

## 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.



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## 2012-2013 Catalogue

The University of Vermont Undergraduate Catalogue is the official publication of undergraduate degree programs, requirements, and course descriptions for the 2012-13 academic year, and is produced each spring by the Office of the Provost for the following academic year.


Students at the University of Vermont are responsible for knowing and complying with all requirements for their respective degrees as stated in the catalogue that is in effect at the time of enrollment.


Prior editions of the catalogue are available in the [Catalogue Archives](#) section of this site.

### Search The Catalogue

- Undergraduate and graduate courses
- All catalogue content

### Catalogue information is provided in two ways:

- The official, fixed, and archival edition of the 2012-2013 Undergraduate Catalogue in PDF format. This version can be viewed or printed from the following link:  
 [The University of Vermont Undergraduate Catalogue 2012-2013 \(PDF\)](#)
- This online application contains information extracted from the catalogue coupled with the current Course Listing and the Faculty Directory. The course and faculty information presented here is updated periodically. Additionally, there may be changes to contact names, phone numbers, addresses and other basic information.

Please note that you may navigate outside the official catalogue site as you peruse these materials. The  identifies links that are not part of the official catalogue website.

Disclaimer: 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.

# UVM Academic Calendar

## :: Academic Year 2011-2012

### Fall 2011\*

Events	Dates	Days of Week
First Day of Classes	Aug 29	M
Labor Day Holiday	Sep 5	M
Add/Drop, Pass/No Pass, Audit Deadline	Sep 13	T
Withdraw with 50% Refund Deadline	Sep 20	T
Withdraw with 25% Refund Deadline	Sep 27	T
Last Day to Withdraw	Oct 31	M
Thanksgiving Recess	Nov 21-25	M-F
Last Day of Classes	Dec 7	W
Reading and Exam Period	Dec 8-16	R,F-F
Reading Days	Dec 8,14	R,W
Exam Days	Dec 9,12,13,15,16	F,M,T,R,F
December Commencement	Dec 17	S

Due to severe weather caused by Hurricane Irene the above deadlines (in red) have been extended by one day to reflect classes starting Tuesday, August 30th.

Please visit the [Tuition Refund Dates and Schedule](#) page of the Student Financial Services website to view the tuition refund dates for the Fall 2011 semester. To learn about the impact of course withdrawal on financial aid, please view our [Financial Aid Handbook](#).

### Winter Session 2012

First Day of Classes	Dec 26	M
Last Day of Classes	Jan 13	F

[Find out more about winter session here.](#)

### Spring 2012\*

Martin Luther King Holiday	Jan 16	M
First Day of Classes	Jan 17	T
Add/Drop, Pass/No Pass, Audit Deadline	Jan 30	M
Presidents' Day Holiday	Feb 20	M
Town Meeting Day Recess	Mar 6	T
Spring Recess	Mar 5-9	M-F
Last Day to Withdraw	Apr 2	M
Honors Day	Apr 20	F
Last Day of Classes	May 2	W
Reading and Exam Period	May 3-11	R,F-F
Reading Days	May 3,9	R,W

Exam Days	May 4,7,8,10,11	F,M,T,R,F
Commencement	May 20	Su

*\*Approved by the Faculty Senate March 14th 2011*

**Summer 2012**

Events	Dates	Days of Week
First Day of Classes	May 21	M
Memorial Day Holiday	May 28	M
Fourth of July Holiday	Jul 4	W
Last Day of Classes	Aug 10	F

*Summer dates modified September 24, 2010*

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- [ALANA U.S.Ethnic Studies \(ALAN\)](#)
- [Anatomy & Neurobiology \(ANNB\)](#)
- [Animal Science \(ASCI\)](#)
- [Animal, Nutrition & Food Sci \(ANFS\)](#)
- [Anthropology \(ANTH\)](#)
- [Art History \(ARTH\)](#)
- [Astronomy \(ASTR\)](#)
- [Biochemistry \(BIOC\)](#)
- [Biology \(BIOL\)](#)
- [Biostatistics \(BIOS\)](#)
- [Business Administration \(BSAD\)](#)
- [Cell Biology \(CLBI\)](#)
- [Chemistry \(CHEM\)](#)
- [Civil & Environmental Engr \(CE\)](#)
- [Classics \(CLAS\)](#)
- [Clinical&Translational Science \(CTS\)](#)
- [Cmty Dev & Apld Econ \(CDAE\)](#)
- [Comm Sciences & Disorders \(CSD\)](#)
- [Complex Systems \(CSYS\)](#)
- [Computer Science \(CS\)](#)
- [Counseling \(EDCO\)](#)
- [Curriculum & Instruction \(EDCI\)](#)
- [Early Childhood Pre K-3 \(EDEC\)](#)
- [Early Childhood Special Educ \(ECSP\)](#)
- [Economics \(EC\)](#)
- [Education \(EDSS\)](#)
- [Electrical Engineering \(EE\)](#)
- [Elementary Education \(EDEL\)](#)
- [Engineering \(ENGR\)](#)
- [Engineering Management \(EMGT\)](#)
- [English \(ENG5\)](#)
- [Environmental Sciences \(ENSC\)](#)
- [Environmental Studies \(ENVS\)](#)
- [Food Systems \(FS\)](#)
- [Forestry \(FOR\)](#)
- [Foundations \(EDFS\)](#)
- [French \(FREN\)](#)
- [Geography \(GEOG\)](#)
- [Geology \(GEOL\)](#)
- [German \(GERM\)](#)
- [Global and Regional Studies \(GRS\)](#)

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- [Graduate Medical \(GRMD\)](#)
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- [Greek \(GRK\)](#)
- [Greek & Latin \(GKLT\)](#)
- [Health \(HLTH\)](#)
- [Health Education \(EDHE\)](#)
- [Higher Education \(EDHI\)](#)
- [Historic Preservation \(HP\)](#)
- [History \(HST\)](#)
- [Human Development & Fam Stdies \(HDFS\)](#)
- [Humanities \(HUMN\)](#)
- [Internal Medicine \(MED\)](#)
- [Latin \(LAT\)](#)
- [Leadership and Policy Studies \(EDLP\)](#)
- [Library Science \(EDLI\)](#)
- [Linguistics \(LING\)](#)
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- [Materials Science \(MATS\)](#)
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- [Medical Laboratory Science \(MLS\)](#)
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- [Middle Level Teacher Education \(EDML\)](#)
- [Molecular Physiology & Biophys \(MPBP\)](#)
- [Music \(MU\)](#)
- [Natural Resources \(NR\)](#)
- [Neurology \(NEUR\)](#)
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- [Nursing & Health Sciences \(NH\)](#)
- [Nutrition and Food Sciences \(NFS\)](#)
- [Obstetrics & Gynecology \(OBGY\)](#)
- [Orthopedic Surgery \(ORTH\)](#)
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- [Philosophy \(PHIL\)](#)
- [Physical Education-Prof \(EDPE\)](#)
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- [Plant Biology \(PBIO\)](#)
- [Political Science \(POLS\)](#)
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- [Water Resources \(WR\)](#)
- [Wildlife & Fisheries Biology \(WFB\)](#)

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Graduate Courses in ALANA U.S.Ethnic Studies (ALAN)

ALAN 295 - Advanced Special Topics

Advanced courses or seminars on topics beyond the scope of existing departments. See Schedule of Courses for specific titles. Prerequisite: Junior standing.

Credits: 1.00 to 18.00

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### Graduate Courses in Anatomy & Neurobiology (ANNB)

#### ANNB 201 - Human Gross Anatomy

Lectures and detailed regional cadaver dissections emphasize functional anatomy of major systems (e.g. musculoskeletal, cardiovascular, nervous). Required of Physical Therapy students; others with Department permission.

Credits: 6.00

#### ANNB 225 - Human Neuroanatomy

Functional anatomy of the human nervous system and its cells. Focus on both peripheral and central nervous system. Lectures and laboratory (gross and microscopic anatomy). Prerequisite: Permission of the Instructor.

Credits: 3.00

#### ANNB 261 - Neurobiology

Focus on molecular and cellular aspects of the nervous system. Electrical signaling, synaptic transmission, signal transduction, neural development, plasticity, and diseases. Prerequisite: BIOL 103 or ANPS 019 & ANPS 020. Cross-listed with: BIOL 261.

Credits: 3.00

#### ANNB 301 - Medical Gross Anatomy

This course includes a complete cadaver dissection by all students and evaluation in embryology as required. Emphasis is placed on individualized laboratory instruction. Prerequisite: Current Medical, Osteopathic, Podiatric and Dental students or Instructor permission.

Credits: 8.00

#### ANNB 302 - Neuroscience

This course examines the structure and functions of the human nervous system, provides laboratory experience with dissected specimens and incorporates clinical information. Prerequisites: Open to Graduate students in Physical Therapy and others with Instructor permission.

Credits: 4.00

#### 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: Permission of the Instructor.

Credits: 3.00

#### 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: Permission of Instructor. Alternate years.

Credits: 3.00

**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: Permission of the Instructor.  
Credits: 3.00

**ANNB 326 - Basic Sci-Neurologic Disease**

In-depth examination of basic mechanisms and clinical aspects of one neurological disease per year. Disease examined changes every year. Prerequisites: Advanced Graduate students, neuroscience faculty and residents in neurology, neurosurgery and psychology. Others contact Dr. Eckenstein at 656-4536.  
Credits: 2.00

**ANNB 327 - Resp Conduct in Biomed Rscrch**

Topics in Scientific Integrity surrounding responsible conduct and practices in biomedical research. Prerequisites: Advanced Graduate students, postdoctoral fellows and assistant professors in the biological or biomedical sciences.  
Credits: 1.00

**ANNB 328 - Techniques in Microscopy**

Topics shall include practical background in microscopy, including brightfield, epifluorescence, confocal, multi-photon, deconvolution, atomic force and electron microscopy. Prerequisite: Permission of the Instructor.  
Credits: 3.00

**ANNB 329 - Topics in Excitable Membranes**

This course is a graduate course designed to introduce the fundamentals of cellular electrophysiology through independent student reading and faculty-led group discussions of journal articles. Prerequisite: Permission of the Instructor.  
Credits: 2.00

**ANNB 330 - Comparative Neurobiology**

This course is designed to introduce students to the cellular mechanisms that underlie selective motor and sensory abilities that have evolved in various species. Pre/co-requisite: Permission of the Instructor.  
Credits: 2.00

**ANNB 342 - Spec Dissections in Gross Anat**

A detailed and independent study of a single anatomical region, utilizing gross, microscopic, and embryologic materials. Prerequisite: Permission of the Instructor.  
Credits: 1.00

**ANNB 381 - Sem in Anatomy & Neurobiology**

Research presentations and critical review of the literature in various areas of anatomical and neurobiological sciences.  
Credits: 1.00

**ANNB 382 - Sem in Anatomy & Neurobiology**

Research presentations and critical review of the literature in various areas of anatomical and neurobiological sciences.  
Credits: 1.00

**ANNB 391 - Master's Thesis Research**

Credit as arranged.  
Credits: 1.00 to 18.00

**ANNB 395 - Special Topics in Neurobiology**  
Prerequisite: Permission of the Instructor.  
Credits: 3.00

**ANNB 491 - Doctoral Dissertation Research**  
Credit as arranged.  
Credits: 1.00 to 18.00

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## ASCI 205 - Equine Reproduction&Management

## ASCI 215 - Physiology of Reproduction

## ASCI 216 - Endocrinology

## ASCI 220 - Lactation Physiology

## ASCI 230 - Agricultural Policy & Ethics

**ASCI 263 - Clin Top:Companion Animal Med**

## ASCI 264 - Clin Topics:Livestock Medicine

**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: 3.00

**ASCI 297 - Advanced Special Topics**

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: 4.00

**ASCI 298 - Advanced Special Topics**

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: 4.00

**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: 1.00

**ASCI 302 - ASCI Graduate Seminar**

Topics of current faculty and graduate student interest presented in a seminar-discussion format. Pre/corequisite: Graduate standing.  
Credits: 1.00

**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: 1.00

**ASCI 391 - Master's Thesis Research**

Credits: 1.00 to 10.00

**ASCI 392 - Independent Literature Rsch**

Reading and literature research culminating in a paper on a topic of current interest in Animal Sciences.  
Credits: 3.00

**ASCI 395 - Special Topics**

Credits: 3.00

**ASCI 491 - Doctoral Dissertation Research**

Credits: 1.00 to 12.00

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Graduate Courses in Animal, Nutrition & Food Sci (ANFS)

ANFS 313 - Food Safety and Public Policy

An exploration of issues that impact the development of microbiological food safety policy through analysis of how science and risk assessment are used in establishing policy. Pre/co-requisite: NFS 203 or Instructor permission.

Credits: 3.00

ANFS 395 - Special Topics

Lectures, laboratories, readings, or projects relating to topics in animal, nutrition and food sciences. Pre/co-requisite: Graduate standing.

Credits: 3.00

ANFS 491 - Doctoral Dissertation

Credits: 1.00 to 18.00

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http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=ANFS&agc=AGC&term=201209&SM=coursemenu.html[9/26/2018 9:31:27 AM]

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# 2012-2013 Catalogue

## Graduate Courses in Anthropology (ANTH)

## ANTH 200 - Field Work in Archaeology

Methods and techniques of archaeological investigation in field situations and the laboratory analysis of data. Pre/co-requisites: ANTH 024, and one 100-level course in Anthropology or History, or Instructor permission.

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 023, three 100-level courses, or Instructor 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 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 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.

