered every semester.
Credits: 3.00

PHIL 004 - **Intro to Philosophy: Ethics**
Introduction to philosophy through an analysis of the principal problems and theories of ethics. Credit not given for more than one of 1, 3, and 4.Offered every semester.
Credits: 3.00

PHIL 013 - **Introduction to Logic**
Study of the basic principles of deductive inference.
Credits: 3.00

PHIL 095 - **Special Topics**
See Schedule of Courses for specific titles.
Credits: 3.00

PHIL 096 - **Special Topics**
See Schedule of Courses for specific titles.
Credits: 3.00

PHIL 101 - **History of Ancient Philosophy**
Study of the works of the Pre-Socratics, Plato, Aristotle, and their successors.
Prerequisite: 1, 3, 4, 95, 96. Fall.
Credits: 3.00

PHIL 102 - **History of Modern Philosophy**
Study of works of the major philosophers of the 17th and 18th centuries:

Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant, and others. Prerequisite: 1, 3, 4, 95, 96.Spring.
Credits: 3.00

PHIL 108 - **Plato**
(See Classics 161.) Prerequisites: 1 course in Philosophy or in Classics (Greek Culture or Greek).
Credits: 3.00

PHIL 110 - **Nature of Mind**
Examination of philosophical issues raised by influential psychological views of the nature of the human mind. Prerequisite: PHIL 001, PHIL 003, PHIL 004, PHIL 095, PHIL 096, or one course in Psychology. Fall.
Credits: 3.00

PHIL 112 - **Philosophy of Science**
Introduction to major philosophical problems raised by science. Typical topics: the nature of scientific inference, the structure of theories, causation, explanation, and scientific change. Prerequisite: One course in philosophy or one course in history of science or six hours in any natural science. Fall.
Credits: 3.00

PHIL 121 - **Chinese Philosophy I**
Study of the Classical Schools of Chinese thought, including Confucianism, Taoism, Mohism, and Legalism. Prerequisite: One course in philosophy, religion, or Asian studies. Offered two out of every three semesters.
Credits: 3.00

PHIL 130 - **Phil Foundations of Education**
Critical examination of the aims of education and the most appropriate means of achieving those aims. Readings from historical and contemporary sources. Prerequisite: 1, 3, 4, 95, 96. Alternate years.
Credits: 3.00

PHIL 133 - **Marxism**
Survey of the philosophy of Karl Marx and the Marxist tradition on such topics as historical materialism, human nature, alienation, freedom, social change, and revolution. Prerequisite: PHIL 001, PHIL 003, PHIL 004, PHIL 095, PHIL 096. Alternate years.
Credits: 3.00

PHIL 135 - **Philosophy of Religion**
Typical topics: the nature of religion, the concept of God, the grounds for belief in God, mortality, truth, and revelation. Historical and contemporary sources. Prerequisite: 1, 3, 4, 95, 96. Offered once a year.
Credits: 3.00

PHIL 140 - **Social & Political Philosophy**
Analysis of such fundamental theories and problems in social and political thought as political obligation, rights, and justice. Prerequisite: 1, 3, 4, 95, 96. Offered once a year.

Credits: 3.00

PHIL 142 - **Philosophy of Law I**

(Same as Political Science 143.) Analysis of the nature of law, the relation between law and morality, obligation to obey the law, the judicial decision, responsibility in law, legal ethics. Prerequisite: 1, 3, 4, 95, 96 or Political Science 41. Offered once a year. (Political Science).
Credits: 3.00

PHIL 143 - **Philosophy of Law II**

(Same as Political Science 144.) Problems of liberty, e.g. freedom of expression, privacy, paternalism; scope and limits of the criminal law; philosophy of punishment; selected problems in criminal justice, e.g. plea bargaining; preventive detention. Prerequisite: 1, 3, 4, 95, 96 or Political Science 41. Offered once a year. (Political Science).
Credits: 3.00

PHIL 144 - **Philosophical Prob Medicine**

Critical and intensive examination of such problems as abortion, euthanasia, dying and death, the ethics of organ transplantation, and the ethics of genetic engineering. Prerequisite: 1, 3, 4, 95, 96. . Offered once a year.
Credits: 3.00

PHIL 151 - **Phil Ideas in Literature**

Philosophical themes as exemplified in literature. Prerequisite: 1, 3, 4, 95, 96. Alternate years.
Credits: 3.00

PHIL 152 - **Philosophy of Art**

A consideration of some leading theories of art, and their application to problems of art as they appear in music, literature, painting, and in the general criticism of the arts. Prerequisite: 1, 3, 4, 95, 96. Offered once a year.
Credits: 3.00

PHIL 153 - **Philosophy and Film**

An examination of style in film from the perspective of philosophical aesthetics, and of the ways film style can be used to express philosophical themes. Prerequisite: 1, 3, 4, 95. 96.
Credits: 3.00

PHIL 160 - **Recent Continental Philosophy**

Survey of 20th century continental philosophy, including phenomenology, hermeneutics, critical theory, structuralism, and poststructuralism. Readings from Husserl, Heidegger, Sartre, Saussure, Wittgenstein, Habermas, and Foucault. Prerequisites: 1, 3, 4, 95, 96 or instructor's permission.
Credits: 3.00

PHIL 170 - **Feminism:Theories and Issues**

Theories of libertarianism, liberalism, and egalitarianism; application to the analysis and evaluation of social issues of contemporary interest, such as abortion and affirmative action. Prerequisite: One course in philosophy.

Credits: 3.00

PHIL 195 - **Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

PHIL 196 - **Intermediate Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

PHIL 197 - **Readings & Research**

Credits: 3.00

PHIL 198 - **Readings & Research**

Credits: 3.00

PHIL 201 - **Theory of Knowledge**

Critical examination of nature and sources of knowledge; belief, truth, evidence, perception, memory, and induction. Prerequisite: PHIL 102 or PHIL 112. Offered every Fall semester.
Credits: 3.00

PHIL 202 - **Metaphysics**

Critical examination of such topics as the nature of space and time, the concept of change, the identity of the self, the nature of the world and man's place in it. Prerequisite: PHIL 101, PHIL 102 or PHIL 110. Offered every Spring semester.
Credits: 3.00

PHIL 210 - **Philosophy of Mind**

Major philosophical theories of the mind and its relation to the physical world, the nature of sensation, desire, and belief, and the relation between thought and action. Prerequisite: PHIL 102 or PHIL 110. Alternate years. Kornblith, Pereboom.
Credits: 3.00

PHIL 217 - **Philosophy of Language**

Philosophical study of the nature of language. Prerequisite: Linguistics 101, 102. Alternate years.
Credits: 3.00

PHIL 221 - **Topics in Chinese Philosophy**

Detailed examination of a classical Chinese philosophical text or school. Prerequisite: 121 or 122. Alternate years.
Credits: 3.00

PHIL 235 - **Topics in Philosophy of Rel**

Advanced study of such issues as the metaphysics of religion, the epistemology of religious belief, philosophy and faith, religion and science, and religion and ethics. (May be repeated for credit when topic is significantly different and with departmental approval.) Prerequisites: 101, 102 or 135.
Credits: 3.00

PHIL 240 - **Contemporary Ethical Theory**

Analysis of the ideas of contemporary moral philosophers in normative ethics and

metaethics. Prerequisite: 140, 142, 143 or 144. Alternate years.
Credits: 3.00

PHIL 241 - **Cont Social & Political Phil**

An analysis of the ideas of contemporary philosophers in social and political philosophy. Prerequisite: 140, 142, 143, or 144. Alternate years.
Credits: 3.00

PHIL 242 - **Justice & Equality**

(Same as Political Science 241.) An examination of contemporary normative theories of distributive justice and equality. Prerequisite: 140, 142, 143, or 144. Offered once a year. (Political Science).
Credits: 3.00

PHIL 260 - **Topics in Continental Phil**

Study of a central issue in current continental philosophy, e.g. social theory, psychoanalysis, or aesthetics. Readings from Nietzsche, Heidegger, Gadamer, Ricoeur, Habermas, Derrida, and Foucault. Prerequisites: Any course in philosophy at the 100 level or above, or instructor's permission. (May be repeated for credit when topic is significantly different.) Alternate years.
Credits: 3.00

PHIL 271 - **Seminar**

Major Philosophical Author or School Study of major philosophical texts by a single author or school of thought. May be repeated for credit when different authors are studied. Prerequisite: An appropriate 100-level course in Philosophy.
Credits: 3.00

PHIL 295 - **Adv Special Topics**

See Schedule of Courses for specific titles.
Credits: 4.00

PHIL 296 - **Adv Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

PHIL 297 - **Adv Readings & Research**

Independent study with an instructor on a specific philosopher or philosophical problem. Prerequisite: An appropriate 200-level course in philosophy.
Credits: 3.00

PHIL 298 - **Adv Readings & Research**

Independent study with an instructor on a specific philosopher or philosophical problem. Prerequisite: An appropriate 200-level course in philosophy.
Credits: 3.00

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Courses in Religion (REL)

REL 020 - **Intro Rel:Comparative**
Study of patterns and differences in religious life; selected comparisons of Asian, Western, and tribal religions.
Credits: 3.00

REL 021 - **Intro Rel:Asian Traditions**
Study of the Hindu, Buddhist, and East Asian religious traditions as expressed in their basic symbolisms, writings, practices, and cultural forms.
Credits: 3.00

REL 022 - **Intro Rel:Western Traditions**
Study of the basic motifs, mythic patterns, and historical transformations in religious life from the ancient Near East to the modern West.
Credits: 3.00

REL 023 - **Intro Rel:Bible**
Study of religious expressions as exemplified in biblical and related texts.
Credits: 3.00

REL 027 - **Integr Humanities**
Study of religious and philosophical thought in Western culture from Hebraic and Greek antiquity to present. Prerequisites: Concurrent enrollment in Integrated Humanities Program, English 27, 28 and History 27, 28.
Credits: 3.00

REL 028 - **Integrated Humanities**
Study of religious and philosophical thought in Western culture from Hebraic and Greek antiquity to present. Prerequisite: Concurrent enrollment in Integrated Humanities Program; ENGS 027, ENGS 028, HST 027, and HST 028.
Credits: 3.00

REL 080 - **Religion & Race in America**
Historical survey of forms of African-American religion in the U.S. in their relation to slavery, segregation, and civil rights; current issues in education and cultural diversity.
Credits: 3.00

REL 095 - **Intro Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

REL 096 - **Intro Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

REL 100 - **Interpretation of Religion**

Examination of major theories and methods used in studying and interpreting religious phenomena. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 101 - **Social Dimension Rel Life**

Comparative study of communal forms of religious life, such as cosmic state, monasticism, sect, caste and denomination, from a variety of cultures-Eastern, Western, tribal, and modern-with a concern for their meanings as fundamental forms of religious expression. Prerequisite: Three hours in Religion or Sociology.
Credits: 3.00

REL 104 - **Mysticism,Shamanism & Possessn**

Comparative study of ways in which the inward dimension of religious life finds expression. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 108 - **Myth, Symbol & Ritual**

Study of patterns and significance of myth and ritual as they appear in cross-cultural perspective, with reference to contemporary interpretations of symbol and language. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 109 - **Ritualization:Rel,Body,Culture**

A cross-cultural examination of ritual strategies for integrating personal and social experience, with attention to various theories and types of religious ritual. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 114 - **Hebrew Scriptures**

Study of the history and writings of the Hebraic-Judaic religion to the first century B.C. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 116 - **Judaism**

Investigation of sustaining rituals, customs, institutions, and beliefs of normative Judaism. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 122 - **Christian Origins**

Historical study of the first four centuries of Christianity in its sociocultural context, including consideration of New Testament texts. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 124 - **Christianity**

Historical study of the Christian tradition examining major religious movements of early, medieval, and Reformation Christianity, and the spirituality of Christians during these periods. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 128 - **Religion in America**

Study of the relationship between religion, the cultural ethos, and identity in America. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 130 - **Islam**

Overview examining doctrines and practices of Muslims and their religious institutions from the rise of Islam to the present. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 131 - **Studies in Hindu Tradition**

Selected writings, rituals, and developments in the Hindu tradition with reference to cultural assumptions of India. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 132 - **Buddhism in India & East Asia**

A study of early and Mahayana Buddhist thought and of some developments of Mayahana in China and Japan. Prerequisite: Three hours in religion. May be taken for credit after Religion 134 only with prior permission of instructor.
Credits: 3.00

REL 134 - **Buddhism Sri Lanka:Elite&Pop**

An examination of Theravada Buddhist belief and practice in the context of Sri Lankan culture, with attention to lay and monastic interaction. Prerequisite: Three hours in Religion. May be taken for credit after REL 132 only with prior permission of Instructor.
Credits: 3.00

REL 141 - **Religion in Japan**

An examination of Japanese values as expressed in folk, Shinto, and Buddhist traditions, and in social structures, aesthetic pursuits, or business practices. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 145 - **Religion in China**

Examination of Classical, Confucian and Taoist thought through texts in translation, developments in these traditions, and interactions with folk religion and Buddhism in the premodern period. Prerequisite: Three hours in Religion.
Credits: 3.00

REL 168 - **Contemporary Spiritual Life**

Study of human involvement with the spiritual as manifested in contemporary religious groups, or in modern theory and practice of meditation. Prerequisite: Three hours in Religion.

Credits: 3.00

REL 173 - **Studies in Gender & Religion**

Selected topics focusing on the social and religious construction of gender and the shape of women's religious lives. Religious traditions studied vary by semester. Prerequisite: Three hours in Religion. May be repeated up to six hours.
Credits: 3.00

REL 180 - **Moral&Rel Persp on Holocaust**

A study of the Holocaust in relation to questions of moral responsibility, justice, guilt, and human suffering, focusing on Jewish responses. Prerequisite: Three hours in Religion, HST 190, or Permission of Instructor.
Credits: 3.00

REL 195 - **Intermediate Special Topics**

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 3.00

REL 196 - **Intermediate Special Topics**

Intermediate courses or seminars on topics beyond the scope of existing departmental offerings. See Schedule of Courses for specific titles.
Credits: 3.00

REL 197 - **Readings & Research**

Variable credit.
Credits: 3.00

REL 198 - **Readings & Research**

Variable credit.
Credits: 1.00 to 6.00

REL 201 - **Senior Seminar**

Selected contemporary issues in theory and interpretation; preparation and presentation of individual senior projects. Prerequisites: Twelve hours in religion, including 100 and six hours at the intermediate level, senior standing. UG only.
Credits: 3.00

REL 214 - **Studies in Judaica**

Selected topics of concentration emerging out of and related to the study of normative Judaism, e.g. the prophetic faith, Rabbinic Judaism, Hasidism, and Jewish mysticism. Prerequisite: Nine hours in religion, with three hours at the intermediate level (116 recommended). May be repeated up to six hours. (Not offered for graduate credit.)
Credits: 3.00

REL 224 - **Studies in Christianity**

Examination of selected issues, movements, periods, or individuals within the Christian tradition. Prerequisites: Nine hours in religion (122, 124, or 173 recommended). May be repeated up to six hours. UG only.
Credits: 3.00

REL 226 - **Studies in Hellenistic Rel**

Study of religion in the Mediterranean area during the period from the 4th century B.C. though the 4th century A.D. including Christian origins. Prerequisite: Nine hours in religion, with three hours at the intermediate level. (Not offered for graduate credit.)
Credits: 3.00

REL 228 - **Studies in Western Rel Thought**

Important figures, issues, movements, or texts examined. Prerequisite: Nine hours in religion, with three hours at the intermediate level. May be repeated up to six hours. (Not offered for graduate credit.)
Credits: 3.00

REL 230 - **Studies in Islam**

Topics varying by semester such as Women and Islam, Sufi (mystical) traditions, Shi'ite Islam, Islam and the West, and South Asian Muslim Cultures. Prerequisites: Nine hours in Religion, with three hours at the intermediate level (130 recommended). UG only.
Credits: 3.00

REL 259 - **Religion and Secular Culture**

Comparison of religious and secular systems of meaning, value, and practice. Prerequisite: Nine hours in religion, with three hours at the intermediate level. (Not offered for graduate credit.)
Credits: 3.00

REL 280 - **Symbol & Archetype**

Study of the work of C.G. Jung and the Jungian circle as it bears upon the interpretation of religion and as it represents a 20th century religious quest. Prerequisite: Nine hours in religion, with six hours at the intermediate level.(Not offered for graduate credit.)
Credits: 3.00

REL 291 - **Tpcs in Hist & Phenom of Rel**

Prerequisite: Nine hours in Religion, with six hours at the intermediate level; Junior standing. May be repeated up to six hours.
Credits: 3.00

REL 292 - **Tpcs in Hist & Phenom of Rel**

Prerequisite: Nine hours in Religion, with six hours at the intermediate level; Junior standing. May be repeated up to six hours.
Credits: 3.00

REL 297 - **Interdisciplinary Seminar**

Student-faculty workshop on a topic of current interest, employing resources from various disciplines. Prerequisites: Nine hours in religion, with six hours at the intermediate level, junior standing, instructor's permission. (Not offered for graduate credit.)
Credits: 3.00

REL 298 - **Interdisciplinary Seminar**

Student-faculty workshop on a topic of current interest, employing resources from

various disciplines. Prerequisites: Nine hours in religion, with six hours at the intermediate level, junior standing, instructor's permission. (Not offered for graduate credit.)
Credits: 3.00

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Courses in Sociology (SOC)

SOC 001 - **Introduction to Sociology**

Fundamental principles and problems in the sociological analysis of the structure and dynamics of modern society.
Credits: 3.00

SOC 011 - **Social Problems**

Introduction to sociology through detailed examination of a selected number of major structural problems characteristic of contemporary societies. Problems treated may vary.
Credits: 3.00

SOC 014 - **Deviance & Social Control**

Analysis of the causes and consequences of social behavior that violates norms. Examines patterns of deviant socialization and social organization and forms of deviance control.
Credits: 3.00

SOC 019 - **Race Relations in the US**

Analysis of racial prejudice, discrimination, and other dominant group practices directed toward Native, Asian-, and African-Americans and their social movements for integration, accommodation, and separatism.
Credits: 3.00

SOC 020 - **Aging: Change & Adaptation**

Individual and social meanings of aging and old age; physical, physiological, psychological, and sociological changes accompanying aging; individual, family, community, and societal adaptations to aging. Crosslists: Nursing 20 and Early Childhood and Human Development 20/Education.
Credits: 3.00

SOC 029 - **Sex, Marriage & Family**

Description and analysis of contemporary patterns in American sexual, marital, and familial behavior; their historical development, variants, and the evolving alternatives to traditional normative forms.
Credits: 3.00

SOC 032 - **Social Inequality**

Introduction to structured class inequality in the U.S., causes and consequences. Focus on wealth, prestige, and power. Inequalities of age, gender, and ethnicity also examined.
Credits: 3.00

SOC 043 - **Survey of Mass Communication**

The historical development of the socioeconomic, political, educational, and religious impacts of the press, film, radio, and television in American society.
Credits: 3.00

SOC 057 - **Drugs & Society**

Patterns of illicit drug distribution, use, abuse, and control in contemporary society. Examines the interaction of cultural, social, psychological, and physiological factors in prohibited drug-taking.
Credits: 3.00

SOC 095 - **Introductory Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

SOC 096 - **Introductory Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

SOC 100 - **Fund of Social Research**

Introduction to research methods in social science. Includes examination of research design, measurement, data collection, data analysis, and the presentation and theoretical interpretation of research findings. Prerequisite: Three hours of sociology or six hours in a related social science. Crosslist: Political Science 181.
Credits: 4.00

SOC 101 - **Developm't Sociological Theory**

Classical sociological theory including Marx, Weber, Durkheim, and Mead, as well as DuBois and early female theorists such as Martineau. Reading and writing intensive. Prerequisites: Six hours of Sociology or equivalent preparation in another social science with Instructor permission.
Credits: 3.00

SOC 102 - **Population, Environment & Soc**

Analysis of the causes and consequences of varying relationships among population size, distribution and composition, social organization, technology, and resource base. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 103 - **Environ Crises Modern Society**

Examines global, national, and local ecological crises both empirically and theoretically. Emphasis on economic processes, political/legal aspects, and social activism. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 105 - **The Community**

Comparative examination of patterns of social interaction in social groups with common territorial bases in contemporary societies and the analysis of community structure and dynamics. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 109 - **The Self & Social Interaction**

Analysis of the roles of sociocultural and situational factors in individual behavior and experience and the social genesis, development, and functioning of human personality. Prerequisite: Three hours of Sociology or PSYC 001.
Credits: 3.00

SOC 115 - **Crime**

Analysis of the nature and types of behavior that violates law, the mechanisms for defining such behaviors as criminal and their causes and consequences. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 118 - **Race, Crime&Criminal Justice**

A comprehensive examination of race, gender, and class on racial minorities' participation in criminal activities and how individuals are treated by the criminal justice system. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 119 - **Race & Ethnicity**

Description and analysis of ethnic, racial, and religious groups in the U.S. Examination of social/cultural patterns in the larger society and in these groups themselves. Prerequisite: Three hours of Sociology. Cross-listed with: ANTH 187.
Credits: 3.00

SOC 120 - **Aging in Modern Society**

Analysis of contemporary needs and problems of the elderly, including discrimination, poverty, health care, and loneliness, and the evaluation of services and programs for the elderly. Prerequisite: Three hours of Sociology or professional experience working with the elderly.
Credits: 3.00

SOC 122 - **Women & Society**

Analysis of the changes in the role of women in contemporary society and their consequences for female socialization, the family, and the other major social institutions. Prerequisite: Three hours of sociology. Crosslist: WGST 101.
Credits: 3.00

SOC 132 - **Affluence & Poverty in Mod Soc**

Examination of structured social inequality in contemporary American society with special attention to the distribution of wealth and its relationship to power, prestige, and opportunity. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 150 - **Popular Culture**

Analysis of social significance of a selected range of contemporary non-elite

cultural forms in the U.S., such as rock music, television programming, and popular literature. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 151 - **Sociology of Religion&Ideology**
Beliefs and value systems and their institutional arrangements, focusing on relationships between these systems and the larger social structure, in cross-cultural and historical perspective. Prerequisites: Three hours of Sociology or six hours of Religion.
Credits: 3.00

SOC 154 - **Social Org of Death & Dying**
Comparative examination of sociocultural adaptations to mortality with special attention to family, medical, legal, religious, and economic responses to fatal illness and death in contemporary society. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 161 - **Sociology of Leisure**
Analysis of the sociocultural organization of nonwork activity, emphasizing the relationships of class, life style, education, and work to contemporary recreation and leisure use patterns. Prerequisite: Three hours of Sociology.
Credits: 3.00

SOC 171 - **Soc Chng&Dev Persp in 3rd Wrld**
perspectives on development in the Third World. Prerequisite: Three hours in sociology.
Credits: 3.00

SOC 195 - **Intermediate Special Topics**
See Schedule of Courses for specific titles.
Credits: 4.00

SOC 196 - **Intermediate Special Topics**
See Schedule of Courses for specific titles.
Credits: 3.00

SOC 197 - **Readings & Research**
Credits: 1.00

SOC 198 - **Readings & Research**
Credits: 3.00

SOC 203 - **Adv Environmental Sociology**
Examination of theoretical interpretations of environmental problems, sources, and solutions, focusing on the social conditions under which problems arise. Emphasis on writing and individual research projects. Prerequisite: Six hours of sociology. UG only.
Credits: 3.00

SOC 205 - **Rural Communities in Mod Soc**
The changing structure and dynamics of rural social organization in context of modernization and urbanization. Emphasis on rural communities in the U.S. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC

001 and SOC 101, or Instructor permission. Cross-listed with:CDAE 205
Credits: 3.00

SOC 206 - **Urban Communities in Mod Soc**

The changing structure and dynamics of urban social organization in context of modernization and urbanization. Emphasis on cities and metropolitan areas in the U.S. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 207 - **Community Org & Development**

Communities as changing sociocultural organizational complexes within modern society. Special attention given to problems of formulation and implementation of alternative change strategies. Prerequisite: Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.
Credits: 3.00

SOC 209 - **Small Groups**

Examination of the structure and dynamics of small groups and the interpersonal, informal network of relations that characterize the interaction of members. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 211 - **Soc Movements&Collective Behav**

Examination of origins, development, structure, and consequences of crowds, riots, crazes, rumors, panics, and political and religious movements and their relationships to cultural and social change. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 213 - **Women in Dev in 3rd World**

An examination of the meaning and measurement of development, sociodemographic characteristics, sex stratification, and effects of Colonialism and Westernization on women's issues in the third world. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission. Cross-listed with: WGST 205.
Credits: 3.00

SOC 214 - **Delinquency**

Analysis of the nature and type of juvenile behavior that violates law, the mechanisms for defining such behaviors as delinquent, and their causes and consequences. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 216 - **Criminal Justice**

Analysis of the social structures and processes involved in the identification and labeling of individuals as criminal offenders: criminal law, its enforcement and the courts. Prerequisite: Six hours of Sociology including 1 and 100, or 1 and 101, or

instructor permission.
Credits: 3.00

SOC 217 - **Corrections**

Analysis of the social structures and processes involved with individuals designated as offenders of criminal law: probation, prison, parole, and programs of prevention and rehabilitation. Prerequisite: Six hours of Sociology.
Credits: 3.00

SOC 219 - **Race Relations**

Examination of American racial subordination in social and historical perspective. Analysis of interracial contacts, racial subcultures and social structures, and responses to racial prejudice and discrimination. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 220 - **Internship in Gerontology**

Supervised service or research internship integrating theoretical and practical gerontological issues. Prerequisites: 6 hours of Sociology including 1 and 100, or 1 and 101 or instructor permission or 20, 120; 221 or 222; or equivalent gerontological preparation (Not offered for graduate credit.)
Credits: 3.00

SOC 222 - **Aging & Ethical Issues**

Analysis of selected ethical issues posed by an aging society and faced by older persons, their families, health care and service providers, and researchers. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 223 - **Sociology of Reproduction**

Examines reproduction of cultural values in relation to social conduct of reproduction of human life (childbearing) under advanced capitalism. Prerequisite: Six hours of Sociology to include one of 29, 122, or 229. Crosslist: WGST 201. (not for Graduate credit)
Credits: 3.00

SOC 225 - **Organizations in Mod Society**

Examination of basic classical and contemporary theory and research on the human relations, internal structures, environments, types, and general properties of complex organizations and bureaucracies. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 229 - **Family as Social Institution**

Examination of the institution of the American family in cross-cultural and historical perspective. Theories and research on family continuity, change, and institutional relationships explored. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.

Credits: 3.00

SOC 232 - **Social Class & Mobility**

Comparative and historical analysis of causes, forms, and consequences of structured social inequality in societies. Examination of selected problems in contemporary stratification theory and research. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 240 - **Political Sociology**

Examination of the social organizations of power and authority in modern societies and the dynamics and institutional relationships of political institutions, interest groups, parties, and publics. Prerequisite: Six hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.
Credits: 3.00

SOC 243 - **Mass Media in Modern Society**

Intensive examination of selected topics in the structure of media organizations and their relationships to and impacts upon the major institutions and publics of contemporary issues. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 250 - **Sociology of Culture**

The relations of cultural forms and subjective experience to social structure and power; in-depth applications of interpretive approaches in contemporary sociology. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 252 - **Sociology of Emotions**

Studies the theoretical premises of a sociocultural explanation of emotions; examines specific emotions such as respect, shame, hatred, love and compassion in humans; and explores the existence of emotions in non-human animals. Prerequisites: Three hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 254 - **Sociology of Health & Medicine**

The social organization and institutional relationships of medicine in society and the role of sociocultural factors in the etiology, definition, identification, and treatment of illness. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 255 - **Soc Mental Health**

Analysis of the social structures and processes involved in the identification, definition, and treatment of mental illness and its sociocultural etiology and consequences. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.

Credits: 3.00

SOC 258 - **Sociology of Law**

Analysis of the sociocultural structure of the legal institution and its relationships to other institutions: the social organization of the legal profession, lawmaking, and the courts. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 272 - **Soc of African Societies**

Current social, cultural, political, and economic changes occurring in African societies, including issues of development, the state and civil society, social class, ethnonationalism, and democratization. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 274 - **Research Seminar**

Principles of research design, data gathering, ethics, measurement, data analysis, and data presentation. Students will complete a research project. Prerequisites: 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.
Credits: 3.00

SOC 275 - **Meth of Data Anyl in Soc Rsch**

Quantitative analysis of sociological data; includes table, regression, and path analysis, scaling and factor analysis, and the analysis of variance emphasizing multivariate techniques. Prerequisite: 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.
Credits: 3.00

SOC 279 - **Contemporary Sociological Thry**

Critical examination of contemporary functional, conflict, exchange, interactionist, and structural theoretical approaches. A number of other theoretical approaches selected by seminar participants also examined. Prerequisite: 6 hours of Sociology including 1 and 100, or 1 and 101, or instructor permission.
Credits: 3.00

SOC 281 - **Seminar**

Presentation and discussion of advanced problems in sociological analysis. Prerequisite: Twelve hours of Sociology; Instructor permission.
Credits: 3.00

SOC 282 - **Seminar**

Presentation and discussion of advanced problems in sociological analysis. Prerequisite: Twelve hours of Sociology; Instructor permission.
Credits: 3.00

SOC 285 - **Internship**

Prerequisite: Twelve hours of sociology including at least one 200-level course in substantive area relevant to field placement, departmental permission. UG only.
Credits: 3.00

SOC 286 - **Internship**

Prerequisite: Twelve hours of sociology including at least one 200-level course in substantive area relevant to field placement, departmental permission. UG only.
Credits: 3.00

SOC 288 - **Rsch Meth Teaching Sociology**

The development and evaluation of the teaching of sociology. Prerequisite: Twelve hours of Sociology; permission of Department. Open only to students who serve concurrently as teaching assistants in the Department.
Credits: 3.00

SOC 289 - **Rsch Meth Teaching Sociology**

The development and evaluation of the teaching of sociology. Prerequisite: Twelve hours of Sociology; permission of Department. Open only to students who serve concurrently as teaching assistants in the Department.
Credits: 3.00

SOC 295 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 100, or Instructor permission.
Credits: 4.00

SOC 296 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

SOC 297 - **Readings & Research**

Prerequisite: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 1.00

SOC 298 - **Readings & Research**

Prerequisite: Six hours of Sociology included SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.
Credits: 3.00

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Courses in Women's Studies (WST)

WST 073 - **Intro to Women's Studies**
Survey of feminist theory and its application to specific areas of inquiry, including analysis of the intersections among race, class, and gender.
Credits: 3.00

WST 076 - **Women in Literature**
(See English 42.)
Credits: 3.00

WST 078 - **History of Costume**
(See Theatre 41.)
Credits: 3.00

WST 084 - **Mothers and Daughters**
Interdisciplinary exploration of historical, social, and cultural definitions of the mother/daughter experience informed by contemporary feminist perspectives.
Credits: 3.00

WST 095 - **Introductory Special Topics**
See Schedule of Courses for specific titles.
Credits: 3.00

WST 096 - **Introductory Special Topics**
See Schedule of Courses for specific titles.
Credits: 3.00

WST 101 - **Women and Society**
(See Sociology 122.) Prerequisite: 73 or three hours of sociology.
Credits: 3.00

WST 111 - **Wmns Spirit:Challenge Inst Rel**
Women's experience of the sacred and the self in Eastern and Western religious traditions. Analysis of political and cultural structures alienating women from their experience.
Credits: 3.00

WST 115 - **Studies in Gender & Religion**
(See Religion 173.) Prerequisite: Three hours in religion or instructor's permission.

Credits: 3.00

WST 121 - **Lit Genre:Wmn Writing Autobiog**

(See English 181.) Prerequisite: Three hours in English or Women's Studies.
Credits: 3.00

WST 122 - **19th Century Women's Writing**

(See English 147.) Prerequisite: Three hours in English or Women's Studies.
Credits: 3.00

WST 131 - **Contemporary Feminist Art**

Credits: 3.00

WST 141 - **Gender and Law**

Feminist jurisprudence and legal theory. Topics include economic consequences of reproduction, sexuality, divorce, custody; sexual harassment, employment discrimination; surrogate motherhood, domestic violence, rape, pornography, prostitution.
Credits: 3.00

WST 151 - **Feminism:Theories and Issues**

(See Philosophy 170.) Prerequisite: One course in philosophy or instructor's permission.
Credits: 3.00

WST 157 - **Greek Feminism**

The construction of the status of women in ancient Greek society. Readings include lyric, tragic, and comic poetry, philosophy, oratory, novel, and nonliterary documents. Prerequisite: Sophomore standing; three hours in literature, History, Anthropology, or Sociology. Cross-listed with: CLAS 157/HST 157/WLIT 157.
Credits: 3.00

WST 161 - **History of Women in U S**

Prerequisite: History 11 or 12, or three hours in Women's Studies. Cross-listed with: HST 182.
Credits: 3.00

WST 170 - **Gender,Space & Environment**

(See Geography 178.) Prerequisite: Six hours in geography or Women's Studies, or instructor's permission.
Credits: 3.00

WST 172 - **Women and Depression**

The exploration of the impact of gender socialization, sexual oppression, discrimination, self-esteem, and body image on women's mental health in our society.
Credits: 3.00

WST 174 - **Women, Science & Nature**

The position of women in relation both to science and nature is considered historically, culturally, and in terms of current feminist perspectives.
Credits: 3.00

WST 179 - **Ecofeminism**

(See Environmental Studies 179.) Prerequisite: 73 or Environmental Studies 1, 2. Sophomore standing.

Credits: 3.00

WST 181 - **Women in American Politics**

(See Political Science 135.) Prerequisite: Political Science 21 or three hours in Women's Studies.

Credits: 3.00

WST 191 - **Internship**

Approved programs of learning outside the classroom. Students work at local women's agencies, in consultation with faculty sponsors. Prerequisites: A contract must be obtained from and returned to the Women's Studies Program office during registration; permission of Director of Women's Studies.

Credits: 3.00

WST 192 - **Internship**

Approved programs of learning outside the classroom. Students work at local women's agencies, in consultation with faculty sponsors. Prerequisites: A contract must be obtained from and returned to the Women's Studies Program office during registration; permission of Director of Women's Studies.

Credits: 3.00

WST 195 - **Intermediate Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

WST 196 - **Intermediate Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

WST 201 - **Sociology of Reproduction**

(See Sociology 223.) Prerequisite: Six hours of sociology to include one of 29, 122, or 129; or instructor's permission.

Credits: 3.00

WST 205 - **Women Dev Third Wrld Countries**

(See Sociology 213.) Prerequisite: Six hours of sociology or instructor's permission.

Credits: 3.00

WST 271 - **Psychology of Women**

(See Psychology 231.) Prerequisite: One psychology course at the 100 level or instructor's permission.

Credits: 3.00

WST 273 - **Seminar in Feminist Theory**

An interdisciplinary examination of theories accounting for women's position in culture and society. Special emphasis on the relationship between gender, race, class, ethnicity, and sexuality. Prerequisites: 73, six additional hours in Women's Studies, and admission to the Women's Studies major or minor program.

Credits: 3.00

WST 295 - **Advanced Special Topics**

See Schedule of Courses for specific titles. UG only.
Credits: 3.00

WST 296 - **Advanced Special Topics**

See Schedule of Courses for specific titles. UG only.
Credits: 3.00

WST 297 - **Independent Study**

Selection and development of topic for investigation using assigned faculty member as preceptor. Prerequisites: 73, approval of Director of Women's Studies.
Credits: 3.00

WST 298 - **Independent Study**

Selection and development of topic for investigation using assigned faculty member as preceptor. Prerequisites: 73, approval of Director of Women's Studies.
Credits: 3.00

Concurrent Degree Programs: M.D./M. S. AND M.D./Ph. D.

College: Graduate College

Overview

Postsophomore students in the Doctor of Medicine program who have been accepted into a Graduate College program are permitted to apply credit from appropriate medical courses in which a letter grade of A, B, or C is earned toward a M. S. or a Ph. D. degree. Such students are enrolled in the Graduate College for one or more years to pursue research and enroll in those courses that normally are not included within their medical program of study. While students are working toward both the M.D. and M. S. or Ph. D., completion of each degree need not occur at the same time.

Accelerated Master's Programs

College: Graduate College

The following Accelerated Bachelors/Masters programs are cooperatively offered by the Graduate College and other Colleges and Schools.

- Animal Science
- Biology
- Biomedical Technologies
- Computer Science
- History
- Materials Science
- Mathematics/Statistics/Biostatistics
- Mechanical Engineering
- Microbiology and Molecular Genetics
- Nursing
- Physics
- Public Administration
- Secondary Education (7-12)/Master of Education

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Graduate College Application

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Change of Program

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Continuous Registration

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Leave of Absence

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Deactivation and Reactivation

Withdrawal from Degree Program

Withdrawal from Degree Program

Transfer Credit and Credit by Examination

Transfer Credit and Credit by Examination

Approval of Credit, Number of Credits, Appropriateness of Credit, Currency of Credit

Concurrent Master's and Doctor of Philosophy Credit

Maximum Time Limits for Degree Completion

Maximum Time Limits for Degree Completion

Degree Requirements

Master's Degree Requirements

Master's degree requirements, including Thesis format and defense

Doctor of Education Degree.

Doctor of Philosophy Degree

Doctor of Philosophy degree requirements, including Dissertation format and defense.

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Graduate College Requirements for the Master's Degree

College: Graduate College
Area: Graduate College Policies

In addition to the requirements described below, individual programs may have their own specific requirements. Students should read and familiarize themselves with their program's requirements. Some of them are detailed in this catalogue under individual program listings and other requirements are available from the director or chairperson of each program.

Credit Hours

Most master's degrees require a minimum of 30 hours of credit. A minimum of 15 graded credits used in compilation of the graduate GPA must be taken in residence at UVM. Consult individual program descriptions for exceptions. In programs that require a thesis, the number of credit hours earned in thesis research may vary between six (minimum) and 15 (maximum). Thesis credit is included as part of the 30-hour minimum. Consult individual programs for specific information. With the prior approval of their department and the Graduate College, students may apply one 100/200 level, three-credit undergraduate course towards their graduate program. A student's advisor must petition the Graduate College for approval before the student enrolls in the course. Consult individual programs for further limitations. Under no circumstances will a course numbered below 100 be applicable to a master's program.

Minimum Residence Requirements

Candidates for the master's degree must satisfactorily complete 21 hours in residence. The residency requirement is completed by courses that (1) are taken for graduate credit through The University of Vermont either in the academic year or summer on the main campus or at off-campus locations, and (2) are taken after the student has been admitted to the Graduate College. Some programs may require more than the above minimum hours in residence. Consult with the individual program.

Comprehensive Examination

All master's degree students are required to pass a written and/or oral comprehensive examination in their field of specialization. If both formats are used, satisfactory completion of the written examination is prerequisite to standing for the oral examination. All comprehensive examinations are to be taken on The University of Vermont campus in Burlington. One re-examination only is permitted for any comprehensive examination. The comprehensive examination is not the same as an oral thesis defense, and must be passed satisfactorily before defending the thesis. Consult individual program descriptions for specific information.

When students plan to take their comprehensive examination they should enroll in GRAD 397: Master's Comprehensive Examination. There is no fee. A grade of "S" or "U" is recorded.

Research and Thesis

Consult the program description to determine whether or not a thesis is required. If a thesis is required, the candidate for the master's degree undertakes a problem of original research under the supervision of a member of the Graduate College Faculty in the department of specialization. At the conclusion of the research, the student must present a thesis which embodies the results of the work and demonstrates the capability for independent research.

Forms

Submit the Defense Committee Membership form and the Defense Notice form to the Graduate College by the designated deadlines. A Public Notice of the defense is required in order to defend. The Intent to Graduate form must be submitted to the candidate's department before the List of Potential Graduates is due.

Thesis Format

Students are required by the Graduate College to use a computer software program appropriate to the discipline to create the Table of Contents and the Lists of Tables and Figures from the thesis text headings. An unformatted thesis will not be accepted by the Graduate College for the Format/Record Check.

A thesis must be prepared and submitted in compliance with the "Guidelines for Writing a Thesis or Dissertation" available from the Graduate College Office. A formatted copy of the thesis must be submitted to the Graduate College for a Format/Record Check at least three weeks prior to the scheduled defense. Students must also provide defendable copies of the thesis to members of their Thesis Defense Examination Committee at least two weeks before the scheduled examination. Individual departments may require earlier deadlines.

Students must enroll in GRAD 399: Thesis Defense prior to defending their thesis.

The oral defense of a thesis can be scheduled only after successful completion of the comprehensive examination and the submission of an original copy of the thesis to the Graduate College for a Format/Record Check.

Thesis Defense Examination Committee

The Thesis Defense Committee consists of at least three University of Vermont faculty members, at least two of whom must be regular members of the Graduate Faculty. Ordinarily, two committee members will be from the candidate's program, including the thesis advisor. The third member, who acts as chair of the committee, must be a member of the Graduate Faculty, must be from a different program and department than the candidate, and must be approved by the Graduate Dean upon nomination by the thesis advisor.

The Chairperson of the Thesis Defense Committee has the responsibility for ensuring proper conduct of the examination, appropriate documentation of the results, and that the signatures of endorsement are added to the acceptance page of the thesis following a successful defense.

The acceptability of the thesis is determined by the Thesis Defense Committee. A grade of "S" or "U" is awarded. If a student's Defense Examination performance is not satisfactory, then only one reexamination is permitted.

After a successful thesis defense, candidates must forward an original and two copies of the corrected thesis to the Graduate College within the time period specified by the Thesis Defense Examination Committee, and/or the Graduate College.

Options within Master of Arts Programs

At least 21 hours of graduate credit, including credit for the thesis and research leading to the thesis, must be earned in the field of specialization. All course credit included in these 21 hours must be earned in courses which have been approved for graduate credit. Students may wish to include in their programs up to nine hours of graduate level courses outside their fields of specialization. These courses must be approved in advance by the student's advisor or studies committee.

Additional Requirements for the Master of Arts in Teaching

The MAT degree is intended for people who are already licensed as secondary school teachers or who will complete teacher licensure requirements before graduation. For already licensed teachers, the program requires a minimum of 30 credit hours of course work; at least 21 hours in the field of specialization and at least six in education. For those seeking teacher licensure, the program requires at least 30 credit hours of education course work and at least 21 hours in the field of specialization. The individual program of study for each MAT student must be approved by their faculty advisor in their field of specialization and their faculty advisor in the Department of Education.

In addition to the comprehensive examination in the field of specialization, students must also take a comprehensive examination in the field of education. Consult specific program listings for additional requirements for this degree program.

Additional Requirement for the Master of Science for Teachers

Applicants for the Master of Science for Teachers must be licensed teachers. Students in a Master of Science for Teachers program may apply more than one three-hour, 100-level course toward their degree. Consult specific department listings for additional requirements and policies related to this degree program.

General Requirements for the Master of Education Degree

College: Graduate College
Department(s): Education

The graduate program of each student admitted to candidacy for the degree of Master of Education is planned and supervised by an advisor in the respective program area. Program planning is based upon the student's undergraduate curriculum, professional experience, and aims and purposes in pursuing the master's degree. Before the degree is awarded, the candidate must have completed one year of successful teaching experience or other educational service. This requirement may be fulfilled by satisfactory completion of student teaching, an internship, or a practicum.

Each program must include a minimum of either 30 semester hours of approved course work or 24 hours earned in courses and six hours in thesis research. Contingent on a candidate's background and interests and on program specification, additional credit hours may be required. If a student's preparation is inadequate to begin study at the graduate level, additional undergraduate courses will be required. Each Master of Education degree program must include a minimum of six semester hours of graduate work in the foundations of education unless this requirement or its equivalent has been met previously. Graduate courses which currently fulfill this requirement include: EDFS 203, 204, 205, 206, 209, 255, 302, 303, 314, 347, 352, 354, and EDSS 313 and EDLS 377.

To insure effective planning of a graduate program for the degree of Master of Education, no more than nine hours credit will be accepted in partial fulfillment of degree requirements for courses taken prior to acceptance to the Graduate College.

Comprehensive Examination

A comprehensive examination is required. However, it may be written, oral, or both. The choice of the examination format will be made by faculty members in the area of specialization after consultation with the advisor and the candidate.

a. The written comprehensive examination will cover the field of education with emphasis on the area of specialization.
b. The oral comprehensive examination will emphasize the area of specialization.

All examinations are taken on the University campus in Burlington. Only one re-examination is permitted for any final comprehensive examination. It is the responsibility of the candidate to schedule the required examination with the College of Education and Social Services. Since each program has different options for meeting the oral and written comprehensive requirements, candidates must contact the respective program chairperson or advisor regarding program policy.

Thesis Option

If the thesis option is elected, there must be an oral or written comprehensive examination prior to the oral examination in defense of the thesis.

Requirements for Admission to Graduate Studies for the Degree of Master of Education

Eighteen hours of Education and related areas or appropriate professional certification. The Education courses prerequisites may not apply to the Higher Education and Student Affairs Administration, Educational Leadership, or Interdisciplinary Major Program in the Department of Integrated Professional Studies. This is particularly true of persons seeking positions which do not require public school certification.

Minimum Degree Requirements

Eighteen hours in courses in Education numbered above 200, including a minimum of six graduate hours in the foundations of education,* 12 additional hours in approved courses or six additional hours and thesis research; a year of successful experience in teaching or in a related educational activity.

* This requirement no longer applies to the program in Special Education.

Graduate College Requirements for the Doctor of Philosophy Degree

College: Graduate College
Area: Graduate College Policies

In addition to the requirements described below, individual programs may have their own specific requirements. Students should consult and familiarize themselves with their program requirements. Some of them are detailed in this catalogue under individual program listings and other requirements are available from the director or chairperson of each program.

Credit Hours

The degree of Doctor of Philosophy requires a minimum of 75 credit hours earned in courses and in dissertation research. A minimum of 15 hours in courses used in compilation of the grade-point average must be taken in residence at The University of Vermont. Consult individual programs for additional information. Generally, the first year of each doctoral program consists of required courses. With the prior approval of their department and the Graduate College, doctoral students may apply two 100-level, three-credit courses towards their graduate programs. A student's advisor must petition the Graduate College for approval before the student enrolls in the course. Consult individual programs for further limitations. Under no circumstances will a course numbered below 100 be applicable to a doctoral program.

Minimum Residence Requirements

Candidates for the doctoral degree must satisfactorily complete a minimum of 51 hours in residence. The residency requirement is completed by courses that (1) are taken for graduate credit through The University of Vermont either in the academic year or summer on the main campus or at off-campus locations, and (2) are taken after the student has been admitted to the Graduate College. Some programs may require more than the above minimum hours in residence.

Teaching Requirement

All doctoral candidates must acquire appropriate teaching experience in their chosen fields prior to the award of the degree. The nature and amount of teaching, for which no academic credit is allowed, will be determined by each candidate's program.

Language Requirement

Consult the program listings to determine whether demonstration of competency in one or more foreign languages is required. The requirement is generally fulfilled by an examination administered by the program or in conjunction with the appropriate language department. Enroll for the examination as GRAD 485. There is no fee for taking the exam. The examination is awarded the grade of "S" (Satisfactory) or "U" (Unsatisfactory). It may be taken more than once if a grade of "U" is awarded.

If department policy permits, the language requirement may be fulfilled through competence in computer literacy, either by completing appropriate Computer Science courses with a grade of B (3.00) or better, or by satisfactorily completing an examination composed and graded by the staff of Computing and Information Technologies. Individual programs may set additional requirements.

Studies Committee

It is the responsibility of the Studies Committee to supervise the graduate student's program and to review progress at regular intervals. A Studies Committee consisting of at least three regular members of the Graduate Faculty is appointed by the department chairperson or designated departmental representative and approved by the Dean of the Graduate College soon after first enrollment in the Graduate College, unless the student's department employs an alternative approved procedure. The Chairperson of the Studies Committee serves as the student's academic advisor and also as the dissertation advisor or supervisor. Only a regular member of the Graduate Faculty can serve as an advisor of a doctoral dissertation. On occasion, it may be appropriate for a professional other than a regular member of the Graduate Faculty to serve as a member of a Studies Committee. In such cases, written approval must be obtained from the Dean of the Graduate College prior to the student's beginning dissertation research.

Comprehensive Examination

A written comprehensive examination in the field of study must be passed by the candidate at least six months before the dissertation is submitted. The examination must be prepared by the program concerned, in consultation with the candidate's Studies Committee. Only one reexamination is permitted. Success in the written comprehensive examination is prerequisite to standing for the Dissertation Defense Examination. All examinations are taken on The University of Vermont campus in Burlington. Some programs also require an oral comprehensive examination.

Students must enroll in GRAD 497: Doctoral Comprehensive Examination prior to taking the comprehensive examination. There is no fee. A grade of "S" or "U" is recorded.

Research and Dissertation

Each candidate, while in residence at The University of Vermont, must complete an acceptable original research project which contributes new knowledge or techniques in an academic field. Each candidate must enroll in a minimum of 20 credits of dissertation research. Only a member of the Graduate Faculty may supervise dissertation research for the Ph. D.

Forms

Submit the Defense Committee Membership form and the Defense Notice form to the Graduate College by the designated deadlines. A Public Notice of the defense is required in order to defend. The Intent to Graduate form must be submitted to the candidate's department before the List of Potential Graduates is due.

Dissertation Format

Students are required by the Graduate College to use a computer software program appropriate to the discipline to create the Table of Contents and the Lists of Tables and Figures from the dissertation text headings. An unformatted dissertation will not be accepted by the Graduate College for the Format/Record Check.

A dissertation must be prepared and submitted in compliance with the "Guidelines for Writing a Thesis or Dissertation" available from the Graduate College Office and the program. A formatted copy of the dissertation must be submitted to the Graduate College for a Format/Record Check at least three weeks prior to the scheduled oral defense. Each student must also provide defendable copies of the dissertation to members of the Dissertation Defense Examination Committee at least two weeks before the scheduled examination. Individual departments may require earlier deadlines.

Students must enroll in GRAD 499: Dissertation Defense prior to defending their thesis.

The oral defense of a dissertation can be scheduled only after successful completion of the comprehensive examination and the submission of an original copy of the dissertation to the Graduate College for a Format/Record Check.

Dissertation Defense Examination Committee

Upon receipt of a completed dissertation, the Dean of the Graduate College will appoint a Dissertation Defense Committee based upon nominations submitted by the candidate's advisor. The Dissertation Defense Committee consists of a minimum of four University of Vermont faculty members, all regular members of the Graduate Faculty. At least two Graduate Faculty members must be from inside the department. The Chairperson must be both a member of the Graduate Faculty and from outside the candidate's department and program. The Chairperson will be designated by the Graduate Dean upon nomination by the dissertation advisor. Individual programs may require more than four committee members or have other specific membership requirements.

The Chairperson of the Dissertation Defense Committee has the responsibility for ensuring proper conduct of the examination, appropriate documentation of the results,

and that the signatures of endorsement are added to the acceptance page of the dissertation following a successful defense.

The acceptability of the dissertation is determined by the Dissertation Defense Committee. A grade of "S" or "U" is awarded. If a student's Defense Examination performance is not satisfactory, then one reexamination, and one only, is permitted.

After a successful dissertation defense, candidates must forward an original and three copies of the corrected dissertation to the Graduate College within the time period specified by the Dissertation Defense Committee and/or the Graduate College.

Faculty and Administration

- Board of Trustees
- Administration
- University Professorships
- Faculty
- Emeriti Faculty

Board of Trustees
The University of Vermont

Daniel M. Fogel, B.A., M.F.A., Ph.D., President, *ex officio*
James H. Douglas, Governor, A.B., *ex officio*

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- Dean Maglaris, B.A., M.B.A., New Canaan, Connecticut
- Pamela G. McDermott, B.S., M.P.A., Milton, Massachusetts
- Seth Reuben Podolsky, B.A., M.S., Ph.D., Burlington, Vermont

Term Ending March 2005

- Marget C. Brue, Burlington, Vermont
- Frank J. Cioffi, B.A., St. Albans, Vermont
- Margaret P. Hummel, B.A., M.A., Underhill, Vermont
- Alysia D. Krasnow, B.A., Charlotte, Vermont
- Malcolm F. Severance, B.S., Ph.D., Colchester, Vermont
- David S. Wolk, B.A., M.Ed., Mendon, Vermont

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- Bruce Lisman, B.A., New York, New York
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- Helen B. Spaulding, Boston, Massachusetts

Term Ending March 2007

- Kathleen C. Hoyt, B.A., Norwich, Vermont
- Richard W. Hube, B.A., South Londonderry, Vermont
- Thomas A. Little, A.B., J.D., Shelburne, Vermont
- Mark S. Young, Orwell, Vermont

Term Ending March 2008

- Robert F. Cioffi, B.A., M.B.A., Rowayton, Connecticut
- Carl H. Lisman, A.B., J.D., Charlotte, Vermont
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See also, the Board of Trustees Web site.