<http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=ANTH&agc=AGC&term=201209&SM=coursemenu.html>[9/26/2018 9:32:15 AM]

**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

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Graduate Courses in Art History (ARTH)

ARTH 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, including three hours in the area of the seminar;  
Minimum Junior standing.  
Credits: 3.00

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Graduate Courses in Astronomy (ASTR)

ASTR 257 - Modern Astrophysics

Prerequisite: One 100-level course in physical science or Engineering. Cross-listed with PHYS 257.

Credits: 3.00

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## Graduate Courses in Biochemistry (BIOC)

**BIOC 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. Prerequisite: CHEM 142 or CHEM 144. Cross-listed with: CHEM 205 and MMG 205.

Credits: 3.00

## BIOC 206 - Biochemistry II

Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. Prerequisite: BIOC 205. Cross-listed with: CHEM 206, MMG 206.

Credits: 3.00

**BIOC 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: BIOC 205 or BIOC 206. Cross-listed with: CHEM 207, MMG 207.

Credits: 3.00

## BIOC 212 - Biochemistry of Human Disease

Molecular approach to genetic, metabolic, and infectious diseases; recombinant DNA technology and medicine; molecular biology of cancer. Prerequisites: CHEM 042 or CHEM 141.

Credits: 3.00

## 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: BIOL 001 , BIOL 002; Organic Chemistry; Junior standing recommended. Cross-listed with: MMG 240. Alternate years.

Credits: 3.00

**BIOC 301 - General Biochemistry**

Survey for science majors. Chemistry, structure, metabolism, and function of proteins, carbohydrates, lipids; enzymes, bioenergetics and respiratory processes. Prerequisites: CHEM 141, CHEM 142 or CHEM 143, CHEM 144, and Department permission.

Credits: 3.00

**BIOC 302 - General Biochemistry**

Survey for science majors. Amino acids, nucleic acids, protein synthesis, cellular and physiological control mechanisms. Prerequisites: CHEM 141, CHEM 142 or CHEM 143, CHEM 144, and Department permission.

Credits: 3.00

**BIOC 305 - Medical Biochemistry**

A survey course in human biochemistry, with particular emphasis on medical applications.

Prerequisite: For medical students only.

Credits: 3.00

**BIOC 306 - Medical Biochemistry**

A survey course in human biochemistry, with particular emphasis on medical applications.

Prerequisite: For medical students only.

Credits: 3.00

**BIOC 307 - Special Topics in Biochemistry**

Areas of biochemistry not treated in concurrent advanced course offerings. Prerequisites: BIOC 301, BIOL 302.

Credits: 3.00

**BIOC 308 - Special Topics in Biochemistry**

Areas of biochemistry not treated in current advanced course offerings. Prerequisites: BIOC 301, BIOC 302 or Department permission.

Credits: 3.00

**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: 3.00

**BIOC 310 - Laboratory Research Rotations**

Two sequential research projects in Departmental faculty laboratories, composed of experimental work, an oral presentation and a written report. Second semester.

Credits: 3.00

**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. Prerequisites: BIOC 301, BIOC 302 or Department permission. Alternate years.

Credits: 3.00

**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; BIOC 302 or equivalent. Cross-listed with: MMG 352. Alternate years.

Credits: 3.00

**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: BIOC 301, BIOC 302, and CHEM 162; Department permission. Alternate years.

Credits: 3.00

**BIOC 370 - Physical Biochemistry**

Protein interaction, solubility and fractionation, electrophoresis, sedimentation, phase rule study,

diffusion, viscosity, spectrophotometry, and related topics. Prerequisites: BIOC 301, BIOL 302 and CHEM 162, or Department permission.

Credits: 3.00

**BIOC 372 - Cancer Biology**

Overview of cancer biology for health science students. Foundation for cancer research. Lecture format; interdisciplinary viewpoint; outside lectures. Prerequisite: BIOC 301, BIOC 302, or Department permission.

Credits: 3.00

**BIOC 381 - Seminar**

A review of recent developments and current literature in the various fields of biochemistry. Prerequisite: Department permission.

Credits: 1.00

**BIOC 391 - Master's Thesis Research**

Credit as arranged.

Credits: 1.00 to 12.00

**BIOC 392 - Independent Literature Rsch**

Reading and literature research culminating in a paper on a topic of current interest in biochemistry.

Credits: 1.00 to 12.00

**BIOC 395 - Special Topics**

Credits: 1.00 to 12.00





**BIOC 396 - Advanced Special Topics**

Credits: 3.00

**BIOC 491 - Doctoral Dissertation Research**

Credit as arranged.

Credits: 1.00 to 12.00

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 UVM Home	<div>2012-2013 Catalogue</div> <div>Graduate Courses in Biology (BIOL)</div> <div><div>BIOL 202 - Quantitative Biology</div><div>Topics in quantitative methods in biological research, including statistics and computer-based analysis. Prerequisites: One of BCOR 101, BCOR 102, BCOR 103; MATH 019, MATH 020.</div><div>Credits: 3.00</div><div>BIOL 204 - Adv Genetics Laboratory</div><div>Laboratory experiments to provide experience with modern genetic techniques. Bench work and data analysis emphasized. Prerequisite: BCOR 101.</div><div>Credits: 4.00</div><div>BIOL 205 - Adv Genetics Laboratory</div><div>Laboratory experiments to provide experience with modern genetic techniques. Bench work and data analysis emphasized. Prerequisite: BCOR 101.</div><div>Credits: 4.00</div><div>BIOL 209 - Field Zoology</div><div>Collection, identification, and ecology of arthropods. Substantial field collecting. Prerequisite: BCOR 102.</div><div>Credits: 4.00</div><div>BIOL 212 - Comparative Histology</div><div>Anatomy of tissues, chiefly vertebrate. Tissue similarities and specializations of organs among the various groups of animals in relation to function. Prerequisite: BCOR 103.</div><div>Credits: 4.00</div><div>BIOL 217 - Mammalogy</div><div>Classification, identification, morphology, evolution, and distribution of mammals. Prerequisite: BCOR 102.</div><div>Credits: 4.00</div><div>BIOL 219 - Compar/Func Vertebrate Anatomy</div><div>Structure, function, and phylogeny, with evolutionary and functional trends of all chordate groups. Prerequisite: Two courses from BCOR 101, BCOR 102, BCOR 103.</div><div>Credits: 4.00</div><div>BIOL 223 - Developmental Biology</div><div>An analysis of the cellular, subcellular, molecular, and genetic mechanisms that operate during oogenesis and embryogenesis in invertebrate and vertebrate organisms. Prerequisite: BCOR 101, BIOL 103.</div><div>Credits: 3.00</div></div>			
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Graduate Courses in Biology (BIOL)

- BIOL 202 - Quantitative Biology**

Topics in quantitative methods in biological research, including statistics and computer-based analysis. Prerequisites: One of BCOR 101, BCOR 102, BCOR 103; MATH 019, MATH 020.

Credits: 3.00
- BIOL 204 - Adv Genetics Laboratory**

Laboratory experiments to provide experience with modern genetic techniques. Bench work and data analysis emphasized. Prerequisite: BCOR 101.

Credits: 4.00
- BIOL 205 - Adv Genetics Laboratory**

Laboratory experiments to provide experience with modern genetic techniques. Bench work and data analysis emphasized. Prerequisite: BCOR 101.

Credits: 4.00
- BIOL 209 - Field Zoology**

Collection, identification, and ecology of arthropods. Substantial field collecting. Prerequisite: BCOR 102.

Credits: 4.00
- 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: BCOR 103.

Credits: 4.00
- BIOL 217 - Mammalogy**

Classification, identification, morphology, evolution, and distribution of mammals. Prerequisite: BCOR 102.

Credits: 4.00
- BIOL 219 - Compar/Func Vertebrate Anatomy**

Structure, function, and phylogeny, with evolutionary and functional trends of all chordate groups. Prerequisite: Two courses from BCOR 101, BCOR 102, BCOR 103.

Credits: 4.00
- 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. Prerequisite: BCOR 101, BIOL 103.

Credits: 3.00

**BIOL 225 - Physiological Ecology**

Processes by which animals cope with moderate, changing, and extreme environments.

Prerequisites: BCOR 102, BIOL 255.

Credits: 3.00

**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: 3.00

**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: BCOR 102.

Credits: 4.00

**BIOL 254 - Population Genetics**

Methods of detecting and investigating genetic variation, as well as its causes and consequences. Applications from medicine, forensics, and environmental biology are emphasized. Pre/co-requisite: BCOR 101.

Credits: 4.00

**BIOL 255 - Comparative Physiology**

Physiology at the organ, systems, and organismal levels. Capstone course to consolidate biological concepts. Pre/co-requisites: BCOR 101, BCOR 102, BCOR 103.

Credits: 4.00

**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: BCOR 103. Cross-listed with: ANNB 261.

Credits: 3.00

**BIOL 262 - Neurobiology Techniques**

Extensive study of laboratory methods used in modern research on the function of the nervous system. Techniques from electrophysiology, cell biology, biochemistry, and genetics. Pre/co-requisites: BCOR 103, BIOL 261.

Credits: 4.00

**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: BCOR 101 or Instructor permission.

Credits: 3.00

**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. Prerequisite: BCOR 102; at least Junior standing.

Credits: 3.00

**BIOL 265 - Developmental Molecular Genetics**

Current topics in developmental genetics explored through lectures and discussions of current literature; emphasis on molecular approaches. Prerequisite: BCOR 101.

Credits: 3.00

**BIOL 266 - Neurodevelopment**

Current topics in developmental neurobiology through lectures and discussions of primary literature. The course is designed for advanced undergraduate life science majors. Pre/co-requisites: BCOR 101 and BCOR 103.

Credits: 3.00

**BIOL 269 - Plant-Animal Interactions**

Ecological and evolutionary interactions among plants and animals. Topics include herbivory, pollination, seed predation, biocontrol, and effects of global climate change. Prerequisite: BIOL 001 and BIOL 002 or BCOR 011 and BCOR 012; BCOR 102 recommended.

Credits: 3.00

**BIOL 270 - Speciation and Phylogeny**

Contribution of modern research in such fields as genetics, systematics, distribution, and serology to problems of evolutionary change. Prerequisite: BCOR 101, BCOR 102 recommended.

Credits: 3.00

**BIOL 271 - Evolution**

Basic concepts in evolution will be covered, including the causes of evolutionary change, speciation, phylogenetics, and the history of life. Pre/co-requisites: BCOR 102 or permission of the Instructor.

Credits: 3.00

**BIOL 275 - Human Genetics**

Application of genetic techniques to the study of human biology. Topics include pedigree analysis, linkage analysis, and complex genetic disorders of medical importance. Prerequisite: BCOR 101.

Credits: 3.00

**BIOL 276 - Behavioral Ecology**

Adaptive significance of behavior in natural environments. Evolutionary theory applied to behavior and tested with field data. Prerequisite: BCOR 102 or Instructor permission.

Credits: 3.00

**BIOL 277 - Sociobiology**

The evolutionary biology of social behavior in animals. Topics include the evolution of sociality, social interactions, and the functional organization of social groups. Prerequisite: BCOR 102.

Credits: 3.00

**BIOL 280 - Molecular Ecology**

Molecular genetic tools and analytical methods used to investigate ecological processes in natural populations of plants and animals. Prerequisite: BCOR 102.

Credits: 4.00

**BIOL 286 - Forensic DNA Analysis**

Theory and techniques of modern genetics used to produce and analyze a DNA profile in forensic science. Emphasis on degraded or contaminated DNA samples. Prerequisite: BCOR 101.

Credits: 3.00

**BIOL 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 4.00

**BIOL 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 4.00

**BIOL 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: CLBI 301, PBIO 301.

Credits: 3.00

**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: 3.00

**BIOL 352 - Evolutionary Computation**

Theory and practice of biologically-inspired search strategies, including genetic algorithms, genetic programming, and evolution strategies. Applications include optimization, parameter estimation, and model identification. Significant project. Students from multiple disciplines encouraged. Pre/co-requisites: Familiarity with programming, probability, and Statistics. Cross-listed with: CS 352, CSYS 352.

Credits: 3.00

**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: 1.00

**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: 4.00

**BIOL 382 - Eco Lunch**

Review and discussion of current research. Attendance of BIOL 382 or BIOL 384 required of Biology Graduate students. Pre/co-requisites: Graduate standing and Instructor permission.

Credits: 0.00 to 1.00

**BIOL 384 - Cell Lunch**

Review and discussion of current research. Attendance of BIOL 382 or BIOL 384 required of Biology Graduate students. Pre/co-requisite: Graduate standing.

Credits: 0.00 to 1.00

**BIOL 385 - Biology Seminar**

Review and discussion of current biological research. Attendance required of Biology graduate students. Pre/co-requisite: Graduate standing and Instructor permission.

Credits: 1.00

**BIOL 391 - Master's Thesis Rsch**

Credit as arranged.

Credits: 1.00 to 10.00

**BIOL 491 - Doctoral Dissertation Research**

Credits: 1.00 to 10.00

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Graduate 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. Prerequisites: STAT 111, STAT 141 or STAT 143; or STAT 211. Cross-listed with: STAT 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 surface optimization. Prerequisites: BIOS 211 (BIOS 221 recommended). Cross-listed with: STAT 231.

Credits: 3.00

BIOS 241 - Statistical Inference

Introduction to statistical theory; related probability fundamentals, derivation of statistical principles, and methodology for parameter estimation and hypothesis testing. Pre/co-requisites: BIOS 151, BIOS 153 or BIOS 25; BIOS 141 or equivalent; MATH 121. Cross-listed with: STAT 241.

Credits: 3.00

BIOS 391 - Master's Thesis Research

Credit as arranged.