Administration
The University of Vermont

- Fogel, Daniel Mark, Ph.D. (2002), President
- Bramley, A. John, Ph.D. (1990), Senior Vice President & Provost
- Parke, E. Lauck, Ph.D. (1977), Vice President for Undergraduate Education
- Frances E. Carr, Ph.D. (2003), Vice President for Research & Dean of Graduate Studies
- DeHayes, Donald H., Ph.D. (1977), Dean, School of Natural Resources
- DeWitt, Rocki-Lee, Ph.D. (2002), Dean, School of Business Administration
- Evans, John N., Ph.D. (1976), Acting Dean, College of Medicine
- Jenkins, Robert G., Ph.D. (1999), Dean, College of Engineering and Mathematics
- Johnson, Rachel N., Ph.D. (1991), Dean, College of Agriculture and Life Sciences
- Rambur, Betty, DNS (2000), Dean, College of Nursing and Health Sciences
- Saule, Mara R., M.L.S. (1985), Dean, Libraries & Information Technologies
- Smith, Joan M., Ph.D. (1990), Dean, College of Arts and Sciences
- Tarule, Jill M., Ed.D. (1992), Dean, College of Education and Social Services
- Taylor, Robert, Ph.D. (1986), Dean, Honors College
- Belliveau, C. (2000) and Vallett, C. (1999), Co-Directors, Continuing Education
- Lantagne, Douglas O., Ph.D. (1977), Interim Director, Extension System
- Bazluke, Francine T., J.D. (1985), Vice President for Legal Affairs & General Counsel
- Gower, J. Michael (2003), Vice President for Finance and Administration
- Gustafson, Thomas J., Ed.D. (1978), Vice President for Student & Campus Life
- Nestor, David A., Ed.D. (1994), Associate Vice President for Campus Life & Student Affairs
- deGroot, Ian W., B.S. (1984), Vice President for University Development & Alumni Relations
- Meyer, Karen N. (2002), Vice President for State and Federal Relations

UVM organizational chart.

University Professorships

The Williams Professorship of Mathematics, 1853, honors Azarias Williams of Concord, Vermont, merchant and judge, native of Sheffield, England, who in 1839 deeded to the University extensive land holdings.

The Marsh Professorship of Intellectual and Moral Philosophy was established in 1867 to honor James Marsh, distinguished UVM president and philosopher of the 1830's. William E. Mann is the Marsh Professor.

The Pomeroy Professorship of Chemistry was established in 1878 by John N. Pomeroy, A.B., 1809, who lectured on chemistry and served as trustee of the University. William E. Geiger is the Pomeroy Professor.

The Howard Professorship of Natural History and Zoology was established in 1881 by John Purple Howard, a generous benefactor of the University. William Kilpatrick is the Howard Professor.

The Flint Professorship of Mathematics, Natural or Technic Science was established in 1895 by a bequest from Edwin Flint.

The Converse Professorship in Commerce and Economics was established in 1899 by John H. Converse, A.B., 1861, LL.D., 1897, who as a trustee of the University proposed the teaching of Latin, modern languages, history, and other subjects. William Gibson is the Converse Professor.

The Thayer Professorship of Anatomy was established in 1910 to honor Dr. Samuel White Thayer, Dean of the College of Medicine from 1854-71 and 1880-82, from contributions made by alumni of the College of Medicine. Professor of Anatomy Rodney L. Parsons is the Thayer Professor.

The McCullough Professorship of Political Science was established in 1926 through grants made by Gov. and Mrs. John G. McCullough. Alan P. Wertheimer, Professor of Political Science, is the McCullough Professor.

The Perkins Professorship of Zoology was established in 1931 to honor George H. Perkins, a teacher of science and dean of the College of Arts and Sciences. Judith L. Van Houten, Professor of Biology, is the Perkins Professor.

The Shipman Professorship of Ophthalmology was established in 1934 by a bequest from Dr. Elliot W. Shipman, M.D., 1885 and is held by Robert Millay, M.D..

The Lyman-Roberts Professorship of Classical Languages and Literature was established in 1941 to honor Robert Roberts, mayor of Burlington in the 1890's and a University trustee from 1895-1939. Z. Philip Ambrose, Professor of Classics, is the Lyman-Roberts Professor.

The Corse Professorship of English Language and Literature was established in 1952 by Frederick M. and Fannie C.P. Corse. Anthony G. Bradley, Professor of English, is the Frederick M. and Fannie C.P. Corse Professor.

The Lawrence Forensic Professorship of Speech was established in 1965 by Edwin W. Lawrence, lawyer and financier of Rutland, Vermont, A.B., 1901. Alfred C. Snider, Associate Professor of Theatre, is the Lawrence Professor.

The Sanders Professorship was established in 1968 by UVM alumni, honoring the Rev. Daniel Clarke Sanders, first president of the University.

The John L. Beckley Professorship in American Business was established in 1983 by John L. Beckley, 1934 graduate of UVM a trustee from 1966 to 1970, to encourage economic education. James M. Sinkula, Professor of Business Administration, is the Beckley Professor.

The Bishop Robert F. Joyce Distinguished University Professorship of Gerontology was established in 1983 by alumni and friends, honoring Robert F. Joyce, 1917 graduate, a trustee from 1948 to 1954, and Bishop of the R. C. Diocese of Burlington for 15 years. Stephen J. Cutler is the Joyce Professor.

The Buttles Professorship in Pathology was established in 1984 to honor Ernest Hiram Buttles, Professor of Pathology and Bacteriology, 1921 to 1946. Bruce R. MacPherson is the Buttles Professor.

The McClure Professorship in Musculoskeletal Research was established in 1988 by J. Warren and Lois H. McClure. Robert J. Johnson is the McClure Professor.

The E. L. Amidon Professorship in Medicine was established in 1989 to honor Dr. E.L. Amidon, a revered teacher and former chair of the Department of Medicine. Dr. Burton E. Sobel is the Amidon Professor.

The Roger H. Allbee Endowed Research Fellowship in Surgery was created in 1992 by Roger Allbee, M.D., '31, to provide support for a research fellow in the Department of Surgery. Michael A. Ricci is the Allbee Fellow in Surgery.

The Robert F. and Genevieve B. Patrick Endowed Professorship was created in 1999 through a generous bequest from the estate of Genevieve Patrick. The endowment is intended to support the study or specialty of nephrology. Dr. F. John Gennari is the Patrick Professor.

Established in 1995 by Gordon and Lulie Gund, *The GundChair in Liberal Arts* provides the College of Arts and Sciences with the opportunity to attract a leading teacher-scholar to one of the liberal arts disciplines. Phillip J. Cooper, Professor of Political Science, is the first Gund professor.

The Wallace Professorship in the Department of Pediatrics was established in 1995 by the family of Harry W. Wallace to represent Mr. Wallace's philanthropic interests. Jerold F. Lucey is the Wallace Professor of Neonatology.

The Dorothean Professorship was established in 1996 by Dr. Stuart Martin in memory of his wife, Dorothy Webster Martin, to support an outstanding individual in the field of engineering or a related science.

The Henry and Carleen Tufo Chair in General Internal Medicine was created in 1999 by Henry M. and Carleen Ann Tufo to support continued excellence in teaching, research and patient care in General Internal Medicine. The Tufo Chair is held by Benjamin Littenberg, M.D.

The S.D. Ireland Family Professorship in Surgical Oncology was established in 1999 in recognition of the cancer research being conducted at the University of Vermont by David N. Krag, M.D., who serves as the S.D. Ireland Family Professor.

The Patrick Chair in Watershed Planning and Science was established in 2000 from a $1.5 million gift from the estate of Genevieve Patrick, part of a $9 million bequest to the University. W. "Breck" Bowden is the first Patrick chair.

The John Van Sicklen Maeck, M.D. Chair in Obstetrics and Gynecology was established in 2000. It is the expressed wish of the Maeck family that the chair of the Department of Obstetrics and Gynecology hold this endowed faculty position. This position is currently held by Mark Phillippe, M.D., Chair and Professor of Obstetrics and Gynecology, he is the second person to hold the Maeck chair.

The Gund Professorship of Ecological Economics was established in 2001 from part of a $7.5 million gift from Gordon and Lulie Gund and their sons, Grant and Zachary. The first Gund professor is Robert Costanza, who also directs the Gund Institute of Ecological Economics.

The Stanley S. Fieber, M.D.'48 Chair in Surgery was created in 2002 by Stanley S. Fieber, M.D. to enhance the research and educational activities of the Department of Surgery. Steven R. Shackford, M.D. is the Fieber Chair in Surgery.

Academics

Catalogue 2003-04

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Faculty

As of October 2018, this is the list of Faculty that we were able to recover. When the catalogue was published, the Faculty list was complete.

A B C D E F G H I J K L M N O P R S T U V W X Y Z

- Abate III, Joseph Anthony; MD - Assistant Professor of Orthopaedic Rehabilitan
- Abrams, Sarah Elise; PHD - Assistant Professor of Nursing
- Abruscato, Joseph Anthony; PHD - Professor of Education Department
- Achenbach, Thomas Max; PHD - Professor of Psychiatry
- Acquisto, Joseph T.; PHD - Assistant Professor of Romance Languages
- Adams, Elizabeth Jean; MA - Lecturer of Communication Sciences
- Ades, Philip A.; MD - Professor of Medicine
- Agne, Russell Maynard; PHD - Professor of Education Department
- Aguiar, Neil W.; MS - Lecturer of Mathematics & Statistics
- Ainsworth, Pamela J.; MS - Extension Professor of Ext-Southern Region
- Aleong, John; PHD - Professor of Plant & Soil Science
- Alexandra, Eve M.; MFA - Lecturer of English
- Ali, Saleem Hassan; PHD - Assistant Professor of Sch of Natural Resources
- Allegretta, Mark; PH.D - Research Assistant Professor of Pathology
- Allen III, Gilman B.; MD - Assistant Professor of Medicine
- Allen, Christopher Whitney; PHD - Professor of Chemistry
- Allen-Malley, Margaret M.; EDD - Lecturer of Education Department
- Almena-Aliste, Monserrat; PHD - Lecturer of Nutrition & Food Sciences
- Alosa, Denise M.; MS - Lecturer of Education Department

- Alpert, Jamie Allison; MD - Clinical Assistant Professor of Medicine
- Alston, Wallace Kemper; MD - Assistant Professor of Medicine
- Ambaye, Abiy B.; MD - Assistant Professor of Pathology
- Ambrose, Z. Philip; PHD - Professor of Classics
- Ames, Suzanne Elizabeth; MD - Assistant Professor of Orthopaedic Rehabilitan
- Anderson, Scott R; MD - Assistant Professor of Pathology
- Anderson, Sharon Eylar; PHD - Assistant Professor of Nursing
- Andrea, Alfred John; PHD - Professor Emeritus of History
- Archdeacon, Dan Steven; PHD - Professor of Mathematics & Statistics
- Aronsson, David Douglas; MD - Professor of Orthopaedic Rehabilitan
- Arslan, Abdullah Necip; PH.D - Assistant Professor of Computer Science
- Ashman, Jay Irwin; JD - Lecturer of Comm Dvlpmnt & Applied Ec
- Ashman, Marguerite Gemson; MA - Extension Professor of Ext-Northwest Region
- Attarian, Hrayr P.; MD - Assistant Professor of Neurology
- Averyt, William Franklin; PHD - Associate Professor of Sch Business Adminstrn

B

- Backus, Linda H.; PHD - Research Assistant Professor of Education Department
- Baege, Monika Ingeborg; MS - Extension Assistant Professor of Ext-Central/Northeast Rgn
- Bailly, Jacques A.; PHD - Assistant Professor of Classics
- Baird, Sandra L.; MA - Lecturer of Sociology
- Baker, Daniel H.; MS - Lecturer of Comm Dvlpmnt & Applied Ec
- Baker, Susan M.; EDD - Lecturer of Education Department
- Bandaru, Viswanath; PHD - Research Associate of Microbio & Moleclr Genetc
- Barfod, Elisabeth T.; PHD - Research Assistant Professor of Pharmacology
- Barna, Jacquelyn Lee; MSW - Lecturer of Social Work
- Barnaby, Andrew Thomas; PHD - Associate Professor of English
- Barnett, David Brian; PHD - Assistant Professor of Philosophy
- Barrington, David Stanley; PHD - Professor of Botany
- Baruth, Philip Edward; PHD - Associate Professor of English
- Bateman, Erik Alan; PHD - Research Associate Professor of Microbio & Moleclr Genetc
- Bates, Jason H. T.; PHD - Research Professor of Medicine
- Battelle, Peter Erle; MBA - Assistant Professor of Sch Business Adminstrn
- Bavly, Gideon; MS - Lecturer of German & Russian
- Beatson, Jean E.; MS - Research Assistant Professor of Nursing
- Beatty, Barbara G.; PH.D - Research Associate Professor of Pathology
- Beatty, J. David; MD - Professor of Surgery
- Beckage, Brian; PHD - Assistant Professor of Botany

- Becker, Kenneth Maver; MA - Lecturer of Comm Dvlpmnt & Applied Ec
- Beer, Caroline Charlotte; PHD - Assistant Professor of Political Science
- Belin, Gayle M.; MA - Clinical Assistant Professor of Communication Sciences
- Beliveau, Jean-Guy Lionel; PHD - Professor of Civil & Environmental Eng
- Benoit, Michel Yves; FRCS - Assistant Professor of Orthopaedic Rehabilitan
- Benson, Daisy S.; MLIS - Library Assistant Professor of Bailey/Howe Library
- Bentil, Daniel E.; DPHL - Associate Professor of Mathematics & Statistics
- Bergdahl, Dale Roger; PHD - Professor of Sch of Natural Resources
- Berger, Christopher Lewis; PHD - Associate Professor of Moleculr Physolgy & Bioph
- Berger, Claudia A.; MD - Assistant Professor of Medicine
- Berkett, Lorraine Pachuta; PHD - Extension Professor of Plant & Soil Science
- Berlin, Linda; MS - Extension Instructor of Nutrition & Food Sciences
- Bernard, Emily E.; PHD - Assistant Professor of English
- Bernheim, Robert B.; MA - Lecturer of History
- Bernstein, Ira Mark; MD - Associate Professor of Obstetrics & Gynecology
- Bernstein, Richard Alan; MD - Associate Professor of Psychiatry
- Bertges, Daniel J; MD - Assistant Professor of Surgery
- Bertsch, Tania Fernandez; MD - Associate Professor of Medicine
- Beynnon, Bonnie; BS - Lecturer of Nutrition & Food Sciences
- Beynnon, Bruce David; PHD - Associate Professor of Orthopaedic Rehabilitan
- Bianchi, Nancy A.; MLS - Library Associate Professor of Medical Library
- Bickel, Warren Kurt; PHD - Professor of Psychiatry
- Bielawski-Branch, Karen E.; MSW - Lecturer of Social Work
- Bierman, Paul Robert; PHD - Professor of Geology
- Bingham, Peter M.; MD - Associate Professor of Neurology
- Birnn, Jane T.; MS - Clinical Assistant Professor of Nursing
- Bishop, Penny A.; ED.D - Assistant Professor of Education Department
- Bitner, Brooke A.; MS - Lecturer of Communication Sciences
- Blair, Linda; MSW - Lecturer of Social Work
- Blaszyk, Hagen J.; MD - Assistant Professor of Pathology
- Blom, Deborah Eileen; PH.D - Assistant Professor of Anthropology
- Boland Chira, Sheila; MA - Lecturer of English
- Bond, Jeffrey P.; PHD - Research Associate Professor of Microbio & Moleclr Genetc
- Bond, Lynne Anne; PHD - Professor of Psychology
- Bonev, Adrian Dimitrov; PHD - Research Assistant Professor of Pharmacology
- Bonifield, Carolyn Marie; PH.D - Assistant Professor of Sch Business Adminstrn
- Bonney, Elizabeth Ann; MD - Associate Professor of Obstetrics & Gynecology
- Borra, Adriana Eva; MA - Lecturer of Romance Languages

- Borra, Antonello; PHD - Assistant Professor of Romance Languages
- Borrazzo, Edward C.; MD - Assistant Professor of Surgery
- Bosenberg, Marcus Wolfram; PH.D - Assistant Professor of Pathology
- Bosompra, Kwadwo; PHD - Research Assistant Professor of Physical Therapy
- Bossange, Janet H.; EDD - Lecturer of Education Department
- Bosworth, Sidney Carl; PHD - Extension Associate Professor. of Plant & Soil Science
- Bottoms, Gregory Todd; MFA - Assistant Professor of English
- Bouchard, Beth Ann; PHD - Research Assistant Professor of Biochemistry
- Bouchard, Peter Francis; MM - Adjunct Lecturer of Music
- Bouchey, Heather Ann; PHD - Assistant Professor of Psychology
- Boumans, Roelof M.; PHD - Research Associate Professor of Sch of Natural Resources
- Bousquet, Daniel William; MBA - Extension Associate Professor. of Ext-Central/Northeast Rgn
- Bouton, Mark Earhart; PHD - Professor of Psychology
- Bovee, Matthew W.; MA - Assistant Professor of Sch Business Adminstrn
- Bovee, Michael L.; PHD - Research Assistant Professor of Biochemistry
- Bovill, Edwin Gladstone; MD - Professor of Pathology
- Bowden, William B.; PHD - Professor of Sch of Natural Resources
- Boyson, Jonathan E.; PHD - Assistant Professor of Surgery
- Braas, Karen Marie; PHD - Research Associate Professor of Anatomy & Neurobiology
- Bradley, Anthony G.; PHD - Professor of English
- Branch, Judy H.; MS - Extension Associate Professor. of Ext-Central/Northeast Rgn
- Branda, Richard Frank; MD - Professor of Medicine
- Brayden, Joseph Elliott; PHD - Professor of Pharmacology
- Brennan, Thomas; MFA - Associate Professor of Art
- Brew, Linda S.; MS - Library Associate Professor of Bailey/Howe Library
- Bridges, Karl F.; MS - Library Associate Professor of Bailey/Howe Library
- Brody, Alison Kay; PHD - Associate Professor of Biology
- Broer, Stephen Michael; PSYD - Research Assistant Professor of Education Department
- Bronstein, Phyllis; PHD - Assistant Professor of Psychology
- Brook, Judy Tenney; MEE - Extension Assistant Professor. of Ext-Northwest Region
- Brooks, Nancy Elizabeth; PHD - Lecturer of Economics
- Broughton, Laurel Ginter; MA - Lecturer of English
- Brown, Dona L.; PHD - Associate Professor of History
- Brown, Kenneth A.; MD - Professor of Medicine
- Brown, Melissa Moore; MMV - Adjunct Lecturer of Music

- Brownbridge, Michael; PHD - Research Associate Professor of Plant & Soil Science
- Brubaker, David W.; BS - Lecturer of Music
- Brummel-Ziedins, Kathleen E.; PHD - Research Assistant Professor of Biochemistry
- Brumsted, John Robert; MD - Professor of Obstetrics & Gynecology
- Brundage, William John; MD - Assistant Professor of Surgery
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- Soons, Heidi; BA - Lecturer of Music
- Soto-Adams, Felipe N; PHD - Research Assistant Professor of Biology
- Soultanakis, Emmanuel Nicholas; MD - Assistant Professor of Obstetrics & Gynecology
- Sowan, Nancy A.; PHD - Associate Professor of Nursing
- Spartalian, Kevork; PHD - Associate Professor of Physics

- Spaulding, Laurie; MD - Associate Professor of Surgery
- Spector, Peter Salem; MD - Associate Professor of Medicine
- Spitzform, Peter H.; MS - Library Assistant Professor of Bailey/Howe Library
- Sproul, Marga Susan; MD - Associate Professor of Family Practice
- Stanfield, Robert Everett; PHD - Professor Emeritus of Sociology
- Stanger, Catherine; PHD - Research Associate Professor of Psychiatry
- Stanley, Andrew Carl; MD - Assistant Professor of Surgery
- Starrett, Mark C.; PHD - Associate Professor of Plant & Soil Science
- Steen, M. Dale; MAT - Extension Assistant Professor. of Ext-Central/Northeast Rgn
- Stein, Murry A.; PHD - Assistant Professor of Microbio & Moleclr Genetc
- Steinthorsson, Georg; MD - Assistant Professor of Surgery
- Stevens, Lori; PHD - Professor of Biology
- Stewart, Alexander; PH.D - Assistant Professor of Music
- Stickle, Timothy R; PHD - Professor of Psychology
- Stilwell, Sean Arnold; PH.D - Assistant Professor of History
- Stokes, Ian Alexander; PHD - Research Professor of Orthopaedic Rehabilitan
- Stokowski, Patricia A.; PHD - Associate Professor of Sch of Natural Resources
- Stoler, Mark Alan; PHD - Professor of History
- Stone, Judith E.; MFA - Lecturer of Art
- Stor, Kirsten Ann; MS - Lecturer of Mathematics & Statistics
- Strader, Doris B.; MD - Assistant Professor of Medicine
- Stratton, Donald Arthur; PHD - Research Assistant Professor of Botany
- Strauss, Michael John; PHD - Professor Emeritus of Classics
- Streeter, Thomas George; PHD - Associate Professor of Sociology
- Strickler, Jennifer Anne; PHD - Associate Professor of Sociology
- Strong, Allan Matthew; PH.D - Assistant Professor of Sch of Natural Resources
- Sturtevant, Norman Vaughn; MD - Professor of Radiology
- Sugarman, Richard Ira; PHD - Professor of Religion
- Sukantarat, Wichada; MSLS - Library Assistant Professor of Bailey/Howe Library
- Sullivan, Anne Marie; MS - Associate Professor Emeritus of Biomedical Technology
- Sullivan, Jill A.; BS - Lecturer of Nutrition & Food Sciences
- Sullivan, Mary Jackman; ED.D - Lecturer of Education Department
- Sullivan, Maureen A.; PHD - Research Assistant Professor of Integratd Profssnl Stdies
- Sun, Diana Yiqing; MA - Lecturer of Classics
- Suratt, Benjamin Tate; MD - Assistant Professor of Medicine
- Suresh, Gautham K.; DM - Assistant Professor of Pediatrics
- Surks, Allison R.; MPH - Lecturer of Nursing

- Suzuki, Kazuko; MA - Lecturer of Classics
- Swarts, Johannnes Christiaan; PHD - Visiting Professor of Chemistry
- Szilva, Jean; MD - Lecturer of Anatomy & Neurobiology

T

- Taatjes, Douglas Joseph; PHD - Research Professor of Pathology
- Tabin, Geoffrey Craig; MD - Associate Professor of Surgery
- Talley, Carol Ann; MD - Assistant Professor of Orthopaedic Rehabilitan
- Tandan, Rup; MRCP - Professor of Neurology
- Tang, Mary E.; MD - Associate Professor of Pathology
- Terrien, Edward F.; MD - Assistant Professor of Medicine
- Tessmann, Brenda V.; MS - Lecturer of Microbio & Moleclr Genetc
- Teuscher, Cory; PH.D - Professor of Medicine
- Thaler, Martin Andrew; MFA - Professor of Theatre
- Thali, Markus Josef; PH.D - Assistant Professor of Microbio & Moleclr Genetc
- Thompson, Ellen A.; MED - Lecturer of Education Department
- Thompson, Margo Hobbs; PHD - Assistant Professor of Art
- Thomson, Ross David; PHD - Associate Professor of Economics
- Tierney, Mary Lauretta; PHD - Associate Professor of Botany
- Tighe, Theodore A.; PHD - Research Assistant Professor of Education Department
- Tignor, Milton Evgene; PHD - Assistant Professor of Plant & Soil Science
- Timblin, Cynthia R.; PHD - Research Assistant Professor of Medicine
- Tindle, Barbara Heywood; MD - Associate Professor of Pathology
- Tischler, Marc David; MD - Associate Professor of Medicine
- Titcomb, Stephen; PHD - Associate Professor of Electrical & Computer Eng
- Tkatch, Peter Jack; MFA - Associate Professor of Theatre
- Todd, John H.; PHD - Research Professor of Sch of Natural Resources
- Tolentino, Efleda P; PHD - Assistant Professor of Integratd Profssnl Stdies
- Tomas III, Michael John; PHD - Assistant Professor of Sch Business Adminstrn
- Tomas, Amy M; PHD - Visiting Assistant Professor of Sch Business Adminstrn
- Toner Jr., D. Thomas; AD - Associate Professor of Music
- Torncello, Susan Ann; MED - Lecturer of Integratd Profssnl Stdies
- Toselli, Richard Mark; MD - Associate Professor of Surgery
- Toth, Michael J.; PHD - Assistant Professor of Medicine
- Toutonghi, Pauls Harijs; MFA - Lecturer of English
- Trabulsy, Mario E.; MD - Assistant Professor of Surgery
- Tracy, Paula Babiarz; PHD - Professor of Biochemistry
- Tracy, Russell P.; PHD - Professor of Pathology
- Trainor, Kevin M.; PHD - Associate Professor of Religion

- Tranmer, Bruce I.; MD - Professor of Surgery
- Trotter, Samuel Joseph; MD - Associate Professor of Surgery
- Troy, Austin R.; PH.D - Assistant Professor of Sch of Natural Resources
- Trybus, Kathleen M.; PHD - Professor of Moleculr Physolgy & Bioph
- Turner, Paul D.; PH.D - Assistant Professor of Medicine
- Tyzbir, Robert Stanley; PHD - Professor of Nutrition & Food Sciences

U

- Uddin, Sufia; PHD - Assistant Professor of Religion
- Ungerer, Walter; MA - Lecturer of Art
- Uphold, Ruth Esther; MD - Professor of Surgery
- Usher, Mark David; PHD - Associate Professor of Classics

V

- Vaccaro, Christopher T.; MA - Lecturer of English
- Valeriano, Irma; MA - Lecturer of Romance Languages
- Van Buren, Peter C.; MD - Associate Professor of Medicine
- van der Vliet, Albert; PHD - Assistant Professor of Pathology
- Van Dusen, Roy Francis; MS - Research Associate of Education Department
- Van Houten, Judith Lee; PHD - Professor of Biology
- Van Kleeck, Lynda A.; BS - Lecturer of Education Department
- Vanden Bergh, Richard G.; PH.D - Assistant Professor of Sch Business Adminstrn
- Vanderbeck, Robert Mark; PH.D - Assistant Professor of Geography
- Vane, Dennis William; MD - Professor of Surgery
- VanSlyke, Gretchen Jane; PHD - Professor of Romance Languages
- Vargas, Claudia M.; PHD - Research Assistant Professor of Pediatrics
- Varhue, Walter John; PHD - Professor of Electrical & Computer Eng
- Vecchio, James A.; MD - Associate Professor of Medicine
- Ventriss, Curtis L.; PHD - Professor of Comm Dvlpmnt & Applied Ec
- Vichi, Paul Joseph; PHD - Assistant Professor of Biomedical Technology
- Viets, Margaret Ann; ED.D - Lecturer of Sch Business Adminstrn
- Vigoreaux, Jim Osvaldo; PHD - Associate Professor of Biology
- Villa, Ferdinando; PH.D - Research Associate Professor of Botany
- Viselli, Anne Louise; MD - Associate Professor of Obstetrics & Gynecology
- Visser, Thomas Durant; MS - Associate Professor of History
- Vivanco, Luis A.; PH.D - Assistant Professor of Anthropology
- Vizcarra, Catalina M.; PHD - Assistant Professor of Economics
- Vizzard, Margaret A.; PHD - Associate Professor of Neurology
- Vogelmann, Thomas C.; PHD - Professor of Botany

- Voinov, Alexey Arkady; PHD - Research Associate Professor of Computer Science

W

- Wager, Adam Robert; PH.D - Assistant Professor of Philosophy
- Wagers, Scott S.; MD - Assistant Professor of Medicine
- Waldron, John Vincent; PHD - Assistant Professor of Romance Languages
- Wallace, Anne; MSW - Lecturer of Social Work
- Wallace, Susan Scholes; PHD - Professor of Microbio & Moleclr Genetc
- Walrath, Dana E.; PHD - Assistant Professor of Medicine
- Walsh, Brian Thomas; PH.D - Lecturer of Classics
- Wang, Deane; PHD - Associate Professor of Sch of Natural Resources
- Wang, Jue-Fei; ED.D - Research Assistant Professor of Education Department
- Wang, Qingbin; PHD - Associate Professor of Comm Dvlpmnt & Applied Ec
- Wang, Xiaoyang S; PHD - Professor of Computer Science
- Wang, Zhong Quan; MD - Research Assistant Professor of Medicine
- Ward, Gary E.; PHD - Associate Professor of Microbio & Moleclr Genetc
- Ward, Norman Stewart; MD - Associate Professor of Family Practice
- Warhol, Robyn R.; PHD - Professor of English
- Warren Hagan, Shelley M.; MFA - Lecturer of Art
- Warshaw, David Michael; PHD - Professor of Moleculr Physolgy & Bioph
- Wasserman, Richard Charles; MD - Professor of Pediatrics
- Waterman, G. Scott; MD - Associate Professor of Psychiatry
- Waters, Brenda Lorraine; MD - Associate Professor of Pathology
- Watkins, Matthew Wells; MD - Professor of Medicine
- Watzin, Mary Catherine; PHD - Associate Professor of Sch of Natural Resources
- Weaver, Donald Lee; MD - Associate Professor of Pathology
- Weaver, Sheila O'Leary; MS - Lecturer of Mathematics & Statistics
- Wegner, Elisabeth Kirsten; MD - Assistant Professor of Obstetrics & Gynecology
- Wehry, Susan; MD - Associate Professor of Psychiatry
- Wei, Chunfang; PH.D - Research Assistant Professor of Botany
- Weidner, Mark Howard; MD - Assistant Professor of Medicine
- Weimersheimer, Peter Edward; MD - Assistant Professor of Surgery
- Weinberg, David A.; MD - Associate Professor of Surgery
- Weinstock, Jacqueline S.; PHD - Associate Professor of Integratd Profssnl Stdies
- Weise, Wolfgang Johannes; MD - Associate Professor of Medicine
- Weisman, Gerald; MS - Adjunct Instructor of Mechanical Engineering
- Weiss, Daniel Jay; MD - Assistant Professor of Medicine
- Weissgold, David J.; MD - Associate Professor of Surgery
- Welch, Nancy Ellen; PHD - Associate Professor of English

- Welkowitz, Julie Ann; PHD - Research Assistant Professor of Education Department
- Wellman, George C.; PHD - Assistant Professor of Pharmacology
- Wemple, Beverley Coghill; PHD - Assistant Professor of Geography
- Wertheimer, Alan Philip; PHD - Professor of Political Science
- Wesley, Cedric Satish; PH.D - Assistant Professor of Microbio & Moleclr Genetc
- Wesley, Umadevi V.; PH.D - Research Assistant Professor of Microbio & Moleclr Genetc
- Wesseling, Bernice Ferguson; MA - Lecturer of Romance Languages
- Whatley, Janet Elinor; PHD - Professor of Romance Languages
- White, Richard B.; MD - Assistant Professor of Family Practice
- White, Sheryl Lynne; PHD - Research Assistant Professor of Anatomy & Neurobiology
- Whitney, Stuart Luhn; MS - Clinical Assistant Professor of Nursing
- Whittaker, Laurie A.; MD - Assistant Professor of Medicine
- Widrick, Gary Charles; PHD - Lecturer of Social Work
- Wilcke Jr., Burton William; PHD - Chairperson of Biomedical Technology
- Williams, Ronald Wendell; PHD - Professor of Electrical & Computer Eng
- Williams, Wayne Weston; PHD - Professor of Education Department
- Williams, William H.; MED - Research Associate of Education Department
- Williamson, James Thomas; MA - Lecturer of English
- Wilson, James Michael; PHD - Professor of Mathematics & Statistics
- Wilson, Matthew Anthony; PHD - Research Assistant Professor of Sch Business Adminstrn
- Winn Jr, Washington Carlyle; MD - Professor of Pathology
- Witkin, Stanley L.; PHD - Professor of Social Work
- Wittpenn, Ann S.; MD - Associate Professor of Pediatrics
- Wong, Cheung; MD - Assistant Professor of Obstetrics & Gynecology
- Wood, Beatrice Jeanne; MA - Lecturer of German & Russian
- Wood, Marie E.; MD - Associate Professor of Medicine
- Wood, Mark A.; BS - Research Associate of Education Department
- Woodman, Martha; MBA - Lecturer of Sch Business Adminstrn
- Woodruff, Paul A.; MED - Research Associate of Education Department
- Woods, Barbara Adams; MAT - Lecturer of Integratd Profssnl Stdies
- Woolf, Arthur George; PHD - Associate Professor of Economics
- Worden, John Kimball; PHD - Research Professor of Family Practice
- Worley, Ian Almer; PHD - Professor of Botany
- Wright, Brad Wallace; PH.D - Lecturer of Anatomy & Neurobiology
- Wright, John M.; MD - Instructor of Medicine
- Wright, Robert Kingman; PHD - Professor of Mathematics & Statistics
- Wright, Stephen F.; PHD - Lecturer of Geology

- Wu, Ge; PHD - Associate Professor of Physical Therapy
- Wu, Hui; PH.D - Research Associate of Microbio & Moleclr Genetc
- Wu, Jun-Ru; PHD - Professor of Physics
- Wu, Xindong; PHD - Professor of Computer Science

X

- Xia, Tian; PHD - Assistant Professor of Electrical & Computer Eng
- Xu, Gang; PH.D - Visiting Assistant Professor of Geography

Y

- Yadav, Dharam Paul; PHD - Associate Professor of Psychology
- Yandell, David Wendell; SCD - Professor of Pathology
- Yang, Jianke; PHD - Associate Professor of Mathematics & Statistics
- Yang, Jie; PHD - Associate Professor of Physics
- Yang, Ying; PHD - Research Associate of Computer Science
- Yano, Junji; PHD - Research Assistant Professor of Biology
- Yeager, Scott Brand; MD - Associate Professor of Pediatrics
- Yin, Jing-hua; PHD - Assistant Professor of Classics
- Young, Michael P.; MD - Assistant Professor of Medicine
- Yu, Jun; PHD - Professor of Mathematics & Statistics
- Yuan, Susan Jane; PHD - Research Assistant Professor of Education Department

Z

- Zakai, Neil A; MD - Instructor of Medicine
- Zhao, Feng-Qi; PHD - Assistant Professor of Animal Sciences
- Zheng, Shiping; PHD - Associate Professor of Political Science
- Zhou, Xu; PH.D - Research Assistant Professor of Mechanical Engineering
- Zhu, Xingquan; PHD - Research Assistant Professor of Computer Science
- Zimakas, Paul James; MD - Assistant Professor of Pediatrics
- Zimny, Nancy Joyce; MS - Associate Professor of Physical Therapy
- Zubarik, Richard S.; MD - Assistant Professor of Medicine
- Zvara, Peter; PH.D - Research Assistant Professor of Surgery
- Zvolensky, Michael Joseph; PH.D - Assistant Professor of Psychology
- Zweber, Thomas J.; MD - Assistant Professor of Orthopaedic Rehabilitan

Emeriti Faculty A to Z

B	C	D	E	F	G	H
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Y	Z					

- Albee, George - Professor of Psychology Emeritus
- Albertini, Richard Joseph - Professor of Microbiology and Molecular Genetics Emeritus, Professor of Pediatrics Emeritus
- Allen, Elizabeth Fleming - Assistant Professor of Pathology Emerita
- Allen Jr., Sinclair T. - Professor of Medicine Emeritus
- Alnasrawi, Abbas - Professor of Economics Emeritus
- Alpert, Norman R. - Professor of Physiology and Biophysics Emeritus
- Ambrose, Jane P. - Professor Emeritus of Music

- Anderson, Richard - Professor of Electrical Engineering Emeritus
- Andrea, Alfred J. - Professor of History Emeritus
- Arns, Robert G. - Professor of Physics Emeritus
- Ashman, Jay Irwin - Senior Lecturer of Community Development and Applied Economics Emeritus
- Ashman, Marguerite G - Extension Professor Emerita
- Atherton, Henry V. - Professor of Animal Science Emeritus
- Atwood, Elizabeth F. - Associate Professor of Merchandising, Consumer Studies, and Design Emerita

Emeriti Faculty A to Z

A	C	D	E	F	G	H
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- Babbott, David - Professor of Medicine Emeritus
- Babbott, Frank L. - Clinical Associate Professor of Medicine Emeritus
- Balch, Donald J. - Professor of Animal Science Emeritus
- Ball, Howard - Professor of Political Science Emeritus
- Bandel, Betty - Professor of English Emerita
- Barbour, James - Associate Professor of Integrated Professional Studies Emeritus
- Barney, Bernard B. - Associate Professor of Surgery Emeritus
- Barnum, H. Gardiner - Associate Professor of Geography Emeritus
- Barrett, Evaline I. - Associate Professor of Professional Nursing Emerita
- Bartlett, Richmond J. - Professor of Plant and Soil Science Emeritus
- Beeken, Warren L. - Professor of Medicine Emeritus
- Beliveau, Jean-Guy Lionel - Professor of Civil Environmental Engineering Emeritus
- Bell, Ross T - Professor of Biology Emeritus

- Bevan, Rosemary - Professor of Pharmacology Emerita
- Bevins, Malcolm - Professor of The Rubenstein School of Environment and Natural Resources Emeritus
- Biddle, Arthur W. - Professor of English Emeritus
- Bigalow, Charles - Extension Professor of Community Development and Applied Economics Emeritus
- Bishop, Kathleen - Associate Professor of Social Work Emerita
- Blair, Alice J. - Extension Associate Professor Emerita
- Bland, John H. - Professor of Medicine Emeritus
- Bliss, Francis R. - Professor of Classics Emerita
- Bloom, Thomas K. - Associate Professor of Community Development and Applied Economics Emeritus
- Bogorad, Samuel N. - Professor of English Emeritus
- Boller, Betty M. - Professor of Organizational, Counseling, and Foundational Studies Emerita
- Bolognani, Betty M. - Extension Instructor Emerita
- Bolton, Wesson D. - Professor of Animal Science Emeritus
- Boushey, Dallas R. - Assistant Professor of Anatomy and Neurobiology Emeritus
- Bouton, Edward - Extension Professor Emeritus
- Boyce, Bertie - Professor of Plant and Soil Science Emeritus
- Bradley, Anthony G. - Professor of English Emeritus
- Branch, Judy H. - Extension Associate Professor Emerita
- Brandenburg, Richard George - Professor of Business Administration Emeritus
- Braun Jr., Theodore - Associate Professor of Obstetrics and Gynecology
- Emeritus Breen, Mary E. - Associate Professor of Medical Technology Emerita
- Brenneman, Walter L. - Professor of Religion Emeritus
- Bright, William - Assistant Professor of Education Emeritus
- Brook, Munro S. - Extension Professor Emeritus
- Broughton, T. Alan - Professor of English Emeritus
- Brown, Joanne C. - Lecturer of Mathematics and Statistics Emerita
- Brown, John S. - Professor of Physics Emeritus
- Brown, Peter M - Associate Professor of Music Emeritus
- Bucke, David P. - Associate Professor of Geology Emeritus
- Buechler, John L. - Library Professor Emeritus
- Burdett, Carol A. - Assistant Professor of Education Emerita
- Burns, Stanley - Professor of Medicine Emeritus
- Burrell, Leon Frederick - Lecturer of Leadership and Developmental Sciences, Professor of Social Work Emeritus
- Buxton, Beatrice F. - Extension Associate Professor Emerita

Emeriti Faculty A to Z

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- Caldwell, Martha M. - Associate Professor of Textiles, Merchandising, and Consumer Studies Emerita
- Campagna, Anthony - Professor of Economics Emeritus
- Capen, David Edward - Research Professor of Natural Resources Emeritus
- Capone, Angela Marie - Associate Professor of Integrated Professional Studies Emerita
- Carlson, Robert Verner - Professor of Education Emeritus
- Carpenter, Howard J. - Associate Professor of Mechanical Engineering Emeritus
- Carrard, Philippe - Professor of Romance Languages Emeritus
- Cassell, Eugene Alan - Professor of The Rubenstein School of Environment and Natural Resources Emeritus
- Chamberlain, Erling W. - Professor of Mathematics Emeritus
- Chamberlain, Valerie M. - Professor of Nutrition and Food Sciences Emerita
- Chapman, James Gliem - Professor Emeritus of Music Emeritus

- Chase, Marilyn - Assistant Professor of Human Development Emerita
- Chase, Richard X. - Professor of Economics Emeritus
- Cheney, Arthur H. - Assistant Professor of Organizational, Counseling, and Foundational Studies Emeritus
- Chiu, Jen-fu - Professor of Biochemistry Emeritus
- Christie, Lu S. - Lecturer in Special Education Emerita
- Clark, Virginia - Professor of English Emerita
- Clarke, John H. - Professor of Education Emeritus
- Clemmons, Jackson J. - Professor of Pathology Emeritus
- Cochran, Robert W. - Professor of English Emeritus
- Coffin Jr., Laurence H. - Professor of Surgery Emeritus
- Cohen, Julius G. - Professor of Psychiatry Emeritus
- Conrad, David - Professor of Education Emeritus
- Cook, Philip W. - Associate Professor of Botany Emeritus
- Corey, William M. - Extension Professor Emeritus
- Costante, Joseph - Professor of Plant and Soil Science Emeritus
- Craighead, John - Professor of Pathology Emeritus
- Cronin, Mary Julia - Associate Professor of Nursing Emerita
- Crouch, Milton H - Library Professor Emeritus
- Cutler, Stephen Joel - Professor of Sociology Emeritus

Emeriti Faculty A to Z

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- Danforth Jr., Elliot - Professor of Medicine Emeritus
- Daniels, Robert V. - Professor of History Emeritus
- Davis, John H - Professor of Surgery Emeritus
- Davison, Jean M. - Lyman-Roberts Professor of Classical Languages and Literature Emerita
- Deane, Robert S. - Professor of Anesthesiology Emeritus
- Deck, Edith F. - Associate Professor of Professional Nursing Emerita
- Demers, Louise Aline - Associate Professor of Professional Nursing
- Emerita Detenbeck, Robert W - Professor of Physics Emeritus
- Dickerson, Mary J - Associate Professor of English Emerita
- Dietzel, Cleason S. - Clinical Associate Professor of Psychology Emeritus
- Donnelly, John R - Professor of Natural Resources Emeritus

- Doremus, Henry M. - Associate Professor of Animal Pathology Emeritus
- Dowe, Thomas W. - Professor of Animal Science Emeritus
- Downer, Richard N. - Associate Professor of Civil Engineering Emeritus
- Ducharme, Edward R. - Professor of Organizational, Counseling, and Foundational Studies Emeritus
- Dumville, Robert Whitney - Extension Assistant Professor Emeritus
- Dunkley, Thomas C. - Assistant Professor of Human Development Studies Emeritus
- Durfee, Herbert A. - Professor of Obstetrics and Gynecology Emeritus
- Duthie, Alexander - Professor of Animal Science Emeritus
- Dwork, Julius S. - Associate Professor of Mathematics Emeritus

Emeriti Faculty A to Z

A	B	C	D	F	G	H
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- Eddy, Dwight K. - Extension Professor of Agricultural and Resource Economics Emeritus
- Edgerton, James A. - Extension Professor Emeritus
- Edwards, Margaret F. - Associate Professor of English Emerita
- Elkins, Alan M. - Professor of Psychiatry Emeritus
- Elliott, Norris A. - Extension Associate Professor Emeritus
- Emerson, Faith G. - Associate Professor of Professional Nursing Emerita
- Erb, Clinton A. - Associate Professor of Education Emeritus
- Etherton, Bud - Professor of Botany Emeritus
- Evering, Frederick C. - Professor of Electrical and Computer Engineering Emeritus

Emeriti Faculty A to Z

A	B	C	D	E	G	H
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- Farnham, John - Clinical Professor of Surgery Emeritus
- Farr, Gordon V. - Extension Associate Professor Emeritus
- Feidner, Edward J. - Professor of Theatre Emeritus
- Feitelberg, Samuel - Professor of Physical Therapy Emeritus
- Felt, Jeremy P. - Professor of History Emeritus
- Fengler-Stephany, Christie - Associate Professor of Art Emerita
- Fenton, Ardith - Instructor in Extension System Emerita
- Fife, C. Lynn - Associate Professor of Community Development and Applied Economics Emerita
- Finney, Henry C. - Associate Professor of Sociology Emeritus
- Fishman, Laura T. - Associate Professor of Sociology Emerita
- Fitzgerald, Martha D. - Research Professor of Education Emerita

- Flanagan, Theodore R. - Extension Associate Professor of Plant and Soil Science Emeritus
- Foote, Murray W. - Associate Professor of Microbiology and Biochemistry Emeritus
- Forgione, Rose J. - Associate Professor of Nursing Emerita
- Forsyth, Ben R. - Professor of Medicine Emeritus
- Foss, Donald C - Professor of Agriculture and Life Science Emeritus
- Francis, Gerald P. - Professor of Mechanical Engineering Emeritus
- Freedman, Steven - Associate Professor of Anatomy and Neurobiology Emeritus
- Friedman, Edward E. - Professor of Family Practice Emeritus
- Frymoyer, John W - Professor of Orthopaedics and Rehabilitation Emeritus
- Fuller, Gerald R. - Professor of Vocational Education and Technology Emeritus
- Fuller, Robert W. - Assistant Professor of Environment and Natural Resources Emeritus
- Fulwiler, Laura - Senior Lecturer of Elementary Education Emerita
- Fulwiler, Toby Edward - Professor of English Emeritus

Emeriti Faculty A to Z

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- Gade, Daniel W. - Professor of Geography Emeritus
- Gans, Joseph H. - Professor of Pharmacology Emeritus
- Gay, Barbara T. - Library Associate Professor Emerita
- Geno, Marie - Lecturer in Romance Languages Emerita
- Geno, Thomas H. - Associate Professor of Romance Languages Emeritus
- Gibson, Kenneth S. - Extension Professor in Animal and Food Sciences Emeritus
- Gibson, Thomas C. - Professor of Medicine Emeritus
- Gilbert, Alphonse H. - Associate Professor of The Rubenstein School of Environment and Natural Resources Emeritus
- Gillies, Ellen M. - Library Professor of the Medical Library Emerita
- Gobin, Robert J. - Professor of Human Development Studies Emeritus
- Gomez, Antonio J. - Associate Professor of Neurology Emeritus
- Goodhouse, Edward W. - Extension Associate Professor Emeritus

- Gora, Irene T. - Lecturer of Merchandising, Consumer Studies and Design Emerita
- Gould, Nathaniel - Associate Professor of Orthopaedics and Rehabilitation Emeritus
- Graham, William G. - Professor of Medicine Emeritus
- Greig, Harold A. - Assistant Professor of Human Development Emeritus
- Gribbons, Jackie Marie - Assistant Professor of Integrated Professional Studies Emerita
- Grime, Philip K. - Extension Professor Emeritus
- Grinnell, Dale Jacques - Professor of Business Administration Emeritus
- Gump, Dieter W - Professor of Medicine Emeritus
- Gussner, Robert E. - Associate Professor of Religion Emeritus

Emeriti Faculty A to Z

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- Haines, Carleton R. - Associate Professor of Surgery Emeritus
- Hall, Mary - Associate Professor of English Emerita
- Hall, Robert - James Marsh Professor of Philosophy Emeritus
- Halpern, William - Professor of Physiology and Biophysics Emeritus
- Hamrell, Burt Benjamin - Professor of Medicine Emeritus, Professor of Molecular Physiology and Biophysics Emeritus
- Hand, Samuel B. - Professor of History Emeritus
- Handelsman, Morris - Professor of Electrical Engineering Emeritus
- Hanley, Edward M. - Professor of Professional Education and Curriculum Development Emeritus
- Hannah, Peter R. - Professor of The Rubenstein School of Environment and Natural Resources Emeritus

- Hanson, John S. - Professor of Medicine Emeritus
- Happ, George - Professor of Biology Emeritus
- Harris, Everett W. - Associate Professor of Community Development and Applied Economics Emeritus
- Hasazi, Joseph E. - Associate Professor of Psychology Emeritus
- Haviland, William A. - Professor of Anthropology Emeritus
- Helzer, John Earl - Professor of Psychiatry Emeritus
- Hendley, Edith D. - Professor of Molecular Physiology and Biophysics Emerita
- Hermance, Clarke E - Professor of Mechanical Engineering Emeritus
- Higgins, Daniel W - Professor of Art Emeritus
- Hilberg, Raul - Professor of Political Science Emeritus
- Hill, H. Charles - Associate Professor of Dental Hygiene Emeritus
- Hirth, David Hammond - Associate Professor of Wildlife and Fisheries Biology
- Emeritus
- Hochheiser, Louis I - Professor of Family Practice Emeritus
- Hong, Richard - Clinical Professor of Pediatrics Emeritus
- Honnold, Robert E. - Extension Professor Emeritus
- Hood, Kenneth W. - Assistant Professor of Education Emeritus
- Hopp, Susan M. - Research Associate Professor of Agriculture Emerita
- Horton, Chesley P. - Extension Assistant Professor Emeritus
- Horton, Edward S. - Professor of Medicine Emeritus
- Houghaboom, Verle R. - Extension Professor of Agricultural and Resource Economics Emeritus
- Houston, Charles S. - Professor of Epidemiology and Environmental Health Emeritus
- Howard, Phillip - Professor of Pathology Emeritus
- Howe IV, James Robinson - Professor of English Emeritus
- Howell, David C. - Professor of Psychology Emeritus
- Huddle, David Ross - Professor of English Emeritus
- Huessy, Hans Rosenstock - Professor of Psychiatry Emeritus
- Hundal, Mahendra S. - Professor of Mechanical Engineering Emeritus
- Hunt, Allen - Professor of Geology Emeritus
- Hyde, Beal B. - Professor of Botany Emeritus

Emeriti Faculty A to Z

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- Irwin, Alan Emory - Professor of Surgery Emeritus
- Irwin, Edward Suter - Clinical Professor of Surgery Emeritus
- Ives, John O. - Associate Professor of Psychiatry Emeritus
- Izzo, Joseph A. - Professor of Mathematics Emeritus
- Izzo, Louis Mario - Associate Professor of Medical Laboratory and Radiation Sciences Emeritus

Emeriti Faculty A to Z

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- Jaffe, Julian J. - Professor of Pharmacology Emeritus
- Jameson, DeeDee M. - Assistant Professor of Human Development Emeritus
- Janson, Richard H. - Professor of Art Emeritus
- Jarvis, Lynville W. - Extension Professor Emeritus
- Joffe, Justin Manfred - Professor of Psychology Emeritus
- Johnstone, Donald B. - Professor of Microbiology and Biochemistry Emeritus
- Jones, Leonidas M. - Frederick and Fanny Corse Professor Emeritus
- Julow, Roy G. - Associate Professor of Romance Languages Emeritus

Emeriti Faculty A to Z

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- Kapp, Bruce S - Professor of Psychology Emeritus
- Kasprisin, Christina Algiere - Clinical Assistant Professor of Nursing Emerita
- Kebabian, Paul - Library Professor Emeritus
- Keller, Jay E. - Associate Professor of Surgery Emeritus
- Kelly, William H. - Associate Professor of Community Development and Applied Economics Emeritus
- Kinnard, Douglas - Professor of Political Science Emeritus
- Kinsey, David L. - Associate Professor of Music Emeritus
- Koplewitz, Martin J. - Associate Professor of Surgery Emeritus
- Korson, Roy - Professor of Pathology Emeritus
- Krapchow, A. Paul - Professor of Chemistry Emeritus
- Kristiansson, Karin - Extension Professor Emerita
- Kuehne, Martin E - Professor of Chemistry Emeritus
- Kuhlmann, Raymond Frank - Clinical Professor of Orthopedics and Rehabilitation Emeritus

- Kunin, Arthur S. - Professor of Medicine Emeritus
- Kunkel, John R. - Extension Associate Professor of Plant and Soil Science Emeritus