Credits: 1.00 to 12.00

BIOS 395 - Advanced Special Topics

Credits: 1.00 to 6.00

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http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=BIOS&agc=AGC&term=201209&SM=coursemenu.html[9/26/2018 9:35:47 AM]

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# 2012-2013 Catalogue

## Graduate Courses in Business Administration (BSAD)

## 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: 3.00

## BSAD 226 - Current Iss in Mgmt &amp; Org Thry

Subjects may include training and development, selection and recruitment, and affirmative action.

Prerequisite: BSAD 120.

Credits: 3.00

## 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: 3.00

## 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. Prerequisites: BSAD 251 and Instructor permission.

Credits: 3.00

## BSAD 256 - Retail Management

Course provides an overview of retail management. Key perspectives that shape the field including strategic planning, merchandising, and competitive advantage are emphasized. Pre/co-requisites: BSAD 150; BSAD majors or minors, MBA or Senior standing.

Credits: 3.00

## BSAD 258 - D2: Intn'l 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: Junior/Senior/Graduate standing; BSAD 150 or permission of the Instructor.

Credits: 3.00

## BSAD 260 - Financial Statement Analysis

A study of the concepts and techniques underlying corporate financial statement analysis, with an emphasis on equity valuation models. Prerequisites: BSAD 180 or 308.

Credits: 3.00

## BSAD 263 - Environmental &amp; Social Reporting

An examination of voluntary and mandatory reporting of environmental and other social activities along with related issues through readings and research. Prerequisites: Junior standing; BSAD 061 or BSAD 065 or BSAD 306.

Credits: 3.00

**BSAD 264 - Intro to Federal Taxation**

An introduction to US federal taxation as it applies to individuals and business entities including proprietorships, partnerships, C Corporations, S Corporations. Pre/co-requisites: BSAD 060 or BSAD 065 or BSAD 306, Jr. Standing.

Credits: 3.00

**BSAD 265 - Accounting Information Systems**

Examination of how accounting information is collected, stored and made available to decision makers with an emphasis on internal control implementation. Students obtain hands on experience with an integrated accounting software package. Pre/co-requisites: BSAD majors/minors; Jr. stdg.; BSAD 60, 65 or 306.

Credits: 3.00

**BSAD 266 - Advanced Accounting**

Focuses on accounting for business combinations and developing consolidated financial statements. Includes accounting for foreign currency transactions, foreign subsidiaries, governmental entities, and not-for-profit organizations. Pre/co-requisite: BSAD 162.

Credits: 3.00

**BSAD 267 - Auditing**

Examination of auditing theory and practice. Topics include standards, ethics and legal responsibilities of the profession, audit planning, internal control, audit evidence and auditor communications. Pre/co-requisites: BSAD 162.

Credits: 3.00

**BSAD 268 - Adv Topics in Management Acctg**

Emphasizes use of internal and external information in management decision making; includes cost of inventory, business activities, strategic use of information, long-range planning. Prerequisites: BSAD 061 or BSAD 306 or equivalent; Senior/Graduate standing.

Credits: 3.00

**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: 3.00

**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. Pre/co-requisite: BSAD 180 or BSAD 308.

Credits: 3.00

**BSAD 285 - Options and Futures**

Financial derivatives - options, futures and swaps. Topics include: structures of the markets for exchange traded and over-the counter derivatives; identification and exploitation of arbitrage opportunities; use and misuse of derivatives to hedge risk in both financial and product markets. Pre/co-requisites: Junior Standing; BSAD 180 or BSAD 308.

Credits: 3.00

**BSAD 288 - Finance Honors Seminar**

Application of financial theory to stock/bond valuation, credit analysis, security underwriting, or risk management. Students will complete projects assigned by major financial service firms. Pre/co-requisite: By Invitation.

Credits: 3.00

**BSAD 289 - Real Estate Finance**

This course is an introduction of real estate finance and investments. Topics include urban economics, appraisal, investment value analysis, financing, and development. Pre/co-requisites: BSAD 180; BSAD major, minor, MBA, Junior standing.

Credits: 3.00

**BSAD 293 - Integrated Product Development**

Project-based course focusing on the entire product life cycle. Team dynamics, process and product design, quality, materials, management, and environmentally-conscious manufacturing. Prerequisite: Minimum Junior standing or Instructor permission. Cross-listed with: ME 265, STAT 265.

Credits: 3.00

**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: 6.00

**BSAD 305 - Fundamentals of Marketing Mgmt**

Accelerated course on marketing principles and theory. Analytical approach to study of product pricing strategies; distribution, communication, and promotion; consumer behavior and development of corporate marketing strategy. Prerequisite: MBA standing.

Credits: 3.00

**BSAD 306 - Fundamentals of Accounting**

Introduction to basic concepts for developing and interpreting financial statements. Introduction to use of accounting information for planning, cost behavior, control, and decision making. Prerequisite: MBA standing.

Credits: 3.00

**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: 3.00

**BSAD 308 - Managerial 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: 3.00

**BSAD 309 - Political Envir of Business**

Explore the rationale for government interaction with business. Analyze (1) business, and the broader society's demand for public policy, as well as (2) the political institutions that supply public policy in both domestic and international contexts. Pre/co-requisite: MBA Standing.

Credits: 3.00

**BSAD 331 - Health Care Management**

Addresses changing challenges confronted by managers in health services delivery organizations. Examines applications and limitations of management concepts and processes in the health care context. Prerequisite: MBA standing. Cross-listed with: PA 312.  
Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**BSAD 357 - Analysis for Mktg Planning**

A post-introductory MBA marketing course that combines managerial and analytic approaches to gaining insight into customer attitudes and behaviors and improving market decision-making. Pre/co-requisites: BSAD 305; MBA standing.  
Credits: 3.00

**BSAD 361 - Accounting Rsch, Reg & Ethics**

Students will research current financial reporting issues and regulatory requirements. Cases will emphasize the ethical responsibilities of professional accountants. Pre/co-requisites: BSAD 266 and MAcc standing.  
Credits: 3.00

**BSAD 362 - CPA Law**

Provides Masters of Accountancy students with exposure to the major areas of U.S. law emphasized on the uniform CPA exam. MBA students will also benefit from the course. Prerequisite: Graduate standing.  
Credits: 3.00

**BSAD 364 - Ind Readings & Rsch for MAcc**

Allows a student to pursue independent research under the direction of a faculty member. Normally, course includes a research paper. Prerequisite: Graduate student standing in Masters in Accountancy program (MAcc).  
Credits: 1.00 to 3.00

**BSAD 365 - Managerial Accounting**

Study of use of company information in internal strategic and operational decision making. Topics include product costing, incentive compensation, and performance measurement. Prerequisites: Graduate standing. BSAD 306 and BSAD 308 or their equivalent.  
Credits: 3.00

**BSAD 376 - Mgmt of Change in Organization**

Applied behavioral science perspective adopted to identify conceptual issues, develop diagnostic skills, examine alternative intervention strategies relevant to accomplishment of planned changes in organizational systems. Prerequisite: MBA standing; BSAD 307.

Credits: 3.00

**BSAD 378 - International Case Analysis**

Analysis of real problems in local and Canadian organizations, pursued in mixed UVM-Concordia teams, with recommendations presented to panel of client and academic judges. Prerequisite: First tier of MBA courses completed.

Credits: 3.00

**BSAD 380 - Adv Financial Management**

Focus on key financial decisions that affect the value of the firms. Topics: capital structure, corporate financial planning, mergers and acquisitions, capital market theories and evidence. Prerequisites: Graduate standing, BSAD 308.

Credits: 3.00

**BSAD 384 - Financial Mrkts&Interest Rates**

Study of level and structure of interest rates. Topics: flow of funds accounting, market vs. natural rate of interest, interest rate structure, behavior of interest rates over business cycle. Prerequisite: MBA Standing.

Credits: 3.00

**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: 3.00

**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: 3.00

**BSAD 396 - Strategy and Competition**

Integrative, capstone course concerned with issues and decisions facing senior executives directing entire enterprises. Students develop analytical skills surrounding industry analysis, strategy formulation, organizational design, and competitive dynamics. Pre/co-requisites: MBA Standing. Taken in last semester of study.

Credits: 3.00

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### Graduate Courses in Cell Biology (CLBI)

- CLBI 295 - Special Topics**

See Schedule of Courses for specific titles. Credit as arranged.

Credits: 3.00
- 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, PBIO 301.

Credits: 3.00
- 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: 3.00
- CLBI 381 - Seminar**

One hour.

Credits: 1.00
- CLBI 391 - Master's Thesis Research**

Credit as arranged.

Credits: 3.00
- CLBI 395 - Special Topics**

See Schedule of Courses for specific titles. Credit as arranged.

Credits: 6.00
- CLBI 491 - Doctoral Dissertation Research**

Credit as arranged.

Credits: 1.00 to 12.00

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Systematic survey of modern methods of chemical analysis. Fundamental principles and applications of spectroscopy, electrochemistry, and separation techniques. Prerequisite: CHEM 121. Credit for or

concurrent enrollment in CHEM 161 or CHEM 162 strongly recommended.

Credits: 3.00

**CHEM 223 - Mass Spectrometry**

An in-depth treatment of modern mass spectrometry, instrumentation and techniques with discussion of biological and chemical applications. Prerequisites: CHEM 142 or CHEM 144, and CHEM 221, or Instructor permission.

Credits: 3.00

**CHEM 225 - Electroanalytical Chemistry**

Principles and techniques of modern electrochemical analysis and applications to redox chemistry. Heterogeneous effects; voltammetry; electron-transfer processes and reactions. Prerequisite: CHEM 221.

Credits: 3.00

**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: 3.00

**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: 1.00

**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: 3.00

**CHEM 231 - Advanced Inorganic Chemistry**

Molecular symmetry and group theory with an emphasis on applications (vibrational and electronic spectra, bonding and reactivity); introduction to transition metal processes; bioinorganic chemistry. Prerequisites: CHEM 142 or CHEM 144. Credit for or concurrent enrollment in CHEM 161.

Credits: 3.00

**CHEM 234 - Organometallic Chemistry**

Synthesis, structure, bonding, properties, reactions, and applications of organometallic systems; mechanisms of organometallic reactions including oxidative addition and insertion reactions with applications in catalysis. Prerequisite: CHEM 131 or CHEM 231.

Credits: 3.00

**CHEM 236 - Physical Inorganic Chemistry**

Determination of molecular and electronic structure of inorganic complexes using spectroscopic techniques. Topics include ligand field theory, magnetism, magnetic resonance, Mossbauer spectroscopy, and X-ray crystallography. Prerequisites: CHEM 131 or CHEM 231; CHEM 161.

Credits: 3.00

**CHEM 237 - Special Topics: Inorganic**

Areas of current interest involving inorganic systems.

Credits: 3.00

**CHEM 238 - Special Topics: Inorganic**

Areas of current interest involving inorganic systems.

Credits: 3.00

**CHEM 241 - Advanced Organic Chemistry 1**

Stereochemistry, conformational analysis, stereoelectronic effects, transition state theory, molecular orbital theory, and reactivity criteria are discussed in regards to reaction mechanisms and functional group manipulations. Prerequisite: CHEM 142 or CHEM 144.

Credits: 3.00

**CHEM 242 - Advanced Organic Chemistry 2**

Modern synthetic organic methods and approaches to multi-step synthesis are discussed. Selected total syntheses are reviewed to highlight important concepts including diastereoselective and enantioselective processes. Prerequisite: CHEM 241.

Credits: 3.00

**CHEM 251 - Physical Organic Chemistry**

Experimental and computational techniques for determining and interpreting structure, properties and reactivity of organic molecules, with an emphasis on the mechanisms of organic reactions.

Prerequisites: CHEM 142 or CHEM 144, CHEM 161, and CHEM 162 strongly recommended.

Credits: 3.00

**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: 3.00

**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: 3.00

**CHEM 262 - Chemical Thermodynamics**

Classical and statistical thermodynamics. Systematic study of applications of thermodynamics to chemical problems. Prerequisite: CHEM 161 and 162.

Credits: 3.00

**CHEM 264 - Adv Quantum & Spectroscopy**

In-depth theoretical discussion of molecular states, their symmetry, and transition probabilities.

Explicit treatment of vibrations, electronic states, and vibronic spectroscopy. Prerequisites: CHEM 161 and MATH 121.

Credits: 3.00

**CHEM 267 - Special Topics: Physical**

Selected topics of current interest in physical chemistry.

Credits: 3.00

**CHEM 268 - Special Topics: Physical**

Selected topics of current interest in physical chemistry.

Credits: 3.00

**CHEM 285 - Special Topics**

Credits: 2.00

**CHEM 286 - Special Topics**

Credits: 2.00

**CHEM 291 - Undergraduate Research**

Research in chemistry in a faculty member's laboratory. Prerequisite: Departmental permission.  
Credit as arranged with maximum of four hours per semester and 12 hours total.

Credits: 3.00

**CHEM 318 - Current Topics in Chemistry**

Survey of current topics in the chemistry literature. Prerequisite: Graduate standing.

Credits: 0.00 or 1.00

**CHEM 380 - Chemical Investigations**

Current problems and literature.

Credits: 1.00

**CHEM 381 - Grad Seminar**

Current problems and literature.

Credits: 1.00

**CHEM 384 - Advanced Topics in Chemistry**

Comprehensive independent study in chemistry. Prerequisite: Permission of the Department.

Credits: 2.00

**CHEM 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**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: 6.00

**CHEM 484 - Advanced Topics in Chemistry**

Comprehensive independent study in chemistry. Prerequisite: Permission of the Department.