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- Laber, Gene - Professor of Business Administration Emeritus
- Laferriere, Mary E. - Lecturer in Professional Nursing Emerita
- Laing, Frederick M. - Research Associate Professor of Botany Emeritus
- Lambert, Denis E. - Assistant Professor of Human Development Emeritus
- Lambert, Lloyd - Professor of Physics Emeritus
- Lamden, Merton P. - Professor of Biochemistry Emeritus
- Lamoray, A. Rosemary - Lecturer of Dental Hygiene Emerita
- Landesman, Richard H. - Associate Professor of Biology Emeritus
- Lang, Helene Wanda - Associate Professor of Education Emeritus, Lecturer of Leadership and Developmental Sciences
- Larson, Karin - Lecturer of Mathematics and Statistics Emerita
- Larson, Robert L. - Professor of Education Emeritus
- Leamy, William P. - Extension Associate Professor of Animal Science Emeritus

- Leggett, Leslie - Professor of Human Development Studies Emerita
- Leitenberg, Harold - Professor of Psychology Emeritus
- Letteri, Charles A - Associate Professor of Education Emeritus
- Lewin, Carroll - Associate Professor of Anthropology Emerita
- Lewis, Gordon F. - Professor of Sociology Emeritus
- Lewis, John D. - Associate Professor of Obstetrics and Gynecology Emeritus
- Lewis, William J. - Professor of Sociology Emeritus
- Lidral, Frank Wayne - Professor of Music Emeritus
- Liebs, Chester - Professor of History Emeritus
- Lind, Aulis - Associate Professor of Geography Emeritus
- Lindsay, John - Associate Professor of The Rubenstein School of Environment and Natural Resources Emeritus
- Linton, Peter C. - Associate Professor of Surgery Emeritus
- Lipke, William Charles - Professor of Art Emeritus
- Lipson, Marjorie Youmans - Professor of Education Emerita, Professor of Literacy and Elementary Education Emerita
- Little, George T. - Professor of Political Science Emeritus
- Livak, Joyce K. - Associate Professor of Nutritional Sciences Emerita
- Lochhead, John H. - Professor of Zoology Emeritus
- Loewen, James William - Professor of Sociology Emeritus
- Long, Littleton - Professor of English Emeritus
- Lubker, James - Professor of Communication Sciences Emeritus
- Luginbuhl, William H. - Professor of Pathology Emeritus

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- Maccollom, George B. - Professor of Plant and Soil Science Emeritus
- MacPherson, Brian Verne - Lecturer of Mathematics and Statistics Emeritus
- Magee, Francis E. - Assistant Professor of Nursing Emertia
- Manchel, Frank - Professor of English Emeritus
- Marshall, Gilbert A. - Professor of Mechanical Engineering Emeritus
- Martin, Hebert L. - Professor of Neurology Emeritus
- Massonneau, Suzanne - Library Professor Emerita
- Maughan, David Wayne - Research Professor of Molecular Physiology and Biophysics Emeritus
- Mazuzan, John E. - Professor of Anesthesiology Emeritus
- Mc Grath, Helen - Professor of Nursing Emerita
- McAree, Christopher - Associate Professor of Psychiatry Emeritus

- McConaughy, Stephanie Hooker - Research Professor of Psychiatry Emeritus
- McCormack, John Joseph - Professor of Pharmacology Emeritus
- McCormick, Thomas J. - Extension Professor Emeritus
- McCrorey, H. Lawrence - Professor of Molecular Physiology and Biophysics Emeritus
- McEntee, Harry J. - Assistant Professor of Education Emeritus
- McFeeters, Donald J. - Extension Professor Emeritus
- McGill, J. Bishop - Associate Professor of Surgery Emeritus
- McKay Jr., Robert J. - Professor of Pediatrics Emeritus
- McLean, Donald L. - Professor of Plant and Soil Science Emeritus
- McSweeney, Douglas E. - Assistant Professor of Surgery Emeritus
- Mead, Philip Bartlett - Clinical Professor of Obstetrics and Gynecology Emeritus
- Melville, Donald B. - Professor of Biochemistry Emeritus
- Mercia, Leonard S. - Extension Professor Emeritus
- Meserve, Bruce E. - Professor of Mathematics Emeritus
- Metcalfe, Marion E. - Lecturer in Music Emerita
- Metcalfe, William - Professor of History Emeritus
- Meyer, Diane H. - Research Assistant Professor of Microbiology and Molecular Genetics Emerita
- Meyer, William L - Professor of Biochemistry Emeritus
- Milhous, Raymond Lee - Professor of Orthopaedics and Rehabilitation Emeritus
- Miller, Donald B. - Associate Professor of Surgery Emeritus
- Milligan, Jean B. - Professor of Professional Nursing Emerita
- Mitchell, William - Professor of Anthropology Emeritus
- Moehring, Joan M. - Research Professor of Microbiology and Molecular Genetics Emerita
- Moehring, Thomas - Professor of Microbiology and Molecular Genetics Emeritus
- Moffroid, Mary T. - Professor of Physical Therapy Emerita
- Moore, Molly - Lecturer of English Emerita
- Morency, David Charles - Lecturer of Mathematics and Statistics Emeritus
- Morselli, Maria-Franca C. - Research Professor of Botany Emerita
- Moser, Donald E. - Professor of Mathematics Emeritus
- Mulieri, Louis Anthony - Research Associate Professor of Molecular Physiology and Biophysics Emeritus
- Munger, Bethia N. - Extension Associate Professor Emerita
- Murray, Barbara Lee - Associate Professor of Nursing Emerita
- Murray, Roger - Research Associate Professor of Animal and Food Sciences Emeritus

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- Nadworny, Milton J. - Professor of Economics Emeritus
- Newton, David P. - Extension Professor Emeritus
- Nichols, Beverly A. - Associate Professor of Education Emerita
- Nielsen, Gordon R. - Extension Assistant Professor of Plant and Soil Science Emeritus
- Novotny, Charles P. - Professor of Microbiology and Molecular Genetics Emeritus
- Nyborg, Wesley L. - Professor of Physics Emeritus

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- Oppenlander, Joseph C. - Professor of Civil and Environmental Engineering Emeritus
- Orth, Ghita - Lecturer of English Emerita
- Orth, Ralph - Professor of English Emeritus
- Outwater, John O. - Professor of Mechanical Engineering Emeritus

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- Pacy, James S. - Professor of Political Science Emeritus
- Paden, William Edward - Professor of Religion Emeritus
- Page, Dorothy - Associate Professor of Physical Therapy Emerita
- Page, H. Gordon - Professor of Surgery Emeritus
- Page, John C. - Extension Professor Emeritus
- Palmer, Mary Ellen - Associate Professor of Nursing Emerita
- Paolucci-Whitcomb, Phyllis E. - Professor of Social Work Emerita
- Paquette, Lucien D. - Extension Professor Emeritus
- Parks, Donald R. - Assistant Professor of Education Emeritus
- Pellett, Norman - Professor of Plant and Soil Science Emeritus
- Peterson, James A. - Professor of Integrated Professional Studies Emeritus
- Petrusich, Mary M. - Professor of Human Development Studies Emerita

- Phillips, Carol F - Professor of Pediatrics Emerita
- Poger, Sidney B. - Professor of English Emeritus
- Porter, Monica B. - Extension Associate Professor Emerita
- Potash, Milton - Professor of Zoology Emeritus
- Powell, Agnes T. - Associate Professor of Human Nutrition and Foods Emerita
- Power, Marjory W. - Associate Professor of Anthropology Emerita
- Powers, Patricia - Associate Professor of Anatomy and Neurobiology Emerita
- Price, John R. - Extension Assistant Professor Emeritus

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- Racusen, David - Professor of Agricultural Biochemistry Emeritus
- Raper, Carlene Allen - Research Associate Professor of Microbiology and Molecular Genetics Emerita
- Rathbone, Charles - Associate Professor of Education Emeritus
- Razza, Mary Lou - Research Associate Professor of Education Emeritus
- Reagin, Dolores M. - Assistant Professor of Organizational, Counseling, and Foundational Studies Emerita
- Reidel, Carl H. - Professor of Environmental Studies Emeritus
- Reinhardt, John E. - Professor of Political Science Emeritus
- Reit, Ernest - Associate Professor of Pharmacology Emeritus
- Richardson, Jean - Professor of Natural Resources Emerita

- Richel, Veronica C. - Associate Professor of German Emerita
- Riggs, Heath K. - Professor of Mathematics Emeritus
- Rippa, Alexander S. - Professor of Organizational, Counseling, and Foundational Studies Emeritus
- Roland, Margaret - Associate Professor of Art Emerita
- Roth, Wilfred - Professor of Electrical Engineering Emeritus
- Rothwell, Kenneth - Professor of English Emeritus
- Royce, Blanche E. - Lecturer of Education Emerita
- Ruess, Johanna - Assistant Professor of Orthopaedics and Rehabilitation Emerita
- Runge, Carl F. - Associate Professor of Medicine Emeritus
- Russo, Joseph N. - Clinical Assistant Professor of Obstetrics and Gynecology Emeritus

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- Sachs, Thomas D. - Associate Professor of Physics Emeritus
- Sampson, Samuel F. - Professor of Sociology Emeritus
- Sandoval, Dolores - Associate Professor of Education Emerita
- Sargent, Frederic O. - Professor of Agricultural and Resource Economics Emeritus
- Sawyer, Janet R. - Professor of Professional Nursing Emerita
- Scarfone, Leonard M. - Professor of Physics Emeritus
- Schlunk, Robin R. - Professor of Classics Emerita
- Schmidt, Frederick Eberhard - Associate Professor of Community Development and Applied Economics Emeritus
- Schmokel, Wolfe W. - Professor of History Emeritus

- Schoonmaker, N. James - Professor of Mathematics Emeritus
- Schultz, Harold S. - Professor of History Emeritus
- Schultz, Herbert L - Associate Professor of Music Emeritus
- Schumacher, George A. - Professor of Neurology Emeritus
- Schwalb, Roberta B. - Associate Professor of Professional Nursing Emerita
- Scrase, David Anthony - Professor of German Emeritus
- Secker-Walker, Roger - Professor of Medicine Emeritus
- Sekerak, Robert John - Library Associate Professor Emeritus
- Senghas, Dorothy C. - Library Assistant Professor in Dana Medical Library Emerita
- Severance, Malcolm F. - Professor of Business Administration Emeritus
- Seybolt, Peter Jordan - Professor Emeritus of Asian Languages & Literatures
- Shea, William I. - Associate Professor of Surgery Emeritus
- Shepherd, Allen G. - Professor of English Emeritus
- Shinozaki, Tamotsu - Professor of Anesthesiology Emeritus
- Simmons, K. Rogers - Associate Professor of Animal Science Emeritus
- Simon, Morris L. - Associate Professor of Political Science Emeritus
- Sims, Ethan Allen - Professor of Medicine Emeritus
- Sinclair, Robert O. - Professor of Agricultural and Resource Economics Emeritus
- Sjogren, Robert - Associate Professor of Microbiology and Molecular Genetics Emeritus
- Smith, Albert M. - Professor of Animal and Food Sciences Emeritus
- Smith, David Young - Professor of Physics Emeritus
- Soule, Phyllis M. - Assistant Professor of Nutritional Sciences Emerita
- Spinner Jr., Thomas J. - Professor of History Emeritus
- Squire, Horace - Associate Professor of Business Administration
- Stanfield, Robert E. - Professor of Sociology Emeritus
- Stanton, Michael Neill - Associate Professor of English Emeritus
- Staron, Stanislaw J. - Professor of Policital Science Emeritus
- Steele, Doris H. - Extension Professor Emerita
- Steen, M. Dale - Extension Associate Professor Emerita
- Steffenhagen, Ronald A. - Professor of Sociology Emeritus
- Stephenson, John F. - Extension Professor Emeritus
- Stevens, Dean F. - Associate Professor of Zoology Emeritus
- Stevenson, S. Christopher - Professor of Education Emeritus
- Stinebring, Warren R. - Professor of Microbiology Emeritus
- Stirewalt, William S. - Associate Professor of Obstetrics and Gynecology Emeritus

- Stout, Neil R. - Professor of History Emeritus
- Strassburg, Kathleen - Extension Professor of Textiles, Merchandising and Consumer Studies Emerita
- Stryker III, Barent W. - Extension Professor Emeritus
- Sullivan, Anne Marie - Associate Professor of Biomedical Technologies Emerita
- Sumner, J Williams - Extension Assistant Professor Emeritus

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- Tabakin, Burton S. - Professor of Medicine Emeritus
- Tashman, Leonard Jay - Associate Professor of Business Administration Emeritus
- Taylor, Fred - Professor of Botany Emeritus
- Thanassi, John W. - Professor of Biochemistry Emeritus
- Thibault, Marlene - Extension Professor of Community Development and Applied Economics Emerita
- Thimm, Alfred L. - Professor of Business Administration Emeritus
- Thompson, Harry L. - Associate Professor of Social Work Emeritus
- Thompson, Noah C. - Extension Professor Emeritus
- Tisdale, William A. - Professor of Medicine Emeritus
- Tormey, David M. - Professor of Family Practice Emeritus
- Townsend, Robert L. - Extension Professor Emeritus
- Trainer, Thomas D. - Professor of Pathology Emeritus

- Tremblay, Raymond H. - Professor of Agricultural and Resource Economics Emeritus
- True., Marshall M. - Associate Professor of History Emeritus
- Tufo, Henry M. - Professor of Medicine Emeritus
- Tuthill, Arthur F. - Professor of Mechanical Engineering Emeritus
- Tuxbury, Vernon - Extension Associate Professor of Community Development and Applied Economics Emeritus

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- Ugalde, Louis Maldonado - Professor of Romance Languages Emeritus
- Ullrich, Robert C. - Professor of Botany and Agricultural Biochemistry Emeritus
- Ure, Helena A. - Associate Professor of Professional Nursing Emerita

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- Van Buren, H. Carmer - Associate Professor of Medicine Emeritus
- Van Buskirk, David - Associate Professor of Psychiatry Emeritus
- Vander Meer, Canute - Professor of Geography Emeritus
- Vane, Dennis William - Professor of Surgery and Pediatrics Emeritus
- Vogelmann, Hubert W. - Professor of Botany Emeritus

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- Waller, Julian A. - Professor of Medicine Emerita
- Wallman, Lester J. - Professor of Neurosurgery Emeritus
- Wang, Jue-Fei - Research Professor of Educational Leadership and Policy Studies Emeritus
- Watson, Frank - Lecturer in Education Emeritus
- Way, Winston A. - Extension Professor of Plant and Soil Science Emeritus
- Weaver, Lelon Jr. A. - Associate Professor of Psychology Emeritus
- Webb, George - Associate Professor of Molecular Physiology and Biophysics Emeritus
- Webster, Fred C. - Professor of Agricultural and Resource Economics Emeritus
- Webster, Selina M. - Professor of Clothing, Textiles, and Design Emerita
- Weed, Lawrence L. - Professor of Medicine Emeritus
- Weiger, John G. - Professor of Romance Languages Emeritus
- Weiner, Sheldon - Professor of Psychiatry Emeritus
- Weinrich, Francis A. - Assistant Professor of Music Emeritus

- Welch, James - Professor of Animal and Food Sciences Emeritus
- Welch, Lorraine M - Associate Professor of Nursing Emerita
- Weller, David L - Professor of Botany and Agricultural Biochemistry Emeritus
- Wells, Jospeh - Professor of Anatomy and Neurobiology Emeritus
- Welsh, George William - Associate Professor of Medicine Emeritus
- Weltin, Eugen E. - Associate Professor of Chemistry Emeritus
- Wesseling, Pieter - Associate Professor of Romance Languages Emeritus
- Wessinger, Nancy B - Associate Professor of Education Emerita
- Whaples, Donald R. - Extension Professor Emeritus
- White, Robert E. - Extension Assistant Professor Emeritus
- White, William N. - Professor of Chemistry Emeritus
- Whitebook, Susan M. - Assistant Professor of Romance Languages Emerita
- Whitmore Jr., Roy A. - Professor of The Rubenstein School of Environment and Natural Resources Emeritus
- Whittlesey, Margaret B. - Associate Professor of Special Education Emerita
- Wiggans, Samuel C. - Professor of Plant and Soil Science Emeritus
- Wigness, Robert C. - Professor of Music Emeritus
- Williams, Blair - Professor of Human Nutrition and Foods Emeritus
- Willmuth, Lewis R. - Associate Professor of Psychiatry Emeritus
- Wilson, Mary S. - Professor of Communication Sciences Emerita
- Winstead-fry, Patricia - Professor of Nursing Emerita
- Wood, Glen M. - Professor of Plant and Soil Science Emeritus
- Wood, Hazen F. - Coordinator of the Professional Laboratory Experiences Emeritus
- Woodruff, William A. - Associate Professor of Psychiatry Emeritus
- Woodworth, Robert C. - Professor of Biochemistry Emeritus
- Woolfson, Peter - Professor of Anthropology Emeritus
- Wootton, Dorothy - Associate Professor of Dental Hygiene Emerita
- Worley, Ian Almer - Professor Emeritus in the Rubenstein School of Environment and Natural Resources

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- Young, William J. - Professor of Anatomy and Neurobiology Emeritus

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- Zarate, Armando - Professor of Spanish Emeritus
- Zucker, Barbara M - Professor of Art Emerita

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Accreditations

The University of Vermont is accredited by the New England Association of Schools and Colleges, Inc., a nongovernmental, nationally-recognized organization whose affiliated institutes include elementary schools through collegiate institutions offering postgraduate instruction.

Accreditations of an institution by the New England Association indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by the New England Association is not partial but applied to the institution as a whole. As such, it is not a guarantee of quality of every course or program offered or the competence of individual graduates. Rather, it provides reasonable assurance about the quality of opportunities available to students who attend the institution.

Inquiries regarding the status of an institution's accreditation by the New England Association should be directed to the administrative staff of the University. Individuals may also contact the New England Association of Schools and Colleges, 209 Burlington Road, Bedford, MA 01730-1433, (781) 271-0022.

Specific program accreditations include:

- Agriculture and Life Sciences
  - Dietetics — Commission on Accreditation for Dietetics Education
- Arts and Sciences
  - Chemistry — American Chemical Society
  - Speech-Language Pathology — American Speech-Language-Hearing Association
  - Clinical Psychology — American Psychological Association
- Business Administration
  - AACSB International — The Association to Advance Collegiate Schools of

Business

- Education
  - Athletic Training Education Program — Commission on Accreditation of Allied Health Programs
  - Social Work — Council on Social Work Education
  - Teacher Education — Vermont Department of Education
  - Athletic Training — Commission on Accreditation of Allied Health Education Programs
  - Counseling — Council for Accreditation of Counseling and Related Educational Programs
  - National Council for Accreditation of Teacher Education
- Engineering and Mathematics
  - Engineering Programs (Mechanical, Electrical, Civil) — Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, Inc.
- Medicine
  - Liaison Committee on Medical Education, American Medical Association — Association of American Medical Colleges
- Nursing and Health Sciences
  - Biomedical Technologies
    - Medical Laboratory Science — National Accrediting Agency for Clinical Laboratory Science
    - Nuclear Medicine Technology — Joint Review Committee on Education Programs in Nuclear Medicine Technology
  - Dental Hygiene — American Dental Association
  - National League for Nursing Accrediting Commission, Inc.
  - Physical Therapy — American Physical Therapy Association — Commission on Accreditation in Physical Therapy Education

Graduate College Application

Area: Graduate College Policies

Application Policies, Deadlines, and Procedures

Eligibility

To be eligible for admission to any program, applicants must hold a U.S. baccalaureate degree earned prior to the date of first graduate enrollment at The University of Vermont or a degree from a foreign institution judged to be equivalent by the Graduate College. Individual degree programs may have additional requirements as described in the program listings in the back section of this catalogue. A number of departments and programs provide opportunities for selected UVM undergraduates to participate in Accelerated Master's Programs (AMPs).

Applicants are expected to be fluent in English. There is no English as a second language program at the University, although limited instruction is available to enhance speaking fluency in English.

Application and Financial Aid Deadlines

Admission

It is in the applicant's best interest to make sure that application materials are filed well in advance of deadlines. Most programs can accommodate only a limited number of new graduate students each year.

April 1 is the application deadline for fall enrollment in all programs, except the following:

Anatomy and Neurobiology	February 15
Botany and Agricultural Biochemistry	February 15
Cell and Molecular Biology	January 15
Civil and Environmental Engineering	February 1
Communication Sciences	February 1

Counseling	February 1
Curriculum and Instruction	August 1
Educational Leadership	August 1
Educational Leadership and Policy Studies	May 1
Educational Studies	August 1
English (Fellowship deadline)	February 15
Field Naturalist.	February 15
Forestry	March 1
French	August 1
Geography	March 1
Geology	February 15
Higher Education and Student Affairs	January 1
Historic Preservation	March 1
Interdisciplinary	August 1
Microbiology and Molecular Genetics	February 1
Natural Resource Planning	March 1
Natural Resources	March 1
Pharmacology	January 15
Physical Therapy	January 15
Psychology	January 15
Public Administration	February 1
Reading and Language Art	August 1
Social Work	February 1
Special Education	August 1
Water Resources	March 1
Wildlife and Fisheries Biology	March 1

Although some programs are willing, on occasion, to review late applications, we urge you to contact specific programs before filing a late application. Some programs accept applications for January admission. Please contact the program of interest regarding its policy on spring admissions.

Financial Aid

The deadline for all students seeking financial aid in the form of fellowships or assistantships is March 1, or the program application deadline, whichever is earlier. For information regarding financial assistance consult Fellowships, Assistantships, Traineeships, Stipends, and Grants and Financial Aid.

Admission Procedure for Full- or Part-Time Students

Degree Students

Application forms are available from the Graduate Admissions Office, 333 Waterman Building, The University of Vermont, Burlington, VT 05405-0160 and at online.

Applicants who are *U.S. citizens* must provide the following material. All but the test scores must be submitted together in one package.

a. The original and two copies of the completed application form and the statement of purpose.
b. Scores from appropriate standard graduate admission test(s) taken within five years of the date of application. Test scores are required for any applicant seeking financial aid in the form of fellowships or assistantships. For additional information, see Graduate Admission Tests below and consult the program listings that follow.
c. Two official transcripts from each college or university attended. UVM students must request official transcripts from the Registrar.
d. Letters of recommendation from three persons qualified to assess your potential for graduate work. College or university placement files are accepted. Photocopied references are acceptable only with original signatures; facsimile references are not acceptable.
e. Check individual department listing for specific requirements such as a resume, or a paper.
f. A $25 nonrefundable application fee.

International applicants must provide the following materials. All but the test scores must be submitted in one package.

a. The original and two copies of the completed application form and the statement of purpose.
b. Scores from appropriate standard graduate admission test(s) taken within five years of the date of application. Test scores are required for all applicants seeking financial aid in the form of a fellowship or assistantship. For additional information, see Graduate Admission Tests below.
c. Scores from the Test of English as a Second Language (TOEFL) if your native language is not English or if your formal education has been conducted in a language other than English. A score of at least 550 (213 Computer-based test) is required for admission; a minimum score of 600 (250 Computer-based test) is required by some departments and for any applicant seeking fellowships or assistantships. Information about the TOEFL examination is available from the Educational Testing Service, Box 6155, Princeton, NJ 08541-6155, U.S.A.
d. Two official transcripts from each college or university attended and, if necessary, an English translation of the transcripts.
e. Letters of recommendation from three persons qualified to assess your potential for graduate work. College or university placement files are accepted. Photocopied references are acceptable only with original signatures; facsimile references are not acceptable.
f. A $25 nonrefundable application fee, in U.S. dollars, by check or money order

made payable to The University of Vermont.

g. For purposes of obtaining a visa, the United States Immigration and Naturalization Service requires that all international students submit evidence of independent financial support in the form of a signed statement from a bank or scholarship source.

Application Review Process

As soon as an application is received in the Graduate College Admissions Office, a file is established. Completed files are forwarded to the appropriate program.

Committees in each program review applications thoroughly. The statement of purpose is extremely important, as are test scores and past academic performance. Letters of support are weighed carefully. Programs must also consider external factors, such as the number of spaces they can make available to new applicants.

Recommendations to admit or not admit, to provide financial aid or not, are made by the programs and forwarded to the Graduate College where they are reviewed. Letters of acceptance or denial are sent from the Graduate College. Offers of financial support are made directly by programs.

If you do not hear anything regarding your application after a sufficient amount of time, please call the Graduate College Admissions Office (802-656-2699). Questions about admission to individual programs should be directed to the appropriate program.

All documents received in support of an application, except irreplaceable foreign materials or term paper and essays required by some departments, become the property of the Graduate College and cannot be returned, copied, or transferred.

It is the applicant's responsibility to ensure that all supporting materials for an application are received by the appropriate deadline.

Acceptance and Candidacy for Advanced Degrees

Applicants for the master's degree may be admitted to graduate studies or accepted to candidacy for the degree concurrent with admission. Acceptance to candidacy for the master's degree is granted only to those students who have met fully all undergraduate course prerequisites required for the graduate degree program and all departmental requirements for candidacy (e.g. course work, examinations, professional certification where applicable). The approval of the department and the Dean is required for concurrent admission and acceptance to candidacy.

Candidacy for the doctoral degree requires a full year of graduate study in residence at The University of Vermont. In addition, most programs require satisfactory completion of a qualifying examination. A doctoral student is accepted to candidacy upon the approval of the student's Studies Committee, the department or departments concerned, and the Dean of the Graduate College.

Nondegree Students

Persons who have completed a baccalaureate degree and wish to take courses that do not carry graduate credit or wish to take courses for graduate credit but do not seek a degree, do not need to make formal application to the Graduate College, but may enroll through Continuing Education. For more information, contact Continuing Education, 322 South Prospect Street, Burlington, VT 05405; (802-656-2085); 1-800-639-3210 or email, EveningUniversity@uvm.edu.

Nondegree students are limited to a maximum of six course credit hours per semester unless additional enrollment is approved by the Dean of the Graduate College. A nondegree student who has accumulated nine credit hours of graduate course work at the University must seek approval for further enrollment from the Dean of the Graduate College.

Change of Program

Area: Graduate College Policies

If an admitted student wishes to change to a different program offered at UVM, a request must be made by the student, in writing, to the Dean of the Graduate College. Upon receipt of the request, the student's file will be forwarded to the Chairperson of the desired program for review. If both the faculty of the desired program and the Dean of the Graduate College approve, the formal transfer of program is made in the Graduate College Office with notification to the former program chairperson, new program chairperson, the student, and the Registrar. The time limit for completion of the degree runs from the date of matriculation in the new program, with credit brought in subject to the appropriate transfer limitation.

Concurrent Master's and Doctor of Philosophy Credit

Area: Graduate College Policies

Concurrent Master's and Doctor of Philosophy Credit

Up to 24 hours of course work for which graduate credit is earned at UVM in a master's degree program, whether a master's degree is received or not, may be applied toward a Ph. D. at UVM, provided that the credit is appropriate for the Ph. D. program.

No provision is made for a person to employ the same credit to satisfy two master's degrees at The University of Vermont.

Conferral of Graduate Degree

Area: Graduate College Policies

Degrees are conferred only in October, March, and May of each year. Diplomas are issued only in May.

It is the graduate student's responsibility to make sure that their name has been submitted by their department or program, to the Dean's Office of the Graduate College for Graduation.

Departments with graduate programs must submit a "List of Potential Graduate Students" along with an "Intent to Graduate" form for each student by July 1, November 1, and January 1 for the October, March, and May graduation deadlines.

Continuous Registration

Area: Graduate College Policies

Students who have completed all credits required for the degree but have not completed all graduation requirements must enroll each semester for Continuous Registration (GRAD 900) and pay a $100 Continuous Registration fee each semester until all degree requirements are completed, including removing incomplete grades; passing the comprehensive examination; or completing a thesis or dissertation.

Educational Leadership and Policy Studies (Ed. D.)

College: Graduate College
Department(s): Education

Overview

A Doctor of Education (Ed. D.) degree is offered in Educational Leadership and Policy Studies. This is an applied research based program for professionals serving in educational management positions in schools and school-related organizations; e.g. state departments of education, professional associations, higher education, and human service agencies.
Program emphases include: the design and implementation of educational research; policy studies; adaptation of theoretical constructs and models related to leadership and change in educational and social service settings; knowledge and skills in interorganizational relationships; budget and strategic planning and program evaluation.

This program has been designed to respond to the expanding demands placed on leaders in educational and human service organizations where they are increasingly expected to design and supervise local research and varied evaluative studies; interpret and apply recent national research findings; analyze and apply governmental regulations and court decisions; develop organizational responses to emerging social expectations; organize and lead staff development programs; understand and apply broad-based economic principles and social and fiscal policy; develop and manage budgets; assess and respond to the psychological needs of educational consumers; employ effective interpersonal management and decision-making skills.

Specific Requirements

Prerequisites for Admission to Graduate Studies

Applicants must possess a master's degree or equivalent, from an accredited institution and a cumulative grade-point average of 3.00 for previous graduate study. Other requirements include a representative scholarly writing sample and a resume. Students applying for graduate fellowships and/or assistantships are required to demonstrate satisfactory scores on the Graduate Record Examination (GRE).

Students admitted to graduate studies must complete successfully a core of study consisting of courses in research, foundational, and policy studies, and organizational change and leadership. Upon such completion and submission of a qualifying paper, students will be considered for candidacy for the degree. Students must also pass a written comprehensive examination prior to the award of the degree of Doctor of Education.

Prerequisites for Acceptance to Candidacy for the Degree of Doctor of Education

Satisfactory completion of all core requirements and the qualifying paper will satisfy the prerequisites for acceptance to candidacy.

Requirements for the degree of Doctor of Education include a minimum of 56 semester credit hours of doctoral studies completed at UVM following formal admission to the program with the following distribution:

- 15 semester hours in the core courses (minimum)
- 21 semester hours general distribution (minimum)
- Dissertation Research - 20 semester hours (minimum).

All course credit hours beyond the core are distributed in educational leadership, research, critical perspectives, organizational change and selected specialty content areas.

Transfer of Credit

A maximum of nine (9) semester hours may be accepted in transfer from an accredited graduate program. Transfer credit may be completed prior to admission to the Doctor of Education Program provided that the credit is approved by the student's Studies Committee and that the credit conforms to all other Graduate College requirements.

Residency Requirement

The residency requirement for the Doctor of Education (Ed. D.) degree consists of the following:

1. Completion of the five core courses (15 semester hours), and
2. Completion of 12 semester credit hours of coursework during two contiguous semesters beyond the core.

For further requirements concerning Studies Committees, Research and Dissertation, and the Dissertation Defense Examination Committee, refer to General Requirements for the Degree of Doctor of Philosophy.

Application deadline is May 1.

Detailed information on the course of study is available from Program Director, Susan

Hasazi, Professor, The University of Vermont, Office of the Dean, College of Education and Social Services, 311 Waterman Bldg., Burlington, VT 05405-0160.

Equal Employment Opportunity and Affirmative Action Policy

The University of Vermont and State Agricultural College is committed to a policy of equal employment opportunity and to a program of affirmative action in order to fulfill that policy.The University will accordingly recruit and hire into all positions the most qualified persons in light of job-related requirements, and applicants and employees shall be treated in employment matters without regard to unlawful criteria including race, color, religion, national origin, sex, sexual orientation, disability, age or status as a disabled or Vietnam-Era Veteran as these terms are defined under applicable law.

In addition, the University of Vermont recognizes that sexual harassment is a form of unlawful sex discrimination, and it is therefore the policy of the University that sexual harassment will not be tolerated.

Further, employees and applicants will not be subjected to harassment because they have engaged in or may engage in the following: filing a complaint; assisting or participating in an investigation, compliance evaluation, or any other activity related to the administration of the Vietnam Era Veterans' Readjustment Assistance Act of 1974 ("VEVRAA"), Section 503 of the Rehabilitation Act of 1973 ("Rehabilitation Act"), or the Affirmative Action provisions of federal, state or local law; opposing any act or practice made unlawful by VEVRAA, requiring equal employment opportunities for individuals with disabilities, disabled veterans, or veterans of theVietnam Era; or exercising any rights underVEVRAA, or the Rehabilitation Act.

Questions regarding this policy statement or compliance with its provisions may be directed to Wanda Heading-Grant, Executive Director, Office of Affirmative Action and Equal Opportunity, University of Vermont, 428 Waterman Building, Burlington, VT 05405 (802-656-3368).Questions may also be directed to government agencies having oversight and enforcement authority with respect to the referenced laws.A complete listing of such agencies may be obtained from the Office of Affirmative Action and Equal Opportunity.

Sources: Titles VI and VII of the Civil Rights Act of 1964; Immigration and Reform and Control Act of 1986; Title IX of the Education Amendments of 1972; the Equal Pay Act of 1963; the Age Discrimination in Employment Act; the Age Discrimination in Employment Act of 1967; the Age Discrimination Act of 1975; Sections 503 and 504 of the

Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; Section 402 of the Vietnam-Era Veterans Readjustment Assistance Act of 1974; the Uniformed Services Employment and Reemployment rights Act of 1994; Executive Order 11246 as amended; the Vermont Fair Employment Practices Act; and such other federal, state and local non-discrimination laws as may apply.

Note: This Statement of Policy is the official University of Vermont Equal Employment Opportunity/Affirmative Action Policy Statement and supersedes all prior policy statements regarding its subject matter.It may be modified only by written statement issued by the President as Chief Executive Officer of the University or by formal action by the University of Vermont and State Agricultural College Board of Trustees. This Policy Statement is designed to express the University's intent and commitment to comply with the requirements of federal, state and local non-discrimination laws. It shall be applied co-extensively with such laws, and shall not be interpreted as creating any rights, contractual or otherwise, that are greater than exist under such non-discrimination laws.Persons seeking to participate in employment opportunities offered by the University must consult position and program descriptions to determine criteria for eligibility.All such criteria shall be established in a manner consistent with the legal requirements herein referenced.

The University of Vermont Equal Opportunity in Educational Programs and Activities Policy

The University of Vermont and State Agricultural College is committed to a policy of equal educational opportunity.The University therefore prohibits discrimination on the basis of unlawful criteria, such as race, color, religion, national or ethnic origin, age, sex, sexual orientation, marital status or disability, as those terms are defined under applicable law, in admitting students to its programs and facilities and in administering its admissions policies, educational policies, scholarships and loan programs, athletic and other institutionally administered programs or activities made available to students at the University.

The University also prohibits unlawful harassment, defined in 16 V.S.A. section 11 (a) (26) as verbal or physical conduct based on a student's race, creed, color, national origin, sex, sexual orientation, marital status or disability and which has the purpose or effect of substantially interfering with a student's educational performance or creating an intimidating, hostile or offensive environment.

Questions regarding this policy statement or compliance with its provisions may be directed to David Nestor, Interim Vice President for Student Affairs, University of Vermont, 41-43 South Prospect Street, Burlington, VT 05405 (802-656-3380) or Wanda Heading-Grant, Executive Director, Office of Affirmative Action and Equal Opportunity, University of Vermont, 428 Waterman Building, Burlington, VT 05405 (802-656-3368). Questions may also be directed to government agencies having oversight and enforcement authority with respect to the referenced laws. A complete listing of those agencies may be obtained from the Office of Affirmative Action and Equal Opportunity.

Sources: Title VI of the Civil Rights Act of 1964; Title IX of the Higher Education Act Amendments of 1972; the Age Discrimination Act of 1975; Section 504 of the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; the Vermont Public Accommodations Act; and such other federal, state and local non-discrimination laws as may apply.

Note: This Statement of Policy is the official University of Vermont Equal Educational Opportunity Policy Statement and supersedes all prior policy statements regarding its subject matter.It may be modified only by written statement issued by the President as

Chief Executive Officer of the University or formal action by the University of Vermont and State Agricultural College Board of Trustees. This Policy Statement is designed to express the University's intent and commitment to comply with the requirements of federal, state and local non-discrimination laws.It shall be applied co-extensively with such laws, and shall not be interpreted as creating any rights, contractual or otherwise, that are greater than exist under such non-discrimination laws. Persons seeking to participate in educational opportunities offered by the University must consult position and program descriptions to determine criteria for eligibility. All such criteria shall be established in a manner consistent with the legal requirements herein referenced.

GRADNET

GRADNET is the electronic forum where graduate students, faculty, and staff discuss issues, research topics, graduate student life, and announcements that pertain to the graduate community. Information on subscribing is provided at Graduate Student Orientation or at the Graduate College. For more information, visit the Graduate College Web Site.

Graduate Admission Tests

Area: Graduate College Policies

Information about admission tests is available from most college testing centers or as follows: Graduate Record Examinations, Educational Testing Service, Box 6000, Princeton, NJ 08541-6000 or Graduate Management Admission Test, Educational Testing Service, P.O. Box 6103, Princeton, NJ 08541-6103. The GRE can be taken in computerized or paper versions. Information is also available from the GRE web site. Those considering application to a graduate program must remember that it can take four to six weeks for the Graduate College to receive the results of test scores from paper and pencil examinations.

Applicants should consult the listing of the program to which they are applying to determine exactly which test scores are required. Scores must be from tests taken within five years of the date of application. Students who are seeking financial aid in the form of assistantships or fellowships are required to submit GRE or GMAT scores from tests taken within five years of the date of application.

Graduate Fellowships, Assistantships, Traineeships, Stipends, and Grants

Students who wish to be considered for fellowships as well as admission must submit completed applications, with supporting materials, by March 1 of the academic year preceding that for which application is made, or the program's application deadline, whichever is earlier. Any applicant requesting fellowship, assistantship, or traineeship support must submit an official copy of the Graduate Record Examination score report.

Application for fellowships is made by completing the appropriate section on the application form. No separate form is required except where indicated in the descriptions below.

Tuition scholarships accompanying Graduate Teaching, College, Research, and Student Affairs Assistantships do not cover physical education activity courses, nor do they cover courses numbered below 200, except upon prior approval of the Dean of the Graduate College.

Graduate College Fellowships

The Graduate College offers ten fellowships in support of master's degree programs in the social sciences and humanities. Five fellowships provide a one-year stipend (currently $5,000) and a full tuition scholarship (36-credit hour maximum) for the degree program (one-two years). The remaining five fellowships provide the tuition scholarship only.

The fellowships are open to prospective students in the social sciences and humanities when they apply to graduate study. Holders of Graduate College Fellowships are required to carry full-time enrollment towards an advanced degree. The fellowships are not renewable.

Graduate Teaching Assistantships and Graduate Research/Teaching Assistantships

Graduate Teaching Assistantships are awarded by many of the departments offering

graduate work. Graduate Teaching Assistants are generally appointed for nine months with stipends averaging $12,100 for 2002-2003. Normally, Teaching Assistants enroll for a minimum of six to a maximum of ten hours per semester. In addition to the stipend, the assistantship award includes a tuition scholarship covering the number of credit hours specified in the award letter, but not to exceed ten credit hours per semester, during the period of the assistantship.

Graduate Research/Teaching Assistantships are awarded in some of the science departments offering graduate work. Research/Teaching Assistants may be appointed for nine or 12 months with stipends generally ranging from $12,000 to $17,500 and a tuition scholarship (see limits in Teaching Assistantship description). Approximately 20 hours of research and teaching effort per week is required of Graduate Teaching and Research/Teaching Assistants, and Assistants must expect that more than one academic year will be necessary to complete the requirements for the master's degree. If a Teaching or Research/Teaching Assistant is a candidate for the doctoral degree, at least four calendar years must be anticipated for completion of the academic program. Generally, assistants are appointed in the departments in which they are doing graduate work.

Student Affairs Assistantships

Within the Division of Student Affairs, a number of assistantships are made available annually. Each assistantship provides graduate students a professional opportunity to support and develop the Division's goals and activities in its work with students. The candidates selected to fill these positions are assigned administrative and advisory positions in the residence halls, departments within the Division, and in other student services areas. Graduate students who hold Student Affairs Assistantships will gain valuable experience in the areas of group advising, administration, personnel advising, and educational programming. Such positions are open to either married or single students who have been accepted for graduate work in any of the academic programs of the University. The majority of graduate students are enrolled in the Higher Education and Student Affairs graduate program. Selection is based upon academic record, character, recommendations, and quality of related experiences. A personal interview is required. Requests for applications and additional information should be addressed to the Division of Student Affairs, Nicholson House, 41 South Prospect Street, Burlington, VT 05405-0094. Questions can also be directed via e-mail: stuaffastn@ uvm.edu. Completed applications must be received by January 1 for full consideration. Applications received after January 1 will be considered only for unanticipated openings. Appointments will be announced on or about April 1.

Graduate Assistantships

Graduate Assistantships are generally available when a faculty member receives a grant from a source external to the University. The range of payments for 12-month appointments for 2002-2003 is $21,500 to $26,000; assistants on 9-month appointments receive proportionate payments. Part of the salary is for tuition at the instate rate with a

maximum enrollment of ten credit hours each semester and nine credit hours during the summer session (12-month appointments).

Approximately 20 hours of effort per week on the project is required of graduate assistants, and more than one academic year will be necessary for the completion of the master's degree, and more for completion of the doctoral degree. For information on the availability of assistantships, contact the chairperson of the department.

Graduate Fellowships/Traineeships

Graduate Fellowships/Traineeships are available in some departments through grants from various state and federal agencies. Fellowships/Traineeships generally include both a stipend and tuition scholarship.

UVM Opportunity Fellowships

The Graduate Dean's Office administers fellowships to increase campus diversity in graduate programs. Opportunity Fellowships, which are generally funded at a level equivalent to Graduate Teaching Assistantships, are available to students in all UVM graduate programs. Please indicate interest in these fellowships on the application form.

Summer Research Stipends

To promote graduate scholarship and to assist students in completing their programs in a timely and successful manner, the Graduate College provides a limited number of summer research stipends to graduate students. The stipends, awarded competitively, are designed to help students devote the summer to their dissertation, thesis, or final research project. Details about the stipends are available at the Graduate College Web site, http://www.uvm.edu/~gradcoll .

Travel Mini-Grants

The Graduate College provides mini-travel grants to help students underwrite the cost of attending conferences where they will present papers or posters based upon their research. The Mini-Grants Program is administered by the Graduate Student Advisory Council. Funds are awarded three times per year. The student's home department must provide a match. Further information on the Mini-Grants Program is available at the Graduate College Web site, http://www.uvm.edu/~gradcoll .

Other Fellowships

Fellowships established by private donors are available periodically in some departments.

Graduate College Requirements for the Doctor of Philosophy Degree

College: Graduate College
Area: Graduate College Policies

In addition to the requirements described below, individual programs may have their own specific requirements. Students should consult and familiarize themselves with their program requirements. Some of them are detailed in this catalogue under individual program listings and other requirements are available from the director or chairperson of each program.

Credit Hours

The degree of Doctor of Philosophy requires a minimum of 75 credit hours earned in courses and in dissertation research. A minimum of 15 hours in courses used in compilation of the grade-point average must be taken in residence at The University of Vermont. Consult individual programs for additional information. Generally, the first year of each doctoral program consists of required courses. With the prior approval of their department and the Graduate College, doctoral students may apply two 100-level, three-credit courses towards their graduate programs. A student's advisor must petition the Graduate College for approval before the student enrolls in the course. Consult individual programs for further limitations. Under no circumstances will a course numbered below 100 be applicable to a doctoral program.

Minimum Residence Requirements

Candidates for the doctoral degree must satisfactorily complete a minimum of 51 hours in residence. The residency requirement is completed by courses that (1) are taken for graduate credit through The University of Vermont either in the academic year or summer on the main campus or at off-campus locations, and (2) are taken after the student has been admitted to the Graduate College. Some programs may require more than the above minimum hours in residence.

Teaching Requirement

All doctoral candidates must acquire appropriate teaching experience in their chosen fields prior to the award of the degree. The nature and amount of teaching, for which no academic credit is allowed, will be determined by each candidate's program.

Language Requirement

Consult the program listings to determine whether demonstration of competency in one or more foreign languages is required. The requirement is generally fulfilled by an examination administered by the program or in conjunction with the appropriate language department. Enroll for the examination as GRAD 485. There is no fee for taking the exam. The examination is awarded the grade of "S" (Satisfactory) or "U" (Unsatisfactory). It may be taken more than once if a grade of "U" is awarded.

If department policy permits, the language requirement may be fulfilled through competence in computer literacy, either by completing appropriate Computer Science courses with a grade of B (3.00) or better, or by satisfactorily completing an examination composed and graded by the staff of Computing and Information Technologies. Individual programs may set additional requirements.

Studies Committee

It is the responsibility of the Studies Committee to supervise the graduate student's program and to review progress at regular intervals. A Studies Committee consisting of at least three regular members of the Graduate Faculty is appointed by the department chairperson or designated departmental representative and approved by the Dean of the Graduate College soon after first enrollment in the Graduate College, unless the student's department employs an alternative approved procedure. The Chairperson of the Studies Committee serves as the student's academic advisor and also as the dissertation advisor or supervisor. Only a regular member of the Graduate Faculty can serve as an advisor of a doctoral dissertation. On occasion, it may be appropriate for a professional other than a regular member of the Graduate Faculty to serve as a member of a Studies Committee. In such cases, written approval must be obtained from the Dean of the Graduate College prior to the student's beginning dissertation research.

Comprehensive Examination

A written comprehensive examination in the field of study must be passed by the candidate at least six months before the dissertation is submitted. The examination must be prepared by the program concerned, in consultation with the candidate's Studies Committee. Only one reexamination is permitted. Success in the written comprehensive examination is prerequisite to standing for the Dissertation Defense Examination. All examinations are taken on The University of Vermont campus in Burlington. Some programs also require an oral comprehensive examination.

Students must enroll in GRAD 497: Doctoral Comprehensive Examination prior to taking the comprehensive examination. There is no fee. A grade of "S" or "U" is recorded.

Research and Dissertation

Each candidate, while in residence at The University of Vermont, must complete an acceptable original research project which contributes new knowledge or techniques in an academic field. Each candidate must enroll in a minimum of 20 credits of dissertation research. Only a member of the Graduate Faculty may supervise dissertation research for the Ph. D.

Forms

Submit the Defense Committee Membership form and the Defense Notice form to the Graduate College by the designated deadlines. A Public Notice of the defense is required in order to defend. The Intent to Graduate form must be submitted to the candidate's department before the List of Potential Graduates is due.

Dissertation Format

Students are required by the Graduate College to use a computer software program appropriate to the discipline to create the Table of Contents and the Lists of Tables and Figures from the dissertation text headings. An unformatted dissertation will not be accepted by the Graduate College for the Format/Record Check.

A dissertation must be prepared and submitted in compliance with the "Guidelines for Writing a Thesis or Dissertation" available from the Graduate College Office and the program. A formatted copy of the dissertation must be submitted to the Graduate College for a Format/Record Check at least three weeks prior to the scheduled oral defense. Each student must also provide defendable copies of the dissertation to members of the Dissertation Defense Examination Committee at least two weeks before the scheduled examination. Individual departments may require earlier deadlines.

Students must enroll in GRAD 499: Dissertation Defense prior to defending their thesis.

The oral defense of a dissertation can be scheduled only after successful completion of the comprehensive examination and the submission of an original copy of the dissertation to the Graduate College for a Format/Record Check.

Dissertation Defense Examination Committee

Upon receipt of a completed dissertation, the Dean of the Graduate College will appoint a Dissertation Defense Committee based upon nominations submitted by the candidate's advisor. The Dissertation Defense Committee consists of a minimum of four University of Vermont faculty members, all regular members of the Graduate Faculty. At least two Graduate Faculty members must be from inside the department. The Chairperson must be both a member of the Graduate Faculty and from outside the candidate's department and program. The Chairperson will be designated by the Graduate Dean upon nomination by the dissertation advisor. Individual programs may require more than four committee members or have other specific membership requirements.

The Chairperson of the Dissertation Defense Committee has the responsibility for ensuring proper conduct of the examination, appropriate documentation of the results,

and that the signatures of endorsement are added to the acceptance page of the dissertation following a successful defense.

The acceptability of the dissertation is determined by the Dissertation Defense Committee. A grade of "S" or "U" is awarded. If a student's Defense Examination performance is not satisfactory, then one reexamination, and one only, is permitted.

After a successful dissertation defense, candidates must forward an original and three copies of the corrected dissertation to the Graduate College within the time period specified by the Dissertation Defense Committee and/or the Graduate College.

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Graduate College Requirements for the Master's Degree

College: Graduate College
Area: Graduate College Policies

In addition to the requirements described below, individual programs may have their own specific requirements. Students should read and familiarize themselves with their program's requirements. Some of them are detailed in this catalogue under individual program listings and other requirements are available from the director or chairperson of each program.

Credit Hours

Most master's degrees require a minimum of 30 hours of credit. A minimum of 15 graded credits used in compilation of the graduate GPA must be taken in residence at UVM. Consult individual program descriptions for exceptions. In programs that require a thesis, the number of credit hours earned in thesis research may vary between six (minimum) and 15 (maximum). Thesis credit is included as part of the 30-hour minimum. Consult individual programs for specific information. With the prior approval of their department and the Graduate College, students may apply one 100/200 level, three-credit undergraduate course towards their graduate program. A student's advisor must petition the Graduate College for approval before the student enrolls in the course. Consult individual programs for further limitations. Under no circumstances will a course numbered below 100 be applicable to a master's program.

Minimum Residence Requirements

Candidates for the master's degree must satisfactorily complete 21 hours in residence. The residency requirement is completed by courses that (1) are taken for graduate credit through The University of Vermont either in the academic year or summer on the main campus or at off-campus locations, and (2) are taken after the student has been admitted to the Graduate College. Some programs may require more than the above minimum hours in residence. Consult with the individual program.

Comprehensive Examination

All master's degree students are required to pass a written and/or oral comprehensive examination in their field of specialization. If both formats are used, satisfactory completion of the written examination is prerequisite to standing for the oral examination. All comprehensive examinations are to be taken on The University of Vermont campus in Burlington. One re-examination only is permitted for any comprehensive examination. The comprehensive examination is not the same as an oral thesis defense, and must be passed satisfactorily before defending the thesis. Consult individual program descriptions for specific information.

When students plan to take their comprehensive examination they should enroll in GRAD 397: Master's Comprehensive Examination. There is no fee. A grade of "S" or "U" is recorded.

Research and Thesis

Consult the program description to determine whether or not a thesis is required. If a thesis is required, the candidate for the master's degree undertakes a problem of original research under the supervision of a member of the Graduate College Faculty in the department of specialization. At the conclusion of the research, the student must present a thesis which embodies the results of the work and demonstrates the capability for independent research.

Forms

Submit the Defense Committee Membership form and the Defense Notice form to the Graduate College by the designated deadlines. A Public Notice of the defense is required in order to defend. The Intent to Graduate form must be submitted to the candidate's department before the List of Potential Graduates is due.

Thesis Format

Students are required by the Graduate College to use a computer software program appropriate to the discipline to create the Table of Contents and the Lists of Tables and Figures from the thesis text headings. An unformatted thesis will not be accepted by the Graduate College for the Format/Record Check.

A thesis must be prepared and submitted in compliance with the "Guidelines for Writing a Thesis or Dissertation" available from the Graduate College Office. A formatted copy of the thesis must be submitted to the Graduate College for a Format/Record Check at least three weeks prior to the scheduled defense. Students must also provide defendable copies of the thesis to members of their Thesis Defense Examination Committee at least two weeks before the scheduled examination. Individual departments may require earlier deadlines.

Students must enroll in GRAD 399: Thesis Defense prior to defending their thesis.

The oral defense of a thesis can be scheduled only after successful completion of the comprehensive examination and the submission of an original copy of the thesis to the Graduate College for a Format/Record Check.

Thesis Defense Examination Committee

The Thesis Defense Committee consists of at least three University of Vermont faculty members, at least two of whom must be regular members of the Graduate Faculty. Ordinarily, two committee members will be from the candidate's program, including the thesis advisor. The third member, who acts as chair of the committee, must be a member of the Graduate Faculty, must be from a different program and department than the candidate, and must be approved by the Graduate Dean upon nomination by the thesis advisor.

The Chairperson of the Thesis Defense Committee has the responsibility for ensuring proper conduct of the examination, appropriate documentation of the results, and that the signatures of endorsement are added to the acceptance page of the thesis following a successful defense.

The acceptability of the thesis is determined by the Thesis Defense Committee. A grade of "S" or "U" is awarded. If a student's Defense Examination performance is not satisfactory, then only one reexamination is permitted.