Credits: 2.00

**CHEM 488 - Rsch Prob Conception&Solution**

Independent origination of research problems and the methods of their solution. Prerequisite:  
Permission of Department.

Credits: 1.00

**CHEM 491 - Doctoral Dissertation Research**

Credits: 1.00

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## 2012-2013 Catalogue

### Graduate Courses in Civil & Environmental Engr (CE)

- CE 220 - Intro to Finite Element Anyl**

Introduction to finite element analysis: applications in solid mechanics, hydrodynamics, and transport: analysis of model behavior: Fourier analysis. Computer project required. Prerequisites: computer programming, linear algebra, or permission of Instructor.

Credits: 3.00
- 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. Prerequisites: Senior/Graduate standing in Civil & Environmental Engineering or Instructor permission. Cross-listed with: CSYS 226.

Credits: 3.00
- 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 133.

Credits: 3.00
- CE 245 - Intelligent Transportation Sys**

Introduction to Intelligent Transportation Systems (ITS), ITS user services, ITS applications, the National ITS architecture, ITS evaluation, and ITS standards. Pre/co-requisites: CE 140 or equivalent; Instructor permission. Cross-listed with: CSYS 245.

Credits: 3.00
- 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: 3.00
- CE 251 - Envr Facility Dsgn/Wastewater**

Design of wastewater conveyance and treatment facilities; sewage treatment plant design; equipment selection. Prerequisite: CE 151.

Credits: 3.00
- 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. Prerequisite: CHEM 031 or CHEM 025; PHYS 031.

Credits: 3.00

**CE 253 - Transportation & Air Quality**

Air pollution sources, measurement methods, legislation, vehicle emissions formation, control and transport processes. Emphasis on emission factor and dispersion multi-scale modeling using latest modeling tools. Co-requisites: CE 133, 134 or instructor permission.

Credits: 3.00

**CE 254 - Environmental Quantitative Anyl**

Course focuses on chemical, biochemical and physical processes; diffusion, equilibria, reaction kinetics, acids/bases, colloids, air/water exchange; laboratories demonstrate standard environmental engineering techniques. Prerequisites: CHEM 032, CE 132, STAT 141 or STAT 143.

Credits: 4.00

**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. Pre/co-requisites: CE 151, CE 154, or permission of Instructor.

Credits: 3.00

**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: CE 151, MATH 271.

Credits: 3.00

**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. Prerequisite: CE 160.

Credits: 3.00

**CE 261 - Open Channel Flow**

Application of the laws of fluid mechanics to flow in open channels, design of channels and transition structures, modeling, uniform and gradually-varied flows. Prerequisite: CE 160.

Credits: 3.00

**CE 265 - Ground Water Hydrology**

Principles of ground water hydraulics, well characteristics, aquifers, and use of numerical methods to solve ground water flow problems. Prerequisite: CE 160.

Credits: 3.00

**CE 271 - Advanced Structural Analysis**

Virtual work, energy theorems, analysis of structures by the displacement method, finite element analysis of structural systems, non-linear structural analysis, structural optimization, probabilistic structural analysis. Prerequisite: CE 170.

Credits: 3.00

**CE 272 - Structural Dynamics**

Vibrations, matrices, earthquake engineering, stability and wave propagation. Prerequisites: Senior or Graduate standing in Engineering or physical sciences, or Instructor permission. Cross-listed with: ME 270.

Credits: 3.00

**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: 3.00

**CE 281 - Geotechnical Design**

Subsurface explorations; bearing capacity, lateral earth pressures, slope stability; analysis and design of shallow and deep foundations, retaining structures, and slopes. Pre/co-requisite: CE 180.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 6.00

**CE 304 - Adv Engineering Analysis I**

Analytical methods for the solution of partial differential equations in engineering mechanics and physics, including: eigenfunction expansions; Fourier series; Sturm-Liouville theory and special functions. Prerequisites: Graduate standing in engineering, mathematics, or physical sciences or permission. Cross-listed with ME 304 and MATH 275.

Credits: 3.00

**CE 305 - Adv Engineering Analysis II**

Advanced analytical techniques for problems in engineering mechanics and physics, including: integral transform methods, Green's functions, perturbation methods, and variational calculus. Prerequisites: ME 304 or equivalent. Cross-listed with: ME 305/MATH 276.

Credits: 3.00

**CE 321 - Engr Computations on Adv Arch**

Engineering computations using multiprocessing computers, concurrent processing, algorithms for numerical approximation of differential equations, linear systems. Programming projects required.

Credits: 3.00

**CE 359 - Appld Artificial Neural Ntwrks**

Introduction to artificial neural networks. A broad range of example algorithms are implemented in MATLAB. Research applications to real data are emphasized. Pre/co-requisites: STAT 223, CS

016/CE 011, or Instructor permission. Cross-listed with: CSYS 359.  
Credits: 1.00 to 3.00

**CE 361 - Fluvial Forms & Processes**

Advanced topics in fluvial forms and processes; focus on river and stream restoration and design; includes journal readings, discussion, field trips and group design project. Pre/co-requisites: CE 160 or Instructor permission.  
Credits: 3.00

**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: 3.00

**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: 3.00

**CE 367 - Phys Flow&Trs thru Porous Mdia**

The fundamental equations describing fluid flow and mass transport in subsurface systems are developed from first principles. Pre/co-requisite: CE 265 or equivalent.  
Credits: 3.00

**CE 368 - Groundwater Modeling**

The fundamental theory of groundwater hydrology is combined with concepts in numerical methods to provide the technology needed to study a real-world groundwater problem. Pre/co-requisite: CE 265 and CE 220 or equivalent.  
Credits: 3.00

**CE 369 - Applied Geostatistics**

Introduction to the theory of regionalized variables, geostatistics (kriging techniques): special topics in multivariate analysis; Applications to real data subject to spatial variation are emphasized. Pre/co-requisite: STAT 223 or STAT 225, CS 016/CE 011, or Instructor permission. Cross-listed with: CSYS 369, STAT 369.  
Credits: 3.00

**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: 4.00

**CE 391 - Master Thesis Rsch**

Credits: 1.00 to 12.00

**CE 393 - CEE Graduate Seminar**

Presentation and discussion of advanced problems, research, and current topics in Civil & Environmental Engineering by faculty, graduate students, and outside guest speakers. Prerequisite: Graduate student in CEE Program.  
Credits: 0.00

**CE 395 - Advanced Special Topics**

Advanced topics in recently developed technical areas. Hours and credits as arranged.  
Credits: 3.00

**CE 491 - Doctoral Dissertation Research**  
Credits: 1.00 to 18.00

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Graduate Courses in Classics (CLAS)

CLAS 295 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 3.00

CLAS 296 - Advanced Special Topics

See Schedule of Courses for specific titles.

Credits: 3.00

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http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=CLAS&agc=AGC&term=201209&SM=coursemenu.html[9/26/2018 9:39:14 AM]

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### Graduate Courses in Clinical&Translational Science (CTS)

- CTS 200 - Introduction to CTS I**

Teaches the principles of human subjects research for those pursuing a path as research assistants or coordinators.

Credits: 3.00
- CTS 271 - Intro Biomedical Informatics**

This survey course provides an overview of the field of biomedical informatics covering relevant topics in computer science, healthcare, biology, and social science.

Credits: 3.00
- CTS 272 - Applied Biomedical Informatics**

Pragmatic coverage of topics/resources relevant to biomedical informatics. Computing skills include Unix, programming, and databases; examples will involve clinical, biomedical, and public health data.

Credits: 3.00
- CTS 275 - Informatics Practicum**

Practicum experience with an informatics research or service project. Prerequisites: At least one of CTS 271, CTS 272, MMG 231, MMG 232, CS 231, or CS 232.

Credits: 3.00 to 12.00
- CTS 301 - Design Clin&Translational Res**

Seminar emphasizing the skills for designing and executing clinical and translational research.

Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.00
- CTS 302 - Quality in Health Care**

This interprofessional course provides students with the skills and knowledge needed to apply quality improvement approaches to the design and management of health care services. Cross-listed with: NH 302.

Credits: 3.00
- CTS 305 - Cell To Society I**

A two-semester seminar that addresses a medical issue from molecule to market. CTS students must take both semesters. Non-CTS students may take either semester independently. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 2.00
- CTS 306 - Cell To Society II**

A two-semester seminar that addresses a medical issue from molecule to market. CTS students must take both semesters. Non-CTS students may take either semester independently. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 2.00

**CTS 308 - Intro to Research Management I**

A course for beginning research coordinators, research managers, or research assistants who need to learn how to prepare and manage clinical and translational research protocols.

Credits: 3.00

**CTS 309 - Intro to Research Mgmt II**

A course for beginning research coordinators, research managers, or research assistants who need to learn how to prepare and manage clinical and translational research protocols.

Credits: 3.00

**CTS 310 - Conduct Clin&Translational Res**

Seminar emphasizing the ethics and mechanics of clinical and translational research. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.00

**CTS 315 - Report Clin&Translational Res**

Seminar emphasizing communication skills for writing, editing and presenting science. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.00

**CTS 320 - Analyze Clin&Translational Res**

Seminar emphasizing basic and analytical skills for clinical and translational research. Pre/co-requisites: Graduate student, or Instructor permission.

Credits: 3.00

**CTS 325 - Multi Analysis Clin&Trans Res**

Introduction to multivariate regression; models that account for effects of multiple predictors on a single outcome, including linear and logistic regression and survival analysis. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.00

**CTS 340 - Medical & Exper Human Genetics**

Overview of medical genetics, including history, techniques and ethical, legal and social implications of genetic diseases and thier treatments. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.00

**CTS 345 - Genetic Approaches CV Disease**

Application of statistics, molecular biology, and genetics to the analysis of complex diseases such as asthma, hypertension and atherolsclerotic heart disease. Pre/co-requiste: Graduate student, or Instruction permission.

Credits: 2.00

**CTS 391 - Master's Thesis Research**

Master's Thesis Research.

Credits: 1.00 to 18.00

**CTS 392 - Master's Research Internship**

Requirement for the Master's in Clinical and Translational Science Research Management; includes experiential education in a research laboratory under the direction of a Research Mentor.

Credits: 3.00

**CTS 395 - ST in Clin & Translational Res**

Special topics in Clinical and Translational Research. Pre/co-requisite: Graduate student, or Instructor permission.  
Credits: 6.00

**CTS 491 - Doctoral Dissertation Research**  
Doctoral Dissertation Research. Credit as arranged.  
Credits: 6.00

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## Graduate Courses in Cmty Dev & Apld Econ (CDAE)

### CDAE 205 - Rural Comm in Modern Society

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. Cross-listed with: SOC 205.

Credits: 3.00

### 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: 3.00

### CDAE 218 - Community Org & Development

The roles of forms of community capital, civic engagement, leadership, social and political institutions, and communities of place and interest in a community development context. Pre/co-requisites: Junior standing; CDAE 102 or Instructor permission.

Credits: 3.00

### CDAE 237 - Economics of Sustainability

Economic analysis that integrates natural resource and community planning for sustainable development at local, national and international levels. or permission. and green business. Prerequisites: 61 or equivalent, Examples include land use, sustainable agriculture

Credits: 3.00

### CDAE 238 - Ecological Landscape Design

Studio course synthesizing work from fields of landscape ecology and landscape design, exploring ecological design alternatives at multiple scales, and developing multifunctional landscape solutions. Pre/co-requisites: Minimum Junior standing; PSS 137 or one course in ecology plus one course in design or drawing. Cross-listed with: PSS 238, ENVS 238, NR 238.

Credits: 3.00

### CDAE 253 - Macroeconomics for Appl Econ

Explore macroeconomic principles and concepts as they affect individuals and businesses in local, regional, national, and global economics. Prerequisites: Economics 11, and CDAE 61 or equivalent.

Credits: 3.00

### CDAE 254 - Microeconomics for Appl Econ

The study of economic choices of individuals and firms, and the analysis of competitive and noncompetitive markets. Emphasis on application of intermediate microeconomic theory Prerequisites: 61 or equivalent. Math 19, or permission.

Credits: 3.00

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Credits: 3.00
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The study of economic choices of individuals and firms, and the analysis of competitive and noncompetitive markets. Emphasis on application of intermediate microeconomic theory

Prerequisites: 61 or equivalent. Math 19, or permission.

Credits: 3.00

**CDAE 266 - Dec Making:Comm Entrepreneurs**

Quantitative decision-making methods and applications for community entrepreneurs. Major topics include linear programming, risk and uncertainty, inventory decisions, and e-commerce.

Prerequisites: CDAE 166, MATH 019, and CALS 085 or CS 002.

Credits: 3.00

**CDAE 267 - Strat Plan:Comm Entrepreneurs**

Applications of marketing, finance, and management strategies. Drafting a real working business plan for community entrepreneurs and economic development. Prerequisites: CENT majors or minors, or permission; senior standing.

Credits: 4.00

**CDAE 272 - Int'l Economic Development**

International trade, finance, investment and development theories and policies for community development. Prerequisites: Jr standing, CDAE 102 or instructor's permission. Co-requisite: CDAE 273.

Credits: 3.00

**CDAE 273 - Project Development & Planning**

National, community and private sector project development. Focus on planning methods and policy instruments, sectoral linkages, and contributions to the economy as a whole. Pre/co-requisites: CDAE 102 or Instructor permission.

Credits: 3.00

**CDAE 276 - Community Design Studio**

Problem-based community design studio course with research on existing conditions, needs assessment, sense of place, and development of sustainable and integrative design solutions and processes. Pre/co-requisites: CDAE 101, 118, 171 or 273; or instructor permission.

Credits: 3.00

**CDAE 286 - Adv Sust Dev Sm Island States**

This course is an advanced course in problems of sustainable development on small island developing states utilizing a case study of St. Lucia, West Indies. Pre/co-requisites: CDAE 002 and CDAE 186, graduate standing, or permission.

Credits: 4.00

**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: 9.00

**CDAE 326 - Community Economic Development**

Examines how rural and urban communities address poverty, unemployment and other economic problems through job creation and retention, workforce training and support, and other development strategies. Cross-listed with: PA 326.

Credits: 3.00

**CDAE 351 - Research Methods**

Developing research projects with the scientific methods; evaluating alternative literature review, sampling, surveying, and analytic methods; and reporting the results. Prerequisite: Three hours of Statistics.

Credits: 3.00

**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: 3.00

**CDAE 377 - Practicum in Extension Educ**

Credits: 1.00 to 12.00

**CDAE 391 - Master's Thesis Research**

Credits: 6.00

**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: 1.00

**CDAE 395 - Special Topics**

Lectures or readings on contemporary issues in Community Development and Applied Economics at the graduate level. Prerequisite: Graduate standing.

Credits: 3.00

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### Graduate Courses in Comm Sciences & Disorders (CSD)

- CSD 208 - Cognition & Language**

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. Prerequisites: PSYC 109, PSYC 161 or Instructor permission.

Credits: 3.00
- CSD 271 - Introduction to Audiology**

Survey of hearing and the nature and causes of hearing impairment. Includes an orientation to assessment procedures and rationales, hearing screening and counseling considerations.

Prerequisite: CSD 101.

Credits: 3.00
- CSD 272 - Hearing Rehabilitation**

Examination of the impact of hearing loss on development and its overall effects on communication. Survey of management considerations, sensory devices, speech reading, and auditory training.

Prerequisite: CSD 271.

Credits: 3.00
- CSD 274 - D2: Culture of Disability**

Focus on theoretical questions of how societies understand disability and its consequences for social justice, by examining the biological, social, cultural, political, and economic determinants in the societal construction of disability. Prerequisite: Minimum Junior standing. Cross-listed with: EDSP 274.

Credits: 3.00
- CSD 287 - D2:Mindfulness&Helping Skills**

This course introduces the students to key elements of mindfulness practice, basic listening and counseling skills, and how to apply them in work and life. Prerequisite: Instructor permission.

Credits: 3.00
- CSD 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.

Credits: 5.00
- CSD 296 - Advanced Special Topics**

See Schedule of Courses for specific titles. Undergraduate only.

Credits: 1.00
- CSD 299 - Autism Spect Dis:Assess&Interv**

Assessment and intervention considerations in communication, social interaction and play, selection

and use of evaluation tools, and implementation of intervention strategies for children with autism.

Prerequisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 311 - Intrdsc Sem Neurodev Disabil I**

Seminar exploring interdisciplinary process, collaborative teaming, cultural competence and family-centered care as they relate to children and families affected by neurodevelopmental and related disabilities. Pre/co-requisite: Instructor permission. Cross-listed with: EDSP 295, GRNU 296, PSYC 380, MVSR 381, SWSS 380.

Credits: 3.00

**CSD 312 - Intrdsc Sem Neurodev Disabil 2**

Seminar exploring interdisciplinary process, collaborative teaching, cultural competence and family-centered care as they relate to children and families affected by neurodevelopmental and related disabilities. Pre/co-requisite: Instructor permission. Cross-listed with: EDSP 295, GRNU 296, PSYC 380, MVSR 381, SWSS 380.

Credits: 3.00

**CSD 313 - Augmentative Communication**

An introduction to development and selection of augmentative/alternative communication strategies and systems for persons with severe communication challenges. Prerequisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 315 - Early Lang&Communicatn 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. Prerequisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 320 - Clinic Preparation&Management**

Principles of behavioral observation, analysis and modification as they apply to the assessment and remediation of communication disorders. Prerequisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 321 - Clinic Study 1**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Pre/co-requisites: Graduate standing or Instructor permission. Concurrent enrollment or completion of CSD 320.

Credits: 1.00

**CSD 322 - Clinic Study 2**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Pre/co-requisites: Graduate standing or Instructor permission. Completion of CSD 320.

Credits: 2.00

**CSD 323 - Clinic Study 3**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Pre/co-requisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 324 - Clinic Study 4**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing,

and language. Pre/co-requisites: Graduate standing or Instructor permission.  
Credits: 2.00

**CSD 325 - Clinic Study 5**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Pre/co-requisites: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 326 - Clinic Study Winter Term 6**

Supervised practicum experiences with children and adults presenting disorders of speech, hearing, and language. Pre/co-requisites: Graduate standing or Instructor permission, CSD 320, CSD 321.  
Credits: 1.00

**CSD 330 - Assessment of Stuttering**

Study of adult and child fluency disorders which focuses upon symptomatology, etiology, and diagnosis of people with stuttering disorder. Prerequisites: Graduate standing or Instructor permission.  
Credits: 1.00

**CSD 331 - Treatment of Stuttering**

Study of adult and child fluency disorders which focuses on rehabilitation of people with stuttering disorder. Prerequisites: Graduate standing or Instructor permission.  
Credits: 2.00

**CSD 340 - Spch Snd Disorders in Children**

Etiology, diagnosis, pathology, and habilitation and rehabilitation of articulation of speech.  
Prerequisites: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 341 - Language Disorders**

Identification, evaluation, and rehabilitation procedures for children with language disabilities.  
Prerequisites: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 342 - Seminar Lang/Lrng Disabilities**

Credits: 3.00

**CSD 350 - 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: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 351 - 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. Prerequisites: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 352 - 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. Prerequisites: Graduate standing or Instructor permission.  
Credits: 3.00

**CSD 353 - 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: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 360 - Rsch Methods Comm Disorders I**

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.

Prerequisites: Graduate standing or Instructor permission.

Credits: 3.00

**CSD 361 - Research Methods II**

Students will critically review the professional literature in preparation for carrying out a systemic review. Prerequisites: Graduate standing or Instructor permission.

Credits: 1.00

**CSD 362 - Master's Thesis Research**

Credits: 1.00 to 6.00

**CSD 363 - Non-thesis Research**

Students complete a systematic review or research project under the direction of faculty.

Prerequisites: Graduate standing or Instructor permission.

Credits: 2.00

**CSD 381 - Advanced Readings**

Readings, with conferences, intended to contribute to the programs of graduate students in phases of communication sciences and disorders for which formal courses are not available. Credit as arranged, up to three hours each semester. Prerequisites: Graduate standing or Instructor permission.

Credits: 1.00 to 3.00

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## Graduate Courses in Complex Systems (CSYS)

### CSYS 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 CSYS 205 may not receive credit for CSYS 208 or CSYS 209. Cross-listed with: CS 205.

Credits: 3.00

### CSYS 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: CS 103 or CS 123; CS 104 or CS 124; STAT 153 or equivalent. Cross-listed with: CS 251.

Credits: 3.00

### CSYS 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 MATH 271; STAT 153 or equivalent; computer programming. Cross-listed with: STAT 256, CS 256.

Credits: 3.00

### CSYS 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. Co-requisite: CSYS 271 or CSYS 230 or Instructor permission Cross-listed with: MATH 266.

Credits: 3.00

### CSYS 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: CSYS 124, CSYS 230; or Instructor permission. Cross-listed with: MATH 268.

Credits: 3.00

### CSYS 300 - Principles of Complex Systems

Introduction to fundamental concepts of complex systems. Topics include: emergence, scaling phenomena and mechanisms, multi-scale systems, failure, robustness, collective social phenomena, complex networks. Students from all disciplines welcomed. Pre/co-requisites: calculus and statistics required; Linear algebra, differential equations, and computer programming recommended but not required. Cross-listed with: MATH 300.

Credits: 3.00

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### Graduate Courses in Complex Systems (CSYS)

#### CSYS 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 CSYS 205 may not receive credit for CSYS 208 or CSYS 209. Cross-listed with: CS 205.

Credits: 3.00

#### CSYS 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: CS 103 or CS 123; CS 104 or CS 124; STAT 153 or equivalent. Cross-listed with: CS 251.

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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 MATH 271; STAT 153 or equivalent; computer programming. Cross-listed with: STAT 256, CS 256.

Credits: 3.00

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Credits: 3.00

#### CSYS 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: CSYS 124, CSYS 230; or Instructor permission. Cross-listed with: MATH 268.

Credits: 3.00

#### CSYS 300 - Principles of Complex Systems

Introduction to fundamental concepts of complex systems. Topics include: emergence, scaling phenomena and mechanisms, multi-scale systems, failure, robustness, collective social phenomena, complex networks. Students from all disciplines welcomed. Pre/co-requisites: calculus and statistics required; Linear algebra, differential equations, and computer programming recommended but not required. Cross-listed with: MATH 300.

Credits: 3.00

**CSYS 302 - Modeling Complex Systems**

Integrative breadth-first introduction to computational methods for modeling complex systems; numerical methods, cellular automata, agent-based computing, game theory, genetic algorithms, artificial neural networks, and complex networks. Pre/co-requisites: Computer programming in any language; calculus. Linear algebra recommended. Cross-listed with: CS 302.

Credits: 3.00

**CSYS 303 - Complex Networks**

Detailed exploration of distribution, transportation, small-world, scale-free, social, biological, organizational networks; generative mechanisms; measurement and statistics of network properties; network dynamics; contagion processes. Students from all disciplines welcomed. Pre/co-requisites: MATH 301/CSYS 301, calculus, and statistics required. Cross-listed with: MATH 303.

Credits: 3.00

**CSYS 350 - Multiscale Modeling**

Computational modeling of the physics and dynamical behavior of matter composed of diverse length and time scales. Molecular simulation. Coarse-graining. Coupled atomistic/continuum methods. Cross-listed with: ME 350.

Credits: 3.00

**CSYS 352 - Evolutionary Computation**

Theory and practice of biologically-inspired search strategies including genetic algorithms, genetic programming, and evolution strategies. Applications include optimization, parameter estimation, and model identification. Significant project. Students from multiple disciplines encouraged. Pre/co-requisites: Familiarity with programming, probability, and statistics. Cross-listed with: BIOL 352, CS 352.

Credits: 3.00

**CSYS 359 - Appld Artificial Neural Ntwrks**

Introduction to artificial neural networks. A broad range of example algorithms are implemented in MATLAB. Research applications to real data are emphasized. Pre/co-requisites: STAT 223, CS 016/CE 011, or Instructor permission. Cross-listed with: CE 359.

Credits: 3.00

**CSYS 369 - Applied Geostatistics**

Introduction to the theory of regionalized variables, geostatistics (kriging techniques): special topics in multivariate analysis; Applications to real data subject to spatial variation are emphasized. Pre/co-requisites: STAT 223 or STAT 225; CS 016/CE 011 or Instructor permission. Cross-listed with: CE 369, STAT 369.

Credits: 3.00

**CSYS 395 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

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### Graduate Courses in Computer Science (CS)

- 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: CS 101 or CS 121; CS 104 or CS 124.

Credits: 3.00
- 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: CS 103 or CS 123; CS 243.

Credits: 3.00
- CS 204 - Database Systems**

Techniques for processing very large collections of data. Secondary storage. Database design and management. Query languages and optimization. Database recovery. Prerequisite: CS 104 or CS 124.

Credits: 3.00
- 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 CS 205 may not receive credit for CS 208 or CS 209. Prerequisite: CS 104 or CS 124. Cross-listed with: CSYS 205.

Credits: 3.00
- CS 206 - Evolutionary Robotics**

Exploration of the automated design of autonomous machines using evolutionary algorithms. Coursework involves reading of research papers, programming assignments and a final project. Prerequisites: Junior standing and programming experience, or Instructor permission.

Credits: 3.00
- 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 CS 205 and CS 208. Prerequisite: CS 104 or CS 124.

Credits: 3.00
- 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 CS 205 and CS 209. Prerequisite: CS 104 or CS 124.

Credits: 3.00

**CS 222 - Computer Architecture**

Architecture of computing systems. Control unit logic, input/output processors and devices, asynchronous processing, concurrency, parallelism, and memory hierarchies. Prerequisite: CS 101 or CS 121.

Credits: 3.00

**CS 224 - Algorithm Design & Analysis**

Comprehensive analysis of common algorithmic paradigms including greedy algorithms, divide and conquer, dynamic programming, graph algorithms, and approximation algorithms. Complexity hierarchies. Prerequisites: CS 104 or 124, MATH 173 recommended

Credits: 3.00

**CS 228 - Human-Computer Interaction**

The design, implementation, and evaluation of user interfaces for computers and other complex, electronic equipment. Includes a significant project. Pre/co-requisites: Programming experience and Junior standing or Instructor permission.

Credits: 3.00

**CS 231 - Programming for Bioinformatics**

Introductory course on computing (including scripting, database, and statistical analysis) for developing bioinformatics applications. Particular emphasis is given to comparative genomics and systems biology scenarios. Prerequisites: STAT 151, STAT 153 or Instructor permission. Cross-listed with: MMG 231.

Credits: 3.00

**CS 232 - Methods in Bioinformatics**

This course provides a methodological survey of bioinformatics. Particular emphasis is given to algorithms associated with sequence analysis, comparative genomics, structural biology, and systems biology. Prerequisites: STAT 151, STAT 153, or Instructor permission. Cross-listed with: MMG 232.

Credits: 3.00

**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: CS 104 or 124. (Same as Math 243).

Credits: 3.00

**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: CS 103 or CS 123; CS 104 or CS 124; STAT 153 or equivalent. Cross-listed with: CSYS 251.