After a successful thesis defense, candidates must forward an original and two copies of the corrected thesis to the Graduate College within the time period specified by the Thesis Defense Examination Committee, and/or the Graduate College.

Options within Master of Arts Programs

At least 21 hours of graduate credit, including credit for the thesis and research leading to the thesis, must be earned in the field of specialization. All course credit included in these 21 hours must be earned in courses which have been approved for graduate credit. Students may wish to include in their programs up to nine hours of graduate level courses outside their fields of specialization. These courses must be approved in advance by the student's advisor or studies committee.

Additional Requirements for the Master of Arts in Teaching

The MAT degree is intended for people who are already licensed as secondary school teachers or who will complete teacher licensure requirements before graduation. For already licensed teachers, the program requires a minimum of 30 credit hours of course work; at least 21 hours in the field of specialization and at least six in education. For those seeking teacher licensure, the program requires at least 30 credit hours of education course work and at least 21 hours in the field of specialization. The individual program of study for each MAT student must be approved by their faculty advisor in their field of specialization and their faculty advisor in the Department of Education.

In addition to the comprehensive examination in the field of specialization, students must also take a comprehensive examination in the field of education. Consult specific program listings for additional requirements for this degree program.

Additional Requirement for the Master of Science for Teachers

Applicants for the Master of Science for Teachers must be licensed teachers. Students in a Master of Science for Teachers program may apply more than one three-hour, 100-level course toward their degree. Consult specific department listings for additional requirements and policies related to this degree program.

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Graduate Credit: Transfer Credit and Credit by Examination

Area: Graduate College Policies

A limited number of graduate course credits acquired elsewhere, at UVM prior to admission to a graduate program, or by credit by examination may be included as part of a student's program of study, with approval of the program faculty and the Dean of the Graduate College. Credit by examination is earned by arranging through a program faculty member to take an examination that tests the student's skills and knowledge in a particular UVM course appropriate for inclusion in the student's degree program.

If credit is transferred, only the credit is transferred, not the grade.

Graduate Credit earned at UVM after completion of the bachelor's degree but prior to admission to a graduate program is transfer credit and is subject to the requirements and limits that follow.

Approval of credit: Approval of credit is granted by the graduate program based on the specific program requirements described in the Graduate College Catalogue, as well as (1) the number of credits requested, (2) the appropriateness of credit for inclusion in the degree program, and (3) the currency of the credit. These criteria are described below. Any exceptions must be approved by the program faculty and the Dean of the Graduate College.

Number of credits: Master's degree and Doctor of Education students are allowed a maximum total of nine hours of transfer credit, and/or credit by examination; Doctor of Philosophy students are allowed a maximum total of 24 credits. This means that all Master's students take at least 21 credits at The University of Vermont after admission; Doctor of Philosophy at least 51 credits; and Doctor of Education at least 47 credits. For Master's programs that require more than 40 credits, program faculty may, in individual cases, allow more than nine transfer credits. In all cases, students must take at least one half of their degree credits at The University of Vermont after admission and adhere to all requirements stipulated by the graduate program.

If an applicant is enrolled as a UVM nondegree student in appropriate graduate courses under the advisement of the program during the semester in which the application is approved for admission, up to six hours of credit from that semester may be applied to

the degree program. This credit will not reduce the number of transfer credit hours available.

Appropriateness of credit: Transfer credit and credit by examination must be approved by the program faculty as appropriate for inclusion as part of the student's degree requirements. Credit cannot be awarded for (1) courses taken prior to completion of an undergraduate degree program, (2) courses that would not receive graduate credit if taken at The University of Vermont, (3) courses with a grade lower than B (3.00), (4) thesis or dissertation research credits received at another institution, and (5) credit by examination given by another institution.

Currency of credit: Transfer credit and credit by examination must be taken within seven years of completion of the master's degree and within nine years of completion of the doctoral degree. Students wishing to apply for readmission to a program after deactivation must demonstrate currency of knowledge in the field of study to which they are applying. Currency of knowledge must be formally evaluated by the program faculty. In addition, the returning student must complete a program of study including at least two courses in the current program.

Graduate Deactivation and Reactivation

Area: Graduate College Policies

Deactivation is equivalent to withdrawal from a graduate program. Students who do not enroll in their program following the termination of a leave of absence will be deactivated from the Graduate College by the Graduate Dean. Students who, prior to completing enrollment for all credit requirements for a graduate program, do not enroll for one or more credits for a period of one calendar year and are not on an approved leave of absence will be deactivated from the College by the Graduate Dean.

Reactivation into a program requires the approval of the program and the Graduate College. Students seeking reactivation must complete the Reactivation Form and pay a $25 Reactivation fee and all other fees, including current and back Continuous Registration fees, if applicable.

Graduate Educational and Living Expenses

The tuition and fee charges listed here are for 2003-2004 only and are subject to change in future years.

Tuition. Tuition - Rates for the 2003-2004 academic year are as follows: For Vermont residents, $362 per credit hour; $4,348 flat rate for 12 hours and $362 per credit hour in excess of 12 hours. For nonresidents of Vermont, $906 per credit hour; $10,874 flat rate for 12 hours, and $906 per credit hour in excess of 12 hours.

The lower rates for Vermont residents are made possible by a subvention to the University from the State of Vermont.

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Health Record

The University requires that all students file a personal health and immunization record with the Center for Health and Wellbeing Student Health/Medical Clinic at the time of first enrollment. Appropriate forms are sent directly to newly enrolled students. They are also available at the Student Health/Medical Clinic, 425 Pearl Street.

Registration

Consult the Academic Calendar printed in the front of this catalogue for registration dates. Students register for courses at the time and in the manner designated by the University Registrar. Course lists are published each semester by the Registrar's Office. Early registration is encouraged for presently enrolled graduate students.

Students should consult with their program advisor before using touch tone telephone or web registration. All charges for the ensuing semester must be paid, or otherwise provided for, before registration is completed.

Graduate Course Levels

Courses which may apply towards a graduate program are generally numbered 200 and above. Courses numbered 400 or above are limited to candidates for the degree of Doctor of Philosophy; courses numbered 300 to 399 are limited to graduate students unless special permission is given by the appropriate department or program. Please consult individual programs for possible exceptions.

Course Loads

Normally, full-time nonfunded graduate students enroll for nine to 12 credit hours per semester; full-time funded students, six to ten hours. Maximum enrollment is 15 hours per semester, and nine hours summer. Enrollment in excess of the normal full-time course load requires written approval from the advisor and the Dean of the Graduate

College.

Auditing Classes

Courses may be taken for audit; however, tuition for the credit hours is charged as usual. Under no circumstances will graduate credit or a grade be allowed for audited courses. A student wishing to audit a course must meet minimum levels of performance set by the instructor at the time of registration in order to receive an audit grade on a transcript. Tuition scholarships funded by the Graduate College do not cover tuition for audited courses.

Physical Education Classes

Students may not enroll in physical education classes without prior approval by the Dean of the Graduate College. Graduate College tuition scholarships do not cover any fees for physical education activities.

Credit by Examination

A student may, under certain circumstances, receive credit for a course by taking an examination. A fee of $50 per credit is charged for each examination. Any credit earned by examination applies to the total number of credit hours allowed for validation and transfer. Appropriate forms to initiate the process of credit by examination are available in the Registrar's Office.

Add/Drop

Courses may be added or dropped, using touch tone telephone, the web, or a paper form, only during the first ten days of instruction of the University semester. Appropriate add/drop forms are available from the Registrar's Office. After the first week of classes an instructor may refuse admission to a course if certain material (such as laboratories) cannot be made up and the loss of this work would seriously affect the quality of the educational experience of the student seeking to enter the course. Faculty are not required to give make-up examinations, papers, or quizzes. No drops are allowed after the second week of classes except in cases where a student is enrolled by administrative error and has not attended the course.

Withdrawal from Courses

From the end of the tenth day to the end of the ninth week of classes, students may withdraw from courses. Students who wish to withdraw fill out the course withdrawal form, consult with their advisor, and submit the form to the instructor for signature. The student is then responsible for delivering the form to the Registrar's Office no later than 4 p.m. on Friday of the ninth week of classes. Students give a copy to their dean for information purposes. The instructor also records the withdrawal grade (W) on the final grade sheet which is sent to the Registrar.

Between the ninth week and the last day of classes, withdrawal requires students to

petition the Dean of the Graduate College explaining that they are unable to continue in the course due to circumstances beyond their control. Such a petition must contain conclusive evidence, properly documented, of the situation which prevents completion of the course. Acceptable reasons do not include dissatisfaction with performance in a course or with an expected grade, with the course or the instructor, or the desire to change a major or program. If the petition is approved, the withdrawal procedure follows that process described above.

Undergraduate Enrollment for Graduate Credit

UVM senior undergraduates may enroll for graduate credit at UVM under the following circumstances: the course must be available for graduate credit; total enrollment including the graduate course must not exceed 12 credit hours in the semester in which the course is taken; the course must not be computed as part of the bachelor's degree; permission to seek such graduate credit must be requested of the Dean of the Graduate College in writing by the Dean of the undergraduate college or school prior to enrollment for such credit. Such graduate credit is limited to six hours. It can be used only at UVM if and when the student is admitted to a UVM graduate program and only if the course is judged appropriate by the student's advisor for the graduate program. Generally, other institutions will not accept such credit, earned before award of the bachelor's degree, in transfer to their graduate programs.

Accelerated Master's Degree Programs (AMPs)

It is possible for highly qualified UVM undergraduates to be accepted into some UVM graduate programs prior to the awarding of the baccalaureate degree. This Accelerated Master's Program (AMP) option is available for admission to UVM graduate programs in Animal and Food Sciences, Biology, Biomedical Technology, Biostatistics, Computer Science, Curriculum and Instruction, History, Materials Science, Mathematics, Mechanical Engineering, Microbiology and Molecular Genetics, Nursing, Public Administration, and Statistics. Please consult the program listing in the UVM undergraduate catalogue and in this Graduate Catalogue for details.

Grading Policies

Letter grades are used to indicate levels of performance in courses as follows: A, excellent; B, good; C, fair; F, failure. (Graduate students do not receive a grade of D.) Designations of S, satisfactory, and U, unsatisfactory, are used to indicate levels of performance for credits received in Thesis or Dissertation Research and may be used to indicate levels of performance in a Seminar. There are no quality points associated with the letter grades of S and U.

A candidate for a graduate degree must complete the program with a minimum overall grade-point average of 3.00. For the purpose of determining a grade-point average, the following applies: A+, 4.00; A, 4.00; A-, 3.67; B+, 3.33; B, 3.00; B-, 2.67; C+, 2.33; C, 2.00; C-, 1.67; F, 0.00. A course may be repeated for credit only when failed and only once; only the second grade is then considered. Both grades remain on the student's

transcript.

A student may be dismissed from the Graduate College if two grades or more below a B (3.00), or the designation of U in Thesis or Dissertation Research or Seminar are received.

The designation "Inc" or "I" applies to work of acceptable quality when the full amount is not completed because of illness or emergency. It can be awarded only with the prior permission of the Dean of the Graduate College. The Dean may set the limit of time when the work of the course is to be completed. In no case shall this time be set longer than the beginning of the corresponding semester of the next academic year.

The grade of XC (Extended Course) is awarded at the end of the semester to a student who is enrolled in an identified course the nature of which makes it unreasonable or impossible for the student to complete the required work within the regular semester. Students who withdraw from a course will receive the grade of W " withdrawn. The grade W does not enter into the grade-point average (GPA).

Graduate students may elect to take an undergraduate course on a satisfactory (S) " unsatisfactory (U) basis provided permission is obtained, prior to enrollment, from the department or program chairperson and the Dean of the Graduate College and a letter grade is not required by the Studies Committee for purposes of evaluation. Courses at the 200 level or above other than Seminar or Thesis/Dissertation Research may not be taken on a satisfactory (S) " unsatisfactory (U) basis for graduate credit.

A grade, other than Inc/I or XC, may be changed only if there was an error in its calculation. In cases in which a student requests reconsideration of a grade for a course already taken, the grade change, if any, must be made by the instructor and approved by the Dean by the end of the first month of the following semester unless an extension has been granted by the Dean within the first month of the following semester.

Dismissal

Students whose academic progress is deemed unsatisfactory at any time may be dismissed from the Graduate College by the Dean upon consultation with the student"s department or program. In addition, students may be dismissed if (a) they receive two grades or more below a B (3.00), or (b) they receive a U (Unsatisfactory) in Thesis or Dissertation Research or Seminar.

Graduate Financial Aid

The University has several options designed to help graduate students finance their UVM education. In order to ensure that the financial aid application process is understandable and accessible, each applicant is assigned to a "service team" within the Financial Aid Office. Whenever a student has a question about his or her financial aid status, he or she may call upon the members of the service team who will be familiar with the applicant's particular circumstances.

Limited amounts of need based financial aid are available for students enrolled in the UVM Graduate College. Much of the available aid consists of low interest student loans, repayable after graduation or withdrawal from the University. Those students with financial need who do not receive supplemental assistance in the form of assistantships or fellowships may find that their need based financial assistance is insufficient to meet their entire cost of attendance. It is important, therefore, for graduate students to fully assess their costs and resources before making a final decision about attendance.

The University provides, through the Office of Financial Aid, long-term loans and /or work study jobs for students based upon demonstrated need remaining after all assistantships, fellowships, traineeships, tuition grants, and any other sources of financial assistance are considered.

In order to be considered for financial assistance, an applicant must meet the following requirements:

1. U.S. citizenship (or permanent resident status).
2. At least half-time enrollment (6 credit hours).
3. Financial need as determined by federal eligibility requirements.

Application for Financial Aid

Application for financial aid should be made as soon after application for admission to the University as possible. In order to apply for aid, graduate students are required to complete the Free Application for Federal Student Aid (FAFSA). The priority deadline for filing a FAFSA is March 1 of each year. Applications mailed after that date will be reviewed according to the date of submission. The UVM Title IV School Code is 003696.

This number is required on the FAFSA. Applicants may also be asked to provide copies of prior year income tax returns and other supporting documentation by the financial aid office. If you are a midyear transfer, a Financial Aid Transcript from your current school must be mailed to the Financial Aid Office. If you are starting your graduate program in the summer, it is important for you to contact your service team to determine what FAFSA you need to complete for summer financial aid. After admission to the University and upon submission of required documentation, applicants will be notified of financial aid eligibility.

For Additional Information

More detailed information about the financial aid opportunities and procedures may be obtained from the UVM Office of Financial Aid located in 330 Waterman Building.

Service Teams	Phone #	E-Mail Address
Team A-F	802-656-8530	team.a-f@uvm.edu
Team G-M	802-656-8531	team.g-m@uvm.edu
Team N	802-656-2474	team.n@uvm.edu
Team O-Z	802-656-8532	scholarships@uvm.edu

The Financial Aid Office Fax number is: (802)-656-4076. Please visit our Web site at www.uvm.edu/fao for additional information on financial aid.

Financial Aid Refund Policy

A student who cancels, withdraws for personal or medical reasons, is suspended or is dismissed will receive an adjustment of charges in accordance with the following schedule. Medical withdrawals require approval of the University Student Health Center.

- 100% tuition and fees credit adjustment prior to the end of the first two weeks of classes.
- 85% tuition and fees credit adjustment through approximately 3 per cent of the semester.
- 67% tuition and fees credit adjustment through approximately 60 per cent of the semester.
- No adjustment after the 60 per cent point of the semester.

Due to federal requirements, financial aid recipients who withdraw during the semester will receive their refund based on current federal guidelines. Room and meal plan payments will be refunded on a prorated basis. Note: The effective date of any cancellation or withdrawal is the date the student's dean receives such notification in writing. The dean may recommend to the Registrar that an exception be made to this policy only in extenuating circumstances. In no case will an adjustment be made after the first day of classes of the following semester.

Changes in Credit Hour Load

A student who adds courses during the semester will be billed additional tuition and fees applicable to the adjusted credit hour load. A student who drops courses during the semester will receive a tuition credit based upon the effective date as described above. A student who withdraws from a course during the semester will receive a tuition credit based upon the effective date as described above. However the course will remain on the student's record. Financial aid will be reviewed and adjusted for any changes to the course load.

Satisfactory Academic Progress for Financial Aid Recipients

In order to maintain eligibility for financial aid, matriculated undergraduate and graduate students must progress at a rate that ensures completion of their degree programs within a reasonable time frame. Beginning with the first semester of study in a degree program at the University of Vermont, a federal financial aid recipient is required to accumulate earned hours totaling at least 75 per cent of the number of hours attempted. Each student's progress will be measured at the end of each year of attendance to ensure adherence to this standard.

All students must have attained at least a 2.0 overall cumulative grade point average in order to continue to qualify for assistance.

Any student not meeting the standard described above will be placed on Financial Aid Probationary Status for a one year period (during which aid eligibility will be maintained). Should the student not meet the required credit standard or cumulative grade point average standard by the end of that probationary year, the student's eligibility for additional financial aid will be withdrawn until the student has met the required standard.

Students whose aid is withdrawn for not maintaining academic progress according to the standard outlined above may appeal their loss of aid by writing to the Director of Financial Aid. The decision to withhold aid eligibility may be overridden by the Director and a five member appeals committee in circumstances which warrant special consideration. Such circumstances may include but are not limited to medical emergencies or family crises which resulted in the student's not meeting the stated requirements.

Graduate Honors and Awards

University Scholars

The University Scholar Awards program was established by the Graduate College to recognize outstanding and sustained contributions of University faculty to research and scholarship in their disciplines. Each year, four faculty members are selected for this award. For the academic year 2001-2002 the recipients were Donald DeHayes (Natural Resources) and Catherine Donnelly (Nutrition and Food Sciences). For the academic year 2002-2003 the recipients are Charles Goodnight (Biology), Rachel Johnson (Nutrition and Food Sciences), Joni Seager (Geography) and Denise Youngblood (History).

Graduate Teaching Fellow Award

Each year, a number of graduate students who serve as Graduate Teaching Fellows are recognized for their teaching excellence; one of those is named Graduate Teaching Fellow of the Year. The most recent recipient of the Graduate Teaching Fellow of the Year Award is Glenn Bailey, Psychology, 2002.

Graduate College Research Day

Graduate College Research Day. In the spring each year, the Graduate College recognizes formally the research undertaken by graduate students. A full day is devoted to talks and poster presentations by students from all of the disciplines. The entire University community has the opportunity to see and hear about the high quality research that graduate students conduct.

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Graduate Student Fees

Application Fee. All applications for admission must be accompanied by a $25 application fee. This fee is nonrefundable.

Continuous Registration Fee: GRAD 900. A fee of $100 per semester is charged each graduate student who has enrolled for all credits required in the degree program but who has not completed all degree requirements (e.g. comprehensive examination, thesis defense) in order to maintain continuous enrollment. Students who have not cleared grades of I or XC, but who have enrolled for all required course work must pay this fee.

Comprehensive Fee. Based on the number of credits enrolled per semester, Students pay a Comprehensive Fee each semester according to the following schedule: 0-3 (including Continuous Registration), no fee; 4 credits, $58, 5 credits, $68, 6 credits $76, 7 credits, $86, 8 credits, $96; 9-11 credits, $104, 12 or more $277.

Student Health Fee. A health fee is included in the full-time Comprehensive Fee. Students enrolled for fewer than 12 credit hours are eligible for University Health Services by paying a health fee of $148 per semester.

Student Accident and Sickness Insurance. Through an arrangement with a commercial insurance company, students are able to procure health insurance which is designed to provide coverage for services beyond those provided by the Center for Health and Well-being. There is an additional charge for this extended coverage beyond the student health fee. The 2000-01 cost for one year's coverage for single students is $668. Married students may obtain coverage for their spouse and children. Further details are available from the Center for Health and Well-being. To participate in this insurance, the student health fee must be paid each semester as well as the additional insurance premium.

Reactivation Fee. Reactivation following withdrawal without an approved leave of absence requires payment of a $25 reactivation fee.

Advanced Degree Fee. The fee charged to each advanced degree recipient is as follows:

Doctoral Degree	$25
Master's Degree (with thesis)	$20

Master's Degree (without thesis) $10

This fee may be paid at any time but must be paid prior to the deadline established for submission of doctoral dissertations or master's theses for each of the three graduation periods.

It is the responsibility of the degree candidate to pay the appropriate advanced degree fee at the Graduate College Office, 333 Waterman, in order to have a degree awarded.

Housing and Living Expenses. The University offers a variety of housing opportunities. Jeanne Mance Hall at the northwest edge of campus offers dormitory accommodations for graduate students. Each room is furnished with a bed, dresser, wardrobe, and refrigerator. A kitchen and laundry center is located on each floor. Computer and study areas are located on the first floor. The maximum rates for the August 19, 2000 – May 18, 2001 fall and spring semesters are $410 per month for a single room. Summer rates are lower. In addition, a limited number of University-owned apartments are available for married and graduate students. The apartments are located at Fort Ethan Allen in Colchester on a bus route five miles from the main campus. For detailed information about either housing option, contact the Ethan Allen Housing Office, 1007 Ethan Allen Avenue, Colchester, VT 05446 (802-654-1735). If considering University housing, contact the Housing Office as soon as possible.

Graduate students may participate in a variety of meal plans from Marriott Food Services and take their meals at a number of locations around campus.

Rents in the Burlington area vary from approximately $100 per week for a single furnished room to $700-$800 or more per month for a two-bedroom apartment. A single student should expect minimum overall living expenses of approximately $1000 per month.

Bill Adjustment. A refund of 100 percent will be processed for enrollment reduction effected prior to the end of the second week of classes, a refund of 50 percent will be allowed for reductions during the third week of classes; a refund of 25 percent during the fourth week; no refund will be processed thereafter. At the end of the semester, an audit will be made of each student's record. If the audit reveals that total credit hour enrollment is greater than at the end of the specified drop period, the student will be financially liable for the total enrollment. Students will be charged for all hours as specified in policy statements regarding tuition.

Withdrawals. A student may voluntarily withdraw from the University by notifying the Graduate Dean and the Registrar. The student will receive a refund in accordance with the bill adjustment policy. Date and time of withdrawal normally will be the date the withdrawal notice is received by the Registrar.

Dismissal. If a student is suspended or dismissed, a refund will be processed according to the bill adjustment schedule.

Death. In case of death of the student, tuition which has been paid for the semester during which the death occurs will be refunded fully.

Graduate Student Rights and Responsibilities

Area: Graduate College Policies

Students have the responsibility to familiarize themselves with the policies and procedures of the University, the Graduate College, and their department or program. Students are primarily responsible for knowing the degree requirements and following the policies that govern their academic program. If students have concerns or doubts about individual policies and procedures, they may contact their advisor, their program or department chairperson, or the Graduate College Office, which is the ultimate arbiter of policies and procedures.

University policies and those of the Graduate College are contained in The Cat's Tale and this Catalogue, respectively. Copies of The Cat's Tale are available to new graduate students and may also be obtained from the Office of the Vice President for Student Affairs. In cases of conflict, the Graduate Catalogue supersedes academic policies in The Cat's Tale.

Advising. Unless a department or program employs an alternative approved procedure, each graduate student will have a faculty advisor to advise on matters of course selection, research direction, and overall guidance from admission to the Graduate College to completion of degree requirements. The initial advisor is assigned by the Department Chairperson or the Graduate Program Coordinator prior to or shortly after enrolling in the Graduate College. If an initial advisor is not assigned by either of the above parties within two weeks after the initiation of course work in a given graduate program, the student is encouraged to contact the Graduate College. Many times, one faculty member serves as an initial advisor for several students, and the advisor may change as the student's program and research interests become refined and definite.

Another common model, especially in doctoral programs, is a Studies Committee comprised of appropriate faculty who share a student's scholarly and professional interests. The committee meets regularly to discuss the student's progress and consult with the student regarding academic development.

While there are a variety of advising models, in each case students have the right to consult regularly with their academic advisor or studies committee.

Professional Ethics and Academic Honesty. Graduate students are required to adhere to the highest standards of professionalism as students, researchers, and teachers, and the University, in order to encourage a positive atmosphere in all phases of academic learning, teaching and research, created specific guidelines and policies regarding academic honesty. They are outlined in The Cat's Tale and are also available from the Office of the Provost.

Sexual Harassment. No member of the University community may sexually harass another. Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when:

a. submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or education;
b. submission to or rejection of such conduct by an individual is used as the basis for academic oremployment decisions affecting that individual; or
c. such conduct has the purpose or effect of substantially interfering with an individual's academic or professional performance or creating an intimidating, hostile, or offensive employment, educational, or living environment.

Any University of Vermont student having a complaint of sexual harassment should notify the Office of Affirmative Action and Equal Opportunity; students may also contact the Vice President for Student Affairs. If a student has personal concerns regarding sexual harassment, confidential counseling can be arranged through the Counseling and Testing Center. Policies and procedures governing complaints of sexual harassment are available in the office of each dean, department head, and chairperson as well as in the Bailey/Howe Library.

Discrimination. The University community will not tolerate discrimination. The Notice of Nondiscrimination, including a statement regarding policies, is published in the front of this catalogue.*Appeals.* The Graduate College is ultimately responsible for grievances regarding policies and procedures related to graduate education. Specifically excluded are grievances that contest grades on grounds other than those enumerated above.

A grievance properly begins within the student's own department by an appeal to a program director or chair. If this does not resolve the grievance, the student can present the grievance in writing to the dean of the unit in which the program resides, and thereafter to the Dean of the Graduate College. Grievances must state clearly and precisely the basis for appeal and provide supporting evidence that astudent's rights have been jeopardized. The Dean may recommend that the grievance be reviewed by the Graduate College Executive Committee. The Dean is the final arbiter of Graduate College regulations. Students retain the right to appeal the Dean's decision to the Provost.

Health Services

Area: Student Services

Center for Health and Wellbeing

The Center for Health and Wellbeing offers counseling, medical and women's clinics, nutritional counseling, physical therapy and athletic medicine, a health promotion program, a drug and alcohol education program, laboratory services, and 24-hour emergency telephone advice (802) 656-3350. The comprehensive student fee covers most primary services. Pharmacy, lab, X-ray, PT, and psychiatric services are billed to the student and typically reimbursed by insurance. Visit our Web site for more complete information.

Counseling

Over a thousand students use the services of the Counseling Center each year for improving academic success, for mental health counseling, and personal growth work. All records in the Counseling Center are confidential, the names of clients are not available without the student's permission. The staff consists of women and men of varying backgrounds, ethnicity, ages, and physical abilities. Full-time students are eligible for services. Part-time students are eligible for consultation and referrals.