Credits: 3.00

**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 MATH 271; STAT 153 or

equivalent; computer programming. Cross-listed with: STAT 256, CSYS 256.  
Credits: 3.00

**CS 260 - Parallel Computing**

Taxonomy of parallel computers, basic concepts for parallel computing, effectiveness and scalability, parallel algorithms for variety of problems, distributed memory and shared memory paradigms.  
Prerequisite: CS 104 or CS 124, or Instructor permission.  
Credits: 3.00

**CS 265 - Computer Networks**

Introduction to the theoretical and pragmatic principles and practices of computer networking. Topics include: local area networks; the Internet; network and world-wide-web application programming.  
Prerequisites: CS 026 or CS 110, CS 101 or CS 121, and STAT 153 or equivalent.  
Credits: 3.00

**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. Prerequisite: CS 104 or CS 124.  
Credits: 3.00

**CS 274 - Computer Graphics**

Graphical representation of two- and three-dimensional objects on color raster displays. Line generation, region filling, geometric transformations, hidden line and surface removal, rendering techniques. Prerequisite: CS 104 or CS 124, MATH 124 or MATH 271, recommended.  
Credits: 3.00

**CS 276 - Integrative Computing**

Integrative computing principles and practices: Abstraction via APIs, distributed systems orchestration, security, application design and implementation. Team projects for mobile and other networked, embedded devices. Prerequisites: Senior standing in Computer Science or Instructor permission.  
Credits: 3.00

**CS 294 - Independent Readings&Research**

Independent readings and investigation under the direction of faculty member. Prerequisite: Department permission.  
Credits: 3.00

**CS 295 - Special Topic:Computer Science**

See Schedule of Courses for specific titles. Subject will vary from year to year. May be repeated for credit.  
Credits: 6.00

**CS 296 - Special Topic:Computer Science**

See Schedule of Courses for specific titles. Subject will vary from year to year. May be repeated for credit.  
Credits: 3.00

**CS 302 - Modeling Complex Systems**

Integrative breadth-first introduction to computational methods for modeling complex systems;numerical methods, cellular automata, agent-based computing, game theory, genetic algorithms, artificial neural networks, and complex networks. Pre/co-requisites: Computer programming in any language, calculus. (Linear algebra recommended). Cross-listed with: CSYS

302.

Credits: 3.00

**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.

Credits: 3.00

**CS 316 - Adv Top: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: 3.00

**CS 321 - Adv Top:Computer Architecture**

Topics from computer architecture, network architecture, array and vector processors, memory hierarchies. May be repeated for credit with Instructor permission. Prerequisite: CS 222.

Credits: 3.00

**CS 331 - Adv Tpcs Database&Knwldg Sys**

Topics chosen from database design, knowledge based systems, object-oriented and relational systems, data models, knowledge representation. May be repeated for credit with Instructor permission. Prerequisite: CS 204, CS 224.

Credits: 3.00

**CS 332 - Data Mining**

Analytical and empirical techniques for analysis of large volumes of data. Topics include association analysis, classification, clustering, pattern discovery in sequential data, and Bayesian networks. Prerequisites: STAT 153 or equivalent; CS 251 recommended.

Credits: 3.00

**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: 3.00

**CS 352 - Evolutionary Computation**

Theory and practice of biologically-inspired search strategies, including genetic algorithms, genetic programming, and evolution strategies. Applications include optimization, parameter estimation, and model identification. Significant project. Students from multiple disciplines encouraged. Pre/co-requisites: Familiarity with programming, probability, and statistics. Cross-listed with: BIOL 352, CSYS 352.

Credits: 3.00

**CS 355 - Statistical Pattern Recognitn**

Analysis of algorithms used for feature selection, density estimation, and pattern classification, including Bayes classifiers, maximum likelihood, nearest neighbors, kernels, discriminants, neural networks, and clustering. Prerequisite: STAT 241 or STAT 251 or Instructor permission. Cross-listed with: STAT 355, CSYS 355.

Credits: 3.00

**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: 3.00

**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: 1.00

**CS 391 - Master's Thesis Research**

Credits: 4.00

**CS 392 - Master's Project**

Prerequisite: Department permission.  
Credits: 3.00

**CS 394 - Independent Study**

Independent readings and investigation under the direction of a faculty member. Prerequisite: Instructor permission.  
Credits: 4.00

**CS 395 - Special Topics**

Subject will vary from year to year. May be repeated for credit. Prerequisite: Instructor permission.  
Credits: 6.00

**CS 491 - Doctoral Dissertation Research**

Credit as arranged.  
Credits: 6.00

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## Graduate 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 341 - Diagnosis in School Counseling

This course outlines the more commonly used psychological diagnostic categories used to describe youth with developmental and psychological challenges.

Credits: 1.00

## EDCO 342 - Assessment in School

This course is designed to provide students with information related to the role of assessment in the practice of school counseling.

Credits: 1.00

## EDCO 344 - Modalities: Couns Child &amp; Adol

Study of the practice of counseling children and adolescents using behavioral and cog-behavior theory, narrative theory and practice, and play therapies. Prerequisites: Counseling majors and concurrent with internship or Instructor permission.

Credits: 3.00

## EDCO 345 - Diagnosis in Counseling

Etiology and diagnosis of mental disorders in children, adolescents, and adults according to DMS. Includes intake, evaluation, treatment planning, and clinical documentation skills. Prerequisite: Counseling majors or Instructor 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 - Assessment in MH**

Students will learn about common assessment tools and processes used in clinical mental health counseling. Prerequisites: Counseling majors and EDCO 220, EDCO 350, EDCO 374, EDCO 375, and EDCO 377 or Instructor permission.

Credits: 3.00

**EDCO 361 - Practice of Mental Hlth CnsIng**

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 - Counseling Practicum**

Introductory supervised experience in counseling in a field setting. Includes 100 hours working as a counselor with a minimum of 40 direct service hours. Prerequisites: Counseling Majors only and EDCO 220, EDCO 350, EDCO 374, EDCO 375 , EDCO 340, and EDCO 361.

Credits: 3.00

**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 - Addictions Counseling**

Development and culturally responsive treatment of addictions, e.g., Motivational Interviewing, family systems, Cognitive Behavioral Therapy (CBT) techniques, recovery maintenance, and an integrative approach to treatment. Prerequisite: Counseling majors or Instructor 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 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 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 and Couples Counseling**

Theory and process of counseling with families and couples including family theory and family therapy orientations and intervention skills. Includes practice of counseling interventions.

Prerequisites: EDCO 220, EDCO 374, EDCO 375, EDCO 377, EDCO 392, or Instructor permission.

Credits: 3.00

**EDCO 389 - Counseling Internship**

A supervised experience in counseling in a field (school or mental health) setting. Prerequisites: Counseling majors only and EDCO 220, EDCO 350, EDCO 374, EDCO 375, EDCO 392, EDCO 363, EDCO 340, and EDCO 361. .

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 Counseling Experience**

Encounter group experiences for prospective clinical mental health and school counselors providing increased awareness of self and models relating to others. Prerequisite: Graduate standing.

Credits: 3.00

**EDCO 393 - Adv Group:Theory and Practice**

Group leadership skills are developed, practiced, and refined through in-class and laboratory experiences that focus on live group supervision, theory, feedback exchange, and ethical issues. Prerequisites: EDCO 220, EDCO 374, EDCO 375, EDCO 377, EDCO 392 and permission of the Instructor.

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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### Graduate Courses in Curriculum & Instruction (EDCI)

- EDCI 200 - Contemporary Issues**

Designed so that its content and structure may accommodate special issues not especially appropriate within the boundaries of an existing course. Pre/co-requisite: twelve hours in Education and related areas.

Credits: 6.00
- EDCI 238 - Teach'g w/Global Perspective**

Approaches to teaching global and multicultural issues: justice and human rights, peace, and the environment. Development of curriculum materials. Links between local and global concerns.

Prerequisite: Twelve hours of Education and related areas.

Credits: 3.00
- EDCI 261 - Current Direction in C&I**

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: 3.00
- EDCI 295 - Laboratory Experience in Educ**

Supervised fieldwork designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.

Credits: 3.00
- EDCI 296 - Laboratory Experience in Educ**

Supervised fieldwork designed to give students experience in specialized areas for their professional development. Prerequisite: Permission of the Coordinator of Professional Laboratory Experiences.

Credits: 1.00 to 6.00
- EDCI 321 - Learning, Design & Technology**

This course examines the relationship between learning theory and technology integration in K-12 classrooms and integrates backward design in standards-based units of study. Prerequisite: Teaching experience.

Credits: 3.00
- EDCI 322 - Differentiation & Technology**

This course enables educators to develop and utilize instructional frameworks based on current research related to differentiating instruction, universal design for learning and assistive technology.

Credits: 3.00
- EDCI 323 - Inquiry and Technology**

This course examines how technology can promote a student-centered active learning classroom

environment that promotes problem-solving and critical thinking skills. Prerequisite: Prior teaching experience.

Credits: 3.00

**EDCI 324 - Assessment and Technology**

Students will cover assessment basics, the role of technology in education, information & knowledge management, and methods for integrating technology into assessment practice.

Credits: 3.00

**EDCI 325 - Leadership and Technology**

This course explores leadership and the role of the Integration Specialist and/or teacher leader in the context of educational technology integration planning.

Credits: 3.00

**EDCI 333 - Curr Concepts/Planning/Develop**

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: 3.00

**EDCI 363 - Analysis of Curr & Instruc Sem**

A case study of the design, implementation, and evaluation of selected curricular and instructional improvements. Prerequisite: Ed.D. students have priority.

Credits: 3.00

**EDCI 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: 3.00

**EDCI 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee. Credit as arranged.

Credits: 1.00 to 12.00

**EDCI 397 - Problems in Education**

Individual work on a research problem selected by the student in consultation with a staff member.

Pre/co-requisites: Twelve hours in Education and related areas; endorsement by a sponsoring faculty member.

Credits: 3.00

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Graduate Courses in Early Childhood Pre K-3 (EDEC)

EDEC 397 - Problems in Education

Credits: 1.00 to 6.00

CONTACT UVM

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## 2012-2013 Catalogue

### Graduate Courses in Early Childhood Special Educ (ECSP)

#### ECSP 200 - Contemporary Issues

Credits: 3.00

#### ECSP 202 - D2:Introduction to EI/ECSE

This course serves as an introduction to the profession and the importance of becoming an advocate for children (0 - 6) experiencing diversity of ability, culture, and or language.

Credits: 3.00

#### ECSP 210 - Curriculum in EI/ECSE

Designing and implementing services and supports for young children with diverse abilities. Topics include IEP/IFSP, embedding instruction, family-centered, and inclusion. three credits, four credits with 30-hour field experience. Pre/co-requisites: ECSP 202 and ECSP 211. Cross-listed with: ECSP 310.

Credits: 4.00

#### ECSP 211 - Assessment in EI/ECSE

Overview of the strengths and limitations of traditional and nontraditional assessments; legal responsibilities, eligibility, family, and cultural aspects. three credits, four credits with 30-hour field experience. Pre/co-requisite: Completion or co-enrollment in ECSP 202 for undergraduates. Cross-listed with: ECSP 311.

Credits: 4.00

#### ECSP 295 - Lab Experience in Education

Undergraduate only.

Credits: 3.00

#### ECSP 310 - Curriculum in EI/ECSE

Designing and implementing services and supports for young children with diverse abilities. Topics include IEP/IFSP, embedding instruction, family-centered, and inclusion (30 hour field experience). Pre/co-requisite: ECSP 202 and ECSP 201. Cross-listed with: ECSP 210.

Credits: 3.00

#### ECSP 311 - Assessment in EI/ECSE

Overview of the strengths and limitations of traditional and nontraditional assessments; legal responsibilities, eligibility, family, and cultural aspects (30-hour practicum). Pre/co-requisite: Completion or co-enrollment in ECSP 202. Cross-listed with: ECSP 211.

Credits: 3.00

#### ECSP 320 - Seminar in EI/ECSE

This seminar accompanies the student teaching or internship experiences. Students will create a variety of evidence-based products and complete their portfolios for licensure. Co-requisite: ECSP

386. Cross-listed with: ECSP 220. For undergraduates only.  
Credits: 3.00

**ECSP 386 - Internship: EI/ECSE**

Semester-long internship in an early intervention and/or early childhood special education setting.  
Pre/co-requisite: ECSP 310, ECSP 311, EDSP 217, EDSP 301, or Instructor permission.  
Credits: 12.00

**ECSP 391 - Master's Thesis Research**

Credits: 1.00 to 12.00

**ECSP 397 - Problems in Education**

Credits: 1.00 to 6.00

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Graduate Courses in Economics (EC)

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### Graduate Courses in Education (EDSS)

- 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: 6.00
- EDSS 208 - The Mass Media as Educator**

Analysis and assessment of the mass media's teachings about reality and worth and how to live our lives individually and collectively. Appropriate for non-education students. Pre/co-requisites: Junior standing for undergraduates; also can be taken for Graduate credit.

Credits: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- EDSS 321 - School Improvement:Thry & Prac**

Analysis of research and practices pertinent to improvement of American schools. Student
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assignments include synthesis papers and site-specific research projects derived from course studies. Prerequisite: Twelve hours of Graduate study in education.

Credits: 4.00 to 6.00

**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: 3.00

**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: 3.00

**EDSS 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: 3.00

**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: 3.00

**EDSS 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee.

Credits: 1.00 to 6.00

**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: 3.00

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### Graduate Courses in Electrical Engineering (EE)

- EE 209 - Transient Phenomena**

Study of complex variable basis of Laplace and Fourier Transforms; applications to transient behavior of lumped and distributed parameter systems, root locus. Nyquist criterion and two-dimensional field problems. Prerequisite: MATH 271.

Credits: 3.00
- EE 210 - 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. Prerequisites: EE 171 or ME 111. Cross-listed with: ME 210.

Credits: 3.00
- EE 212 - Computer Vision**

Introduction to computer vision systems for interactive and industrial applications using both hard/software computational approaches. Pre/co-requisites: MATH 124 or MATH 271 and CS 026, or Instructor permission. Cross-listing: CS 212.

Credits: 3.00
- EE 215 - Electric Energy Systems Analys**

Transmission line, generator, transformer modeling and control, per-unit conversion, power flow calculations and software, symmetric components and fault analysis, protection/relaying, stability analysis, smart grid. Prerequisite: EE 113. Co-requisite: MATH 124.

Credits: 3.00
- 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/co-requisites: EE 131, EE 163, EE 121.

Credits: 3.00
- 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: 3.00
- 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: 3.00

**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: 3.00

**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: 3.00

**EE 231 - Digital Computer Design I**

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: 3.00

**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: 3.00

**EE 241 - Electromagnetic Wave Theory**

Electromagnetic radiation and wave propagation in complex media and systems: angular spectrum of plane waves, dispersive pulse propagation, applications to communications, imaging and remote sensing. Prerequisite: EE 141 or equivalent.

Credits: 3.00

**EE 245 - Quantum Electronics**

A theoretical description of light-matter interactions in photon emitting resonant cavities. A practical understanding of laser design and operation. Prerequisite: EE 141.

Credits: 3.00

**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: EE 121, EE 131.

Credits: 3.00

**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: EE 131.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EE 273 - Digital Communications**

Digital modulation/demodulation methods and BER performance; source entropy and channel capacity; optimal detection; convolutional codes and decoding algorithms. Pre/co-requisites: EE 174 and STAT 151.

Credits: 3.00

**EE 274 - Intro Wavelets & Filter Banks**

Continuous and discrete-time signal processing. Continuous wavelet transform. Series expansion of continuous and discrete-time signals. Perfect reconstruction, orthogonal and biorthogonal filter banks. Wavelets from filters. Prerequisites: 171, or instructor's permission. Cross-listing: Math 278.

Credits: 3.00

**EE 275 - Digital Signal Processing**

Sampling and reconstruction of signals. DFT, FFT and the z-transform. FIR and IIR filter design. Speech coding. Accompanying lab: EE 289. Pre/co-requisites: EE 171; Instructor permission.

Credits: 4.00

**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. Prerequisite: EE 275.

Credits: 4.00

**EE 278 - Wireless Communication**

Modern wireless systems, including cellular design, propagation modeling, multiple access and equalization techniques. Pre/co-requisites: EE 174 and STAT 151.

Credits: 3.00

**EE 281 - Materials Science Seminar**

Presentation and discussion of advanced electrical engineering problems and current developments. Prerequisite: Senior or Graduate Engineering enrollment.

Credits: 1.00

**EE 295 - Special Topics**

Special topics in developing areas of Electrical Engineering. Prerequisites: Senior standing; or Instructor permission.

Credits: 4.00

**EE 301 - System Theory**

Basic concepts in system theory; linear vector spaces; state variable representation; phase plane analysis of nonlinear dynamic systems; limit cycles; Lyapunov stability. Applications in engineering. Prerequisites: MATH 230 or MATH 271, MATH 124, EE 171.

Credits: 4.00

**EE 302 - Stochastic Processes**

Probability theory, random variables and stochastic processes. Response of linear systems to

random inputs. Applications in engineering. Prerequisites: EE 171 and STAT 151.  
Credits: 4.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EE 365 - Optoelectronic Devices**

Optical and electro optical properties of semiconductors. Applications to photodetectors, solar cells, light emitting diodes and lasers. Prerequisites: EE 142, EE 261.  
Credits: 3.00

**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: 3.00

**EE 371 - Estimation Theory**

Foundations of linear and nonlinear least squares estimation, smoothing and prediction, computational aspects, Kalman filtering, nonlinear filtering, parameter identification, and adaptive filtering. Applications to students' research. Pre/co-requisite: EE 302.

Credits: 3.00

**EE 373 - Adv Topics in Communications**

Advanced topics of current interest in communication systems. Topics may include channel coding/decoding, software radio, ad-hoc networks, wireless systems, etc. Prerequisites: EE 273 or Instructor permission.

Credits: 3.00

**EE 391 - Master's Thesis Research**

Credits: 6.00

**EE 395 - Advanced Special Topics**

Advanced topics of current interest in electrical engineering. Prerequisite: Instructor permission.

Credits: 4.00

**EE 491 - Doctoral Dissertation Research**

Credits: 6.00

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Graduate Courses in Elementary Education (EDEL)

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: 3.00

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: 12.00

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: 8.00

EDEL 391 - Master's Thesis Research

Thesis topic must be approved by a faculty committee.

Credits: 1.00 to 18.00

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: 1.00 to 6.00

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Graduate Courses in Engineering (ENGR)

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### Graduate Courses in English (ENG5)

#### ENG5 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." Prerequisites: ENG5 086, six hours at the intermediate level, and Instructor permission.  
Credits: 3.00

#### ENG5 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." Prerequisite: ENG5 086; six hours at the intermediate level; Instructor permission.  
Credits: 3.00

#### ENG5 211 - Sem in Composition & Rhetoric

Recent topics: "Writing the New Yorker;" "Writing Vermont Life;" "Editing and Publishing." Prerequisite: ENG5 086; six hours at the intermediate level; Instructor permission.  
Credits: 3.00

#### ENG5 212 - Sem in Composition & Rhetoric

Recent topics: "Writing the New Yorker;" "Writing Vermont Life;" "Editing and Publishing." Prerequisite: ENG5 086; six hours at the intermediate level; and Instructor permission.  
Credits: 3.00

#### ENG5 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." Prerequisite: ENG5 086; six hours at the intermediate level; Instructor permission.  
Credits: 3.00

#### ENG5 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." Prerequisite: ENG5 086; six hours at the intermediate level; Instructor permission.  
Credits: 3.00

#### ENG5 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." Prerequisite: ENG5 086; six hours at the intermediate level; Instructor permission.  
Credits: 3.00

**ENGS 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." Prerequisite: ENGS 086; six hours at the intermediate level; Instructor permission.

Credits: 3.00

**ENGS 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." Prerequisite: ENGS 086; six hours at the intermediate level; Instructor permission.

Credits: 3.00

**ENGS 252 - Seminar in 20th Century Lit**

Recent topics: "The Beat Generation;" "Literature and Society in Modern Ireland;" "Dostoevsky's Influence on 20th Century American Literature." Prerequisite: ENGS 086; six hours at the intermediate level; Instructor permission.

Credits: 3.00

**ENGS 281 - Sem Lit Themes,Genres,Folklore**

Recent topics: "Spiritual Journeys;" "Murder, He Said: Detective Fiction;" "Chekhov to Cheever: The Short Story." Prerequisite: ENGS 086; six hours at the intermediate level; Instructor permission.

Credits: 3.00

**ENGS 282 - Sem Lit Themes,Genres,Folklore**

Recent topics: "Spiritual Journeys;" "Murder, He Said: Detective Fiction;" "Chekhov to Cheever: The Short Story." Prerequisite: ENGS 086; six hours at the intermediate level; Instructor permission.

Credits: 3.00

**ENGS 295 - Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisites: ENGS 086, six hours at the intermediate level, and Instructor permission.

Credits: 6.00

**ENGS 296 - Advanced Special Topics**

See Schedule of Courses for specific titles. Prerequisites: ENGS 086, six hours at the intermediate level, and instructor permission.

Credits: 3.00

**ENGS 320 - Seminar:Major Author**

In-depth study of the works, critical reception, and context of an author writing in English. Representative topics: Chaucer; Shakespeare; Milton; Austen; Dickinson; Morrison.

Credits: 3.00

**ENGS 330 - Seminar:Literary Period**

Advanced survey of authors, themes, genres, and/or cultural context in a British or American literary period. Representative topics: British Renaissance; Restoration and Eighteenth Century; Victorian; American Renaissance.

Credits: 3.00

**ENGS 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, literature and composition.

Credits: 3.00

**ENGS 345 - Practicum in Teaching Writing**

Introduces new graduate teaching assistants in English to best practices in teaching college composition and provides support for their first semester teaching ENGS 001. Prerequisites: Admission to English Graduate program; appointment to a Graduate teaching assistantship; permission of Instructor or English department Graduate advisor.

Credits: 3.00

**ENGS 350 - Surv of Lit Theory & Criticism**

Theory and Criticism.

Credits: 3.00

**ENGS 360 - Seminar:Special Topics**

Topic varies, based on faculty research. Representative topics: orality and literacy in medieval literature; feminist theory; anthropological approaches to literature; narrative theory and Victorian novels.

Credits: 3.00

**ENGS 370 - Principles of Literary Rsch**

Methods of literary study, research, and scholarship, including bibliographic, manuscript, and archival work.

Credits: 3.00

**ENGS 391 - Master's Thesis Research**

Credits: 6.00

**ENGS 392 - Seminar Paper Review**

Credits: 0.00

**ENGS 397 - Special Readings & Research**

Directed individual study of areas not appropriately covered by existing courses. Permission of Graduate Director.

Credits: 3.00

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Graduate Courses in Environmental Sciences (ENSC)

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## ENVS 212 - Advanced Agroecology

Credits: 4.00

Studio course synthesizing work from fields of landscape ecology and landscape design, exploring ecological design alternatives at multiple scales, and developing multifunctional landscape solutions. Pre/co-requisites: Minimum Junior standing, PSS 137 or one course in ecology plus one course in design or drawing. Cross-listed with: CDAE 238, PSS 238, NR 238.

Credits: 3.00

Advanced reading and research on the role and influence of nature on human history and how people and cultures have influenced the natural world. Prerequisites: ENVS 151; six credits in History. Cross-listed with: HST 267.

Credits: 3.00

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

Explores the causes of conflicts involving environmental concerns and the role of environment as a factor in conflict development and mediation. Pre/co-requisites: 100-level course in Environmental Studies or Natural Resources; Junior, Senior, or Graduate standing.

Credits: 3.00

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

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

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### Graduate Courses in Food Systems (FS)

- FS 335 - Qualitative Research Methods**

This course provides an overview of qualitative research methods and an opportunity to apply such research methods for topics focusing on food systems and health.

Credits: 3.00
- FS 340 - Food Systems, Science & Policy**

This course examines key questions being asked about our contemporary food system by examining natural and life sciences scholarship and the applications for public policy.

Credits: 3.00
- FS 345 - Food Systems, Society & Policy**

This course examines key questions being asked about our contemporary food systems by examining social science and humanities scholarship and the applications for public policy.

Credits: 3.00
- FS 350 - Food Systems Immersion**

This problem-based course uses current issues in Vermont's food system to explore systems complexity, emergence and interdependence. Pre/co-requisites: FS 340, FS 345.

Credits: 3.00
- FS 391 - Master's Thesis Research**

Credits: 1.00 to 18.00
- FS 395 - Special Topics**

Credits: 4.00
- FS 396 - Master's Thesis Research**

Credits: 1.00

# 2012-2013 Catalogue

## Graduate Courses in Forestry (FOR)

Basic anatomy and physiology of trees and other woody plants, emphasizing their unique structural and physiological adaptations to the environment. Prerequisite: Permission.  
Credits: 3.00

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: 2.00

Forest health is a broadly defined, emerging discipline in forestry and ecology that examines the agents and processes affecting tree and forest decline. Pre/co-requisites: NR 103, BIOL 001 and BIOL 002 or PBIOL 004, MATH 009, FOR 021, preferred FOR 121.

Credits: 4.00

Principles of long-term planning and plan implementation in support of sustainable forestry; Adaptive management; biodiversity and ecosystem health; major management planning project. Prerequisite: FOR 122, NR 205; concurrent or prior enrollment in FOR 223, or Graduate standing.  
Credits: 4.00

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: 4.00

Advanced readings, or a special investigation dealing with a topic beyond the scope of existing formal courses. Prerequisite: Instructor permission.

Credits: 4.00

2012-2013 Catalogue

## EDFS 200 - Contemporary Issues

Credits: 3.00

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: 3.00

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: 3.00

Educational principals and practices in the U.S. as they relate to the main currents of social history. Key ideas of historic and contemporary significance. Prerequisite: Twelve hours in Education and related areas or Instructor permission.

Credits: 3.00

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: 3.00

Perspectives on schooling at all levels directed at preserving and extending a heritage (cultural, racial, ethnic, religious, regional, national), or promoting individual freedom, character, or academic excellence. Selected topics, Instructor choice. Prerequisite: Junior standing. Also for Graduate credit.

Credits: 3.00

Seminars and research projects. Methods of historical, descriptive, experimental, quasi-experimental, field studies, and survey research.

Credits: 3.00

**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: 3.00

**EDFS 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: 3.00

**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: 3.00

**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: 3.00

**EDFS 304 - Religion,Spirituality & Ed**

A narrative approach to thinking about religion and spirituality and theoretical and practical implications for policy making, pedagogy, curriculum development, and educational leadership.

Credits: 3.00

**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: 3.00

**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: 3.00

**EDFS 320 - Technology, Schooling, Society**

This course explores influences of technology on schooling and society. Using sociological, historical, and philosophical frameworks, participants examine equity, cultural diversity, student empowerment, and community.