The Counseling Center is accredited by the International Association of Counseling Services and adheres to the code of ethics of the American Psychological Association. Counseling is located in Jacob's House on the corner of Main Street and South Williams, (802) 656-3340.

Student Health/Medical and Women's Health Clinics

The Clinics are available to all students (except those in the College of Medicine) for primary and preventive health care. Most of these services are covered by the comprehensive student fee. Students entering the University are required to furnish the Center with a complete immunization record, to include two valid measles (Rubeola) vaccinations, and a medical history. A physical exam is not required.

Health Insurance

The University makes available to students an optional health insurance plan that provides hospitalization and some outpatient benefits. Full-time students who do not provide proof of adequate health insurance at the time of registration will be required to purchase the University-sponsored plan. Information regarding the Student Health Insurance Plan is available on-line.

The Burlington area has a large and sophisticated medical community of which the Center for Health and Wellbeing is a part. Students requiring specialty care are referred to specialists in the area. When necessary, hospitalization is usually arranged at Fletcher Allen Health Care, a teaching hospital located on the edge of the main campus.

Note: The University Health Center (UHC) is not the UVM Center for Health and Wellbeing.

Leave of Absence

Area: Graduate College Policies

A leave of absence suspends the time limit for degree completion for the duration of the leave. It does not suspend the time limit for the completion of individual courses.

Eligibility

Only students who have not enrolled for all course credit requirements may request a leave of absence. The maximum leave is one year. Students who have enrolled for all required credits but have not completed all degree requirements, such as passing the comprehensive examination or completing a thesis or dissertation, are not eligible for a leave of absence but must register for Continuous Registration.

Procedure

Students request a leave of absence from their program director or chairperson. If the program approves the request, the chairperson or director completes the Leave of Absence form available in the Graduate College Blue Book or from the Graduate College Office and forwards it to the Dean for approval. A leave of absence does not take effect until after approval has been received from both the program chairperson or director and the Dean of the Graduate College.

Any student who does not enroll following termination of a leave of absence will be deactivated from the Graduate College.

Maximum Time Limits for Degree Completion

Area: University Policies and Information

MASTERS DEGREE

- Full-Time Student 3 years
- Part-Time Student 5 years

DOCTORAL DEGREE

- All students 9 years

Individual departments may set deadlines within these time limits.

Name and Address Exclusion

Areas: Undergraduate Academic and General Information, Policies of the Graduate College

The Family Educational Rights and Privacy Act of 1974 grants to all students the right not to have personal information contained in the records of the University released to any individual, agency, or organization. UVM feels that the following constitutes such personal information.

Name
Address (including e-mail address)
Telephone number
Dates of attendance
Class
Previous institution(s) attended
Major field of study
Enrollment status
Awards
Honors (including Dean's list)
Degree(s) conferred (including dates)
Past and present participation in officially recognized sports and activities
Physical factors (height, weight of athletes)
Date and place of birth

Students who do not wish to have the above information released should fill out an information exclusion card at the Registrar's Office.

Notification of Rights Under FERPA for Postsecondary Institutions

Areas: Undergraduate Academic and General Information, Policies of the Graduate College

The Family Educational Rights and Privacy Act (FERPA) affords students certain rights with respect to their education records. These rights include:

1. The right to inspect and review the student's education records within 45 days of the day the University receives a request for access. Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the record(s) they wish to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.
2. The right to request the amendment of the student's education records that the student believes are inaccurate or misleading. Students may ask the University to amend a record that they believe is inaccurate or misleading. They should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
3. The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. One exception which permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a

person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by The University of Vermont to comply with the requirements of FERPA. The name and address of the office that administers FERPA:

Family Policy Compliance Office
U.S. Department of Education
600 Independence Avenue, SW
Washington, DC 20202-4605

Payment Obligations

Area: Undergraduate Tuition and Fees

Payment of Obligations

The Touchtone registration system will generate charges based on enrolled credit hours. All tuition, fees, and room and board charges are payable in full upon notification. Degree students who enroll in advance for courses will receive itemized statements of applicable semester charges at their permanent address about a month prior to the commencement of classes, with instructions to settle in full by a specific date (generally three weeks before classes begin). Advance payments are accepted; checks should be made payable to The University of Vermont. Any checks or payments received by the University may be applied to outstanding balances.

Students who cannot meet their financial obligations because of unusual circumstances should contact the Office of Student Financial Services as soon as possible before the payment due date. Students who are allowed a Monthly Payment Plan or a postponement of all or a portion of their financial obligations will be charged a $75 Monthly Payment Plan service charge per semester or $130 for a year plan.

Students who have not satisfactorily completed financial arrangements by the announced due date may have their enrollment cancelled. Disenrollment will automatically place a registration hold on a student's account that will prevent re-enrolling until the student has contacted Student Accounting to discuss the account. A $50 fee must be paid to allow reregistration.

The University reserves the right to withhold registration material, the diploma, degree, and all information regarding the record, including transcript, of any student who is in arrears in the payment of tuition, fees, or other charges, including, but not limited to, student loans, dining and housing charges, telephone toll charges, and parking fines.

If a student leaves the University for any reason with an outstanding balance and this balance is not settled in a timely manner, the University may turn the account over for collection. If this is done, any additional collection fees, legal fees, and other costs and charges necessary for the collection of this debt will be added to the outstanding balance.

Late Payment Service Charge

Students who do not settle their accounts by the due date will be charged a late payment service charge. Please refer to the Payment Information and Financial Policies information on the Web page.

Budgeted Payment

The University offers a Monthly Payment Plan to parents who desire to budget annual costs in monthly installments. Specific information is mailed to parents of incoming and returning students in the spring by the Office of Student Financial Services.

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Policies and Procedures

Health Record, Registration, Graduate Course Levels, Course Loads, Auditing Classes, Physical Education Classes, Credit by Examination, Add/Drop, Withdrawl from Courses, Undergraduate Enrollment for Graduate Credit, Accelerated Master's Degree Programs (AMPs), Grading Policies, Dismissal

Change of Program

Change of Program

Continuous Registration

Continuous Registration

Leave of Absence

Leave of Absence

Eligibility, Procedure

Deactivation and Reactivation

Deactivation and Reactivation

Withdrawal from Degree Program

Withdrawal from Degree Program

Transfer Credit and Credit by Examination

Transfer Credit and Credit by Examination

Approval of Credit, Number of Credits, Appropriateness of Credit, Currency of Credit

Concurrent Master's and Doctor of Philosophy Credit

Maximum Time Limits for Degree Completion

Maximum Time Limits for Degree Completion

Degree Requirements

Master's Degree Requirements

Master's degree requirements, including Thesis format and defense

Doctor of Education Degree.

Doctor of Philosophy Degree

Doctor of Philosophy degree requirements, including Dissertation format and defense.

Student Rights and Responsibilities

Student Rights and Graduate Student Responsibilities

UVM Responsibilities

Transcripts

Notification of Rights under FERPA for Postsecondary Institutions

Name and Address Exclusion

Conferral of Graduate Degrees

Residency Regulations, In-State Status Regulation

The Vermont Legislature has established a lower rate of tuition for students who are Vermont residents. These regulations define eligibility requirements for in-state status classification. All students at The University of Vermont and State Agricultural College (UVM) shall be assigned in-state or out-of-state status classification consistent with these regulations. A Vermont domicile must be established for a student to be eligible for in-state status.

In-State Status Classification Rules

1. Domicile shall mean a person's true, fixed, and permanent home. It is the place at which one intends to remain indefinitely and to which one intends to return when absent.
2. As one element of domicile, a student must reside in Vermont continuously for one year prior to the semester for which in-state status is sought.
3. A residence established for the purpose of attending UVM shall not by itself constitute domicile.
4. An applicant becoming a student within one year of first moving to the state shall have created a rebuttable presumption that residency in Vermont is for the purpose of attending UVM and/or acquiring in-state status for tuition purposes.
5. A domicile or residency classification assigned by a public or private authority neither qualifies nor disqualifies a student for UVM in-state status. Such classification may be taken into consideration, however, in determining the student's status at UVM.
6. It shall be presumed that a student who has not reached the age of majority (18)holds the domicile of his/her parents or legal guardian(s).
7. Receipt of financial support by a student from his/her family shall create a rebuttable presumption that the student domicile is with his/her family, regardless of whether the student has reached the age of 18.
8. A student who has not reached the age of 18 whose parents are legally separated or divorced shall be rebuttably presumed to hold the domicile of the parent with legal custody.
9. A student of parents legally separated or divorced may be granted in-state status if a noncustodial or joint custodial parent is domiciled in Vermont and has

contributed more than 50 percent of financial support for at least one year prior to the semester for which in-state status is sought.

10. The burden of proof as to eligibility for in-state status rests with the student. Eligibility must be established by clear and convincing evidence.

In-State Status Classification Documentation

11. The student must submit with the application form all relevant information.
12. The classification decision shall be based upon information furnished by the student, information requested of the student, and other relevant information available consistent with University policies and procedures and legal guidelines.
13. Testimony, written documents, affidavits, verifications, and/or other evidence may be requested.
14. The student's failure to produce information requested may adversely affect the decision for instate status.
15. A student or others furnishing information may request the deletion from documents of irrelevant private data.

In-State Status Classification Appeals

16. The decision of the Residency Officer must be appealed in writing to the Residency Appellate Officer within thirty (30) calendar days of the date of the Residency Officer's written decision. Appeal to the Residency Appellate Officer is the final appeal at UVM.

In-State Status Reclassification

17. A student who does not qualify for in-state status classification may reapply for such classification each subsequent semester.
18. In-state status classification becomes effective the first semester following the date of successful application.

Re-Examination of Classification Status

19. Classification status may be re-examined upon the initiative of the Residency Officer in the exercise of sound discretion. Circumstances such as periodic enrollment may be cause for reexamination.

Adopted by the Board of Trustees, December 14, 1974; amended June 13, 1981, and May 2, 1987. These regulations took effect with the 1987-88 academic year.

Support Services for Graduate Students

Graduate Student Advisory Committee

The Graduate Student Advisory Committee (GSAC), comprised of graduate student representatives from various graduate programs, provides a forum for discussion of graduate student issues and assists the Dean and the Executive Committee in matters affecting graduate students. Issues considered by GSAC include academic matters, professional development and student life. GSAC sponsors occasional social events and conducts a mini-grants program to support, in part, expenses associated with student travel for professional purposes.

Center for Cultural Pluralism

The Center coordinates efforts to create a campus culture based on equality, respect for all members of our community, and appreciation of diversity. The Center is a highly visible, tangible symbol of commitment to inclusiveness and multicultural education. It provides a central meeting place for individuals and groups working on diversity issues and facilitates interaction and cooperation among students, faculty, and staff, and with members of the larger Burlington community as well.

Under the direction of the Special Advisor to the Provost, the Center develops policy and strategies for increasing diversity at UVM, including efforts to improve recruitment and retention of students, faculty and staff of color, transformation of the curriculum to include more multicultural perspectives, and creation of a campus climate in which each individual feels safe and valued in the classroom, residence halls, offices, and co-curricular activities. The Center oversees programming of social, cultural, and educational events throughout the year, works with standing committees devoted to various diversity efforts, conducts research, and develops grant proposals for additional funding for diversity initiatives from foundations.

In addition to the Special Advisor to the Provost and staff, the Center houses the Race and Culture Course, meeting spaces, a classroom, art gallery, resource library, multicultural and religious and spiritual organizations, several handicapped-accessible offices available for campus-wide use, and offices for graduate assistants and visiting scholars.

The Center for Cultural Pluralism is located in Allen House on the University Green at the corner of Main Street and South Prospect, (802) 656-8833. Visitors are welcome.

ALANA Student Center

The primary goal of the Center is to help meet the academic, cultural, social, and emotional needs of ALANA (African, Latino/a, Asian, and Native American) students by providing resources and support. The Center offers information and programs to promote a just multiracial campus climate. Several ALANA student groups (Alianza Latina, Asian American Student Union, Womyn of Color, Wahbeenowin: the seventh generation, and New Black Leaders) meet at the Center. The Center has a small computer lab, meeting/study space, kitchen, and television lounge.

The ALANA Student Center is located in Blundell House on Redstone Campus, (802) 656-3819.

Career Services

Career Services staff assist first year students through graduate students from all majors. Whether you need to select a major, develop some career direction, choose a summer job, find an internship, identify a work-study position, prepare a resume, network with alumni, or get hired after graduation Career Services is there to serve.

Career Services is located at Living/Learning Center, E Building, 656-3450. Email:career@granola.uvm.edu. Hours: Mon., Tues., Thurs., and Fri. 8:00 a.m. to 5:00 p.m.; Wed. 8:00 a.m. to 7:00 p.m.

Center for Health and Wellbeing

The Center for Health and Wellbeing is available to all students (including incoming first year medical students as of 9/00) for primary and preventive health care (including: Medical, Women s and Sports Therapy Clinics; mental health counseling, nutrition counseling, psychiatry, drug and alcohol services, health promotion and education). Most of these services are covered by the health fee. Students entering the University are required to furnish the Center with a complete immunization record to include two valid measles (Rubeola) vaccinations and a medical history. A physical exam is not required.

The Burlington area has a large and sophisticated medical community of which the Center for Health and Wellbeing is a part. Students requiring consultations are referred to specialists in the area. When necessary, hospitalization is usually arranged at the Fletcher Allen Hospital, a teaching hospital located on the edge of the main campus. Note: The University Health Center (UHC) is not the UVM Student Health/Medical Clinic (CHWB).

The University also makes available to students an optional health insurance plan that provides hospitalization and some outpatient benefits. Full-time students who do not provide proof of adequate health insurance at the time of registration will be required to purchase the University sponsored plan.

The Counseling Center is a campus resource which provides confidential counseling, consulting and educational outreach programs. Many graduate students consult the staff regarding academic stress, relationships, mental health issues and future planning.

The Counseling Center is located on the corner of Main St. and So. Williams. Hours are from 8-4:30, M-Thu, and 8-5:30 F during the academic year and 8-4:30 during vacations. The Counseling Center is part of the Center for Health and Wellbeing and is free to students who have paid the health fee or are registered for six credits or more.

Services for Students with Disabilities

Services and accommodations for students with disabilities are coordinated by three offices: The Office of Specialized Student Services certifies and coordinates services for students with physical disabilities, learning disabilities, and attention deficit disorders; The Counseling Center certifies and coordinates services for students with emotional disabilities; The Center for Health and Wellbeing certifies and coordinates services for students with ongoing medical conditions. Services to equalize opportunities in the classroom and course accommodations are arranged through these offices. Students are encouraged to inform the staff of the appropriate certifying office of any needed services or accommodations at least two weeks in advance of each semester. Current and comprehensive documentation of disability will be required.

The Office of Specialized Student Services, A170 Living/Learning Center, 656-7753, TTY 656-3865. The Counseling Center, 146 So. Williams St., 656-3340. Center for Health and Wellbeing, 425 Pearl St., 656-3350. ADA/504 Compliance, 428 Waterman, 656-8280.

Graduate College Workshops

Each year the Graduate College sponsors workshops designed to support the professional development of graduate students. Examples of topics considered include teaching techniques and student learning, personal writing and evaluating student writing, grant writing, developing web pages, mentoring, ethical conduct of research, and more.

Exercise and Wellness

The University's extensive physical education facilities are available for recreational use by faculty, staff, and students during hours not devoted to specific instruction. Swimming, handball, skating, tennis, squash, and many other individual and group activities are available for interested participants.

In addition to the physical education facilities, the University has an active Outing Club. There are many opportunities in Vermont for participation on either an organized or informal level in such activities as hiking, camping, sailing, swimming, skiing, running, bicycling, and other outdoor activities.

Transcripts

Area: Undergraduate Academic and General Information, Policies of the Graduate College

An official transcript is the reproduction of a complete, unabridged permanent academic record validated with the University seal, facsimile signature of the Registrar, and date of issue. A key to the transcript is printed on the reverse side of each page of the transcript. A rank-in-class entry is made on undergraduate records upon completion of undergraduate degree requirements. Currently enrolled as well as former students may obtain an official transcript of their permanent academic record by writing the Office of the Registrar, 360 Waterman Building. Please allow a minimum of one week for normal processing and three weeks following the end of a semester. Transcripts are not released when there is an indebtedness to the University.

Veterans Advising and Benefits

Area: Student Services

The University provides support and advising to any veteran or dependent eligible for benefits under Federal Law, Chapters 30, 31, 32, 34, 35, or 106. Students eligible for these benefits should contact the Registrar's Office at least one month prior to registration each semester. Students wishing to register for benefits should be prepared to present their certificates of eligibility.

It is important that all veterans and dependents keep in contact with the University for the latest information regarding benefits and requirements. Also, those students involved in the Veterans Program should contact the University in the event of any change in credit load, dependency status, address, or major. The phone number is (802) 656-2045.

Withdrawal from a Graduate Degree Program

Area: Graduate College Policies

Students must notify the Graduate Dean's Office in writing of their intent to withdraw from a degree program. However, if a student does not register at The University of Vermont for course work, thesis or dissertation research, or continuous registration for a period of more than one calendar year, and does not notify the department or the Graduate Dean's Office, in writing, the student will be considered to have withdrawn from the degree program. It will be necessary to apply for reactivation and pay a reactivation fee if the student wishes to resume the graduate program.

Courses in Anthropology (ANTH)

ANTH 021 - **Human Cultures**
Introduction to cultural anthropology focusing on the life ways of non-Western societies and how anthropologists study them.
Credits: 3.00

ANTH 023 - **Anthropology Third World Dev**
A survey of the role of applied anthropology in the understanding and analysis of development efforts to alleviate (mostly) third world problems.
Credits: 3.00

ANTH 024 - **Prehistoric Archaeology**
Examination of the origins and development of culture from the earliest human fossils through the appearance of civilization; the nature of archaeological data and interpretations.
Credits: 3.00

ANTH 026 - **Biological Anthropology**
Introduction to the study of the evolution and physical variation of humanity from a biocultural perspective.
Credits: 3.00

ANTH 028 - **Linguistic Anthropology**
Introduction to linguistic anthropology, focusing on language and communication as they pertain to human culture and human social interaction.
Credits: 3.00

ANTH 064 - **Native Americans of Vermont**
Vermont's native peoples from their earliest appearance in the region until today. Archaeological and ethnographic data reviewed in the broader perspective of aboriginal Northeastern cultural history. Alternate years.
Credits: 3.00

ANTH 095 - **Introductory Special Topics**
See Schedule of Courses for specific titles.
Credits: 6.00

ANTH 096 - **Introductory Special Topics**

See Schedule of Courses for specific titles.
Credits: 3.00

ANTH 160 - **North American Indians**
Ethnographic survey of major Native American cultures of Mesoamerica and the U.S. against background of aboriginal culture history, and problems of contact with European cultures. Prerequisite: ANTH 021. Alternate years.
Credits: 3.00

ANTH 161 - **Cultures of South America**
Ethnographic survey of major native American cultures south of Mesoamerica against background of aboriginal culture history, and their relation to present day culture spheres. Prerequisite: 21. Alternate years.
Credits: 3.00

ANTH 162 - **Cultures of Africa**
Ethnographic survey of representative native societies of sub-Saharan Africa and major colonial/immigrant minorities emphasizing changes resulting from colonialism, independence, and modernization. Prerequisite: ANTH 021. Alternate years.
Credits: 3.00

ANTH 163 - **South Pacific Cultures**
Survey of major cultural areas of the South Pacific including problems of prehistory, contact with Western colonialism, and contemporary life. Prerequisite: ANTH 021. Alternate years.
Credits: 3.00

ANTH 165 - **Peoples of South Asia**
Culture and social organization of peoples of Pakistan, India, Bangladesh, and Sri Lanka. Theoretical issues in anthropological analysis of these societies discussed. Prerequisite: ANTH 021. Alternate years.
Credits: 3.00

ANTH 166 - **Peoples of the Middle East**
Culture and social organization of peoples living in lands from Morocco to Afghanistan, including a consideration of Islam. Prerequisite: ANTH 021. Alternate years.
Credits: 3.00

ANTH 167 - **Native Peoples of Canada**
Traditional life-ways of the native peoples of Canada, Indian, and Inuit; contemporary issues in native life in Canada. Prerequisites: ANTH 021 or GEOG 052 or HST 065 or HST 066. Alternate years.
Credits: 3.00

ANTH 169 - **Latinos in the United States**
Survey of peoples of Latino/Hispanic descent living in the U.S. Course examines their similarities and differences in history, ethnic identification, and cultural practices. Prerequisite: ANTH 021.
Credits: 3.00

ANTH 172 - **Women, Society & Culture**

Cross-cultural treatment of women which emphasizes the interrelationships between female status, social organization, and ideological systems. Prerequisite: 21. Alternate years.
Credits: 3.00

ANTH 178 - **Sociolinguistics**

Exploration of language and nonverbal interactions as cultural activities. Focus on rules and patterns people display appropriate to communication and social interaction. Prerequisite: 28.
Credits: 3.00

ANTH 179 - **Cultural Ecology**

(Same as Geography 179.) Interrelationships of social groups and their natural environments and resource bases, with primary emphasis on nonindustrial cultures. Prerequisite: 21 or Geography 1. (taught on a rotating basis). Alternate years.
Credits: 3.00

ANTH 180 - **Psychological Anthropology**

Cross-cultural study of the individual in a sociocultural context examining cognition and culture, symbols, alternative states of consciousness, human sexuality, deviance and madness, and ethnotherapy. Prerequisite: 21. Alternate years.
Credits: 3.00

ANTH 181 - **Law, War and Disorder**

Introduction to the anthropology of law and conflict management emphasizing the cultural fora and social organization of disputes and efforts to deal with conflict. Prerequisite: ANTH 021.
Credits: 3.00

ANTH 187 - **Race and Ethnicity**

Description and analysis of ethnic, racial, and religious groups in the U.S. Examination of social/cultural patterns in the larger society and in these groups themselves. Prerequisite: ANTH 021. Cross-listed with: SOC 119.
Credits: 3.00

ANTH 188 - **Historical Archaeology**

Survey of field, lab, and archival research methods; specialized studies of material culture; selected topics on ethnicity in the Americas, gender and status. Prerequisites: ANTH 024. Alternate years.
Credits: 3.00

ANTH 189 - **Aging in Cross-Cultural Persp**

Aging from an anthropological perspective. Topics include the biology of aging; aging in hunting, pastoral, fishing, and horticultural societies; aging in contemporary ethnic America. Prerequisites: 21 or Sociology 20. Alternate years.
Credits: 3.00

ANTH 190 - **ISSP Thesis**

Independent study for students enrolled in Integrated Social Sciences Program;

final product is thesis. Prerequisite: Enrollment in ISSP courses.
Credits: 3.00

ANTH 195 - **Intermediate Special Topics**
See Schedule of Courses for specific titles.
Credits: 4.00

ANTH 196 - **Intermediate Special Topics**
See Schedule of Courses for specific titles.
Credits: 6.00

ANTH 197 - **Readings & Research**
Credits: 3.00

ANTH 198 - **Readings & Research**
Credits: 3.00

ANTH 200 - **Field Work in Archaeology**
Methods and techniques of archaeological investigation in field situations and the laboratory analysis of data. Prerequisites: 24, one 100-level course in anthropology or history, instructor's permission. Summers only.
Credits: 6.00

ANTH 201 - **Practicum & Internship**
Supervised service or research integrating theoretical and practical anthropological issues. Prerequisite: Nine hours of anthropology. UG only.
Credits: 6.00

ANTH 210 - **Archaeological Theory**
Development of archaeology from the 19th century to the present including concepts of form, space and time, intellectual attitudes, current systems theory, and research strategies. Prerequisites: ANTH 024, one 100-level Anthropology course; or HP 201; or graduate standing in Historic Preservation Program, or HIST 121, HIST 122, or HIST 149. Alternate years.
Credits: 3.00

ANTH 220 - **Develop & Applied Anthropology**
Seminar examines the application of anthropological knowledge and methodologies to alleviate social problems around the world, with a special focus on the cultural politics of expertise. Prerequisites: ANTH 23, three 100-level courses, or instructor's permission. Alternate years.
Credits: 3.00

ANTH 225 - **Anthropological Theory**
Schools of anthropological thought examined in relation to data on non-Western societies and the historical and social context in which the anthropologist works. Prerequisites: ANTH 021, one 100-level course.
Credits: 3.00

ANTH 228 - **Social Organization**
Examination of the basic anthropological concepts and theories used in the cross-cultural analysis of kinship and marriage. Prerequisites: ANTH 021, one 100-level course.

Credits: 3.00

ANTH 250 - **Museum Anthropology**

The cultural context of selected archaeological and ethnographic collections at Fleming Museum; cataloguing, conservation, research, and interpretation of objects; exhibition design and ethical issues. Prerequisites: Junior standing; Anthropology, Art History, Studio Art majors and minors. Alternate years.
Credits: 3.00

ANTH 283 - **Colonialism**

The concepts, ideologies, and practice(s) of colonialism within a sociocultural and historical context emphasizing the cultures of the colonizer and the colonized and the interaction thereof. Prerequisites: ANTH 021, one 100-level course, or ANTH 021, six hours in the social sciences. Alternate years.
Credits: 3.00

ANTH 284 - **Microethnography**

Tape recorders and video cameras used to explore human patterns of communication; specifically phonemic, paralinguistic, haptic and kinesic detail, as well as ethnographic semantics. Prerequisite: 28 or Linguistics 101.
Credits: 3.00

ANTH 290 - **Meth of Ethnographic Field Wrk**

Examination of theoretical and ethical premises of field work methodology with practical experience in participant observation, interviewing, the genealogical method, and the recording of data. Prerequisite: Twelve hours of Anthropology. Alternate years.
Credits: 3.00

ANTH 295 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisites: ANTH 021, one 100-level course.
Credits: 6.00

ANTH 296 - **Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisites: ANTH 021, one 100-level course.
Credits: 4.00

ANTH 297 - **Advanced Readings & Research**

Prerequisite: Junior/Senior standing.
Credits: 1.00

ANTH 298 - **Advanced Readings & Research**

Prerequisite: Junior/Senior standing.
Credits: 3.00

Program Requirements

Please consult the Graduate College Dean's Office or the Department for the program requirements.