Credits: 3.00

**EDFS 322 - D1:Chall Multicult/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: 3.00

**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: 3.00

**EDFS 348 - Analyze&Write Qualitative Rsch**

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 the course. Prerequisite: EDFS 347 or Instructor Permission.  
Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EDFS 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee.  
Credits: 1.00 to 18.00

**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: 3.00

**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: 3.00

# 2012-2013 Catalogue

## FREN 235 - Medieval/Renaissance Studies

## FREN 237 - Early French Women Writers

## FREN 247 - Power/Desire in Class Fr Drama

## FREN 256 - EnlightenmentSocietyReimagined

## FREN 265 - Romanticism and Symbolism

## FREN 266 - Rev&React in 19th C Narrative

## FREN 269 - La Belle Epoque

## FREN 270 - Lyric Poetry:Harmony & Crisis

A consideration of the French lyric tradition. Authors may include the troubadours, Ronsard, Dubellay, Hugo, Baudelaire, Mallarme, Rimbaud, Valery, Roubaud. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**FREN 275 - Morality&ItsDiscontents-20C Lt**

20C French authors who challenge traditional notions of morality or advance new modes of philosophical thought and ethics. May include Colette, Gide, Malraux, Beauvoir, others. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**FREN 276 - Topics in Modern French Lit**

Selected topics dealing with poetry and/or narrative related either to an historical period or a literary movement. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**FREN 280 - Francophone Crossings**

Study of works in French that demonstrate multiple cultural influences. Topics may include: exile writings, cultural/linguistic mixing, colonialism and independence movements, human rights, immigration. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**FREN 285 - Quebec Literature**

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 FREN 141 or FREN 142, or both.  
Credits: 3.00

**FREN 289 - African Lit: French Express**

Study of West African poetry, theatre, novel, and civilization as an expression of the Black experience in the language of the French colonizer. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**FREN 292 - Topics in French Culture**

In-depth study of a major aspect of French culture. See Schedule of Courses for specific offering. Prerequisites: FREN 131 or FREN 132 or Instructor permission.  
Credits: 3.00

**FREN 293 - Quebec Culture**

Sociocultural study of the Francophone culture of Canada. Prerequisite: One 100-level French course.  
Credits: 3.00

**FREN 294 - Topics in French Cinema**

A topical approach to the study of French cinema and cinematographic aesthetics, from the medium's beginnings through contemporary films. Prerequisites: FREN 141 or FREN 142.  
Credits: 3.00

**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: 3.00

**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: 3.00

**FREN 297 - Advanced Readings & Research**  
Permission of Chair required.  
Credits: 3.00

**FREN 298 - Advanced Readings & Research**  
Permission of Chair required.  
Credits: 3.00

**FREN 391 - Master's Thesis Research**  
Credits: 1.00 to 18.00

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## 2012-2013 Catalogue

### Graduate Courses in Geography (GEOG)

- 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: 3.00
- 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: 3.00
- 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: 3.00
- GEOG 246 - Adv Top:Climate&Water Resource**

Analysis of regional climatology, paleoclimatology, hydroclimatological hazards, or fluvial geomorphology. Topics include droughts, severe weather, climate change, floods and floodplain management, mountain and lowland rivers. Pre/co-requisites: GEOG 143 or GEOG 144 and Senior or Graduate standing with nine hours in Geography.

Credits: 3.00
- 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: 3.00
- 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: 3.00
- 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
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hours in Geography, or Instructor permission.  
Credits: 3.00

**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: 3.00

**GEOG 287 - Spatial Analysis**

Analysis of spatial pattern and interaction through quantitative models; introduction to measurement, sampling, and covariation in a spatial framework. Prerequisites: Senior/Graduate standing with at least nine hours in Geography or Instructor permission.  
Credits: 3.00

**GEOG 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.  
Credits: 4.00

**GEOG 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.  
Credits: 3.00

**GEOG 297 - Readings & Research**

Credits: 4.00

**GEOG 298 - Readings & Research**

Credits: 3.00

**GEOG 300 - Graduate Tutorial**

Readings and research on topics arranged individually by students with instructors; attendance in appropriate undergraduate courses may be required. Prerequisite: Instructor permission.  
Credits: 3.00

**GEOG 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

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## 2012-2013 Catalogue

### Graduate Courses in Geology (GEOL)

- GEOL 201 - Advanced Field Geology**

Advanced field mapping techniques, analysis of field data, preparation of geological maps and reports. Prerequisite: GEOL 260.

Credits: 3.00
- GEOL 217 - Vermont Field Geology**

Field observations of rocks and surficial materials across northern Vermont are utilized to decipher the region's geologic history. Readings complement field work. Pre/co-requisite: Graduate student standing.

Credits: 4.00
- GEOL 231 - Petrology**

The course covers the scope and methods of igneous, sedimentary and metamorphic petrology, and the geologic environments and processes relevant to the major rock types. Pre/co-requisite: GEOL 110.

Credits: 4.00
- 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: 3.00
- GEOL 234 - Global Biogeochemical Cycles**

Integrated perspective on biogeochemical cycles describing the transformation and movement of chemical substances in the natural environment, as seen on the global context. Prerequisite: Introductory Chemistry.

Credits: 3.00
- GEOL 235 - Geochemistry of Natural Waters**

Basic concepts of chemical equilibria applied to natural waters, including thermodynamics, pH, oxidation-reduction, weathering, and solution equilibria. Prerequisite: CHEM 031, CHEM 032.

Credits: 3.00
- 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: GEOL 101, GEOL 110.

Credits: 3.00
- 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: 4.00

**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.

Prerequisite: GEOL 101, GEOL 110, PHYS 011, or Instructor permission.

Credits: 4.00

**GEOL 263 - Geochronology**

This course will survey the basic concepts of radioactive decay, mass spectrometry, and isotopic systems commonly used to quantify the timing of geologic events. Prerequisite: GEOL 110.

Credits: 3.00

**GEOL 266 - Microstructures**

This course will focus on deformation of rocks and minerals at the microscopic scale and the practical use of photographic analyses to unravel tectonic histories. Pre/co-requisite: GEOL 260.

Credits: 3.00

**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: 4.00

**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. Prerequisite: GEOL 101, GEOL 110, or Instructor permission.

Credits: 3.00

**GEOL 278 - Principles of Aquatic Systems**

See NR 278.

Credits: 3.00

**GEOL 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 4.00

**GEOL 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 4.00

**GEOL 301 - Intro to Graduate Studies**

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: 1.00

**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: 1.00

**GEOL 335 - Aqueous Environmental Geochem**

This course focuses on the chemical equilibrium and kinetics principles governing water chemistry, including water interaction with the atmosphere, microbes and minerals. Prerequisite: Graduate standing.

Credits: 3.00

**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: 1.00 to 3.00

**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: 1.00 to 3.00

**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: 4.00

**GEOL 361 - Advanced Structural Geology**

Selected topics in analytical structural geology. Prerequisite: GEOL 260 or equivalent.

Credits: 3.00

**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: 3.00

**GEOL 384 - Teaching in the Geosciences**

A review of the pedagogical underpinnings of introductory geology and its laboratory activities. Prerequisite: Geology Graduate Teaching Assistantship.

Credits: 1.00

**GEOL 391 - Master's Thesis Research**

Credits: 1.00 to 9.00

# 2012-2013 Catalogue

## Graduate 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 Räuber* 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 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 Folklore**

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 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 - Advanced 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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Graduate Courses in Global and Regional Studies (GRS)

GRS 297 - Advanced Readings & Research

Independent study of a specific region with an approved instructor. Prerequisites: Junior/Senior standing or Graduate student, and permission of Program Director.  
Credits: 1.00 to 6.00

GRS 298 - Advanced Readings & Research

Independent study of a specific region with an approved instructor. Prerequisites: Junior/Senior standing or Graduate student, and permission of Instructor.  
Credits: 1.00 to 6.00

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Graduate Courses in Graduate (GRAD)

GRAD 395 - Advanced Special Topics

Credits: 1.00

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UVM Home	<h2>2012-2013 Catalogue</h2>  <h3>Graduate Courses in Graduate Medical (GRMD)</h3>  <p><b>GRMD 353 - Medical Cell &amp; Molec Biology</b> Fundamental vocabulary, concepts, and methods of molecular genetics, cell physiology, biochemistry and metabolism including cell-cell and cell-environment communication, cell proliferation and cell death. Pre/co-requisite: Graduate standing; permission of the Instructor; six credits coursework, plus two credits lab in Biology, general chemistry, organic chemistry and Physics. Credits: 3.00</p> <p><b>GRMD 354 - Medical Human Struc &amp; Fncion</b> Combination of gross anatomy, histology, embryology, physiology and medical imagine to present an integrated overview of the human body. Pre/co-requisites: Graduate standing; Instructor permission; six credits coursework, plus two credits lab in Biology, general chemistry, organic chemistry and Physics; graduate cousework in Cell Biology or Biochemistry. Credits: 6.00</p> <p><b>GRMD 355 - Medical Attacks &amp; Defenses</b> Principles of hematology, immunology, microbiology, toxicology, pathology, pharmacology, and neoplasia as a foundation to pathophysiology and therapeutics. Pre/co-requisite: Graduate standing; Instructor permission; six credits coursework plus two credits lab in Biology, general chemistry, organic chemistry and Physics; graduate coursework in Cell Biology or Biochemistry and Anatomy &amp; Physiology. Credits: 4.00</p> <p><b>GRMD 356 - Medical Nutr, Metab, &amp; GI Syst</b> Organizes studies in nutrition, organ systems metabolism and the gastrointestinal and endocrine systems through integrated lessons in cell biology, biochemistry, normal and pathologic anatomy, pharmacology, physiology, pathophysiology and microbiology. Pre/co-requisite: Graduate standing; permission of the Instructor; six credits coursework, plus two credits lab in Biology, Anatomy &amp; Physiology, and an introduction to immunology, microbiology, toxicology, pathology and pharmacology. Credits: 5.00</p> <p><b>GRMD 357 - Medical Neural Science</b> Organize study of the human nervous and behavioral system through lessons that integrate cell metabolism, endocrinology, normal and pathologic anatomy, pharmacology, physiology, pathophysiology and psychopathology. Pre/co-requisite: Graduate standing; permission of the Instructor; six credits coursework plus two credits lab in Biology, general chemistry, organic chemistry and Physics; Graduate coursework in Cell biology or Biochemistry, human anatomy &amp; physiology, and an introduction to immunology, microbiology, toxicology, pathology and pharmacology. Credits: 6.00</p> <p><b>GRMD 358 - Medical Connections</b></p>			
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Introduction to musculoskeletal and integumentary systems that integrates cell metabolism, endocrinology, normal and pathologic anatomy, physiology and pathophysiology, and pharmacology. Pre/co-requisite: Graduate standing; Instructor permission; six credits coursework plus two credits lab in biology, general chemistry, organic chemistry and physics; graduate coursework in cell biology or biochemistry, human anatomy and physiology, and an introduction to immunology, microbiology, toxicology, pathology, and pharmacology.

Credits: 1.00

**GRMD 359 - Medical Cardio,Resp,Renal Syst**

Organizes studies in the cardiovascular, respiratory and renal system through lessons that integrate cell metabolism, endocrinology, normal and pathologic anatomy, pharmacology, physiology and pathophysiology. Pre/co-requisite: graduate standing; permission of the Instructor; six credits coursework plus two credits lab in biology or biochemistry, human anatomy and physiology, and an introduction to immunology, microbiology, toxicology, pathology and pharmacology.

Credits: 6.00

**GRMD 360 - Medical Generations**

Organizes studies in reproduction, development and aging through lessons that integrate behavioral development, cell and molecular biology, endocrinology, normal and pathologic anatomy, pharmacology, physiology and pathophysiology. Pre/co-requisite: Graduate standing; permission of the Instructor; six credits coursework plus two credits lab in biology, general chemistry, organic chemistry and physics; graduate coursework in cell biology or biochemistry, human anatomy and physiology, and an introduction to immunology, microbiology, toxicology, pathology and pharmacology.

Credits: 5.00

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# 2012-2013 Catalogue

## Graduate Courses in Graduate Nursing (GRNU)

## 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&amp;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 302 - Professional Nursing Issues

Issues affecting nursing practice provide framework for examination of and socialization into professional nursing. The historical, legal, ethical, cultural, structural, and economic aspects of nursing practice will be explored. Prerequisite: Admission to MEPN program. Co-requisite: GRNU 311, GRNU 322.

Credits: 2.00

## GRNU 303 - Drug Therapy:Impl Clin Pract

Pharmacology and pharmacotherapeutics will be applied to nursing practice with a focus on pharmacodynamics, pharmacokinetics, indications, adverse effect, drug interactions, safe administration and patient education. Prerequisites: GRNU 302, GRNU 311, GRNU 322, or DPT student.

Credits: 3.00

## GRNU 305 - Advanced Pathophysiology

In-depth examination of the biological and physical manifestations of disease as they correlate with pathophysiology to guide clinical decision making of the APRN. Prerequisite: RN license.

Credits: 3.00

## GRNU 306 - Advanced Pharmacotherapy

In-depth examination of the pharmacokinetics and pharmacodynamics of select drugs for acute and chronic health conditions. Ethical and legal standards of prescriptive authority explored. Pre/co-requisite: GRNU 305 recommended.

Credits: 3.00

## GRNU 307 - Pharmacotherapeutics II

Continuation of GRNU 306. In-depth 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 309 - Adv Prac Nsg Psychophrm**

This course prepares Advance Practice Nurses to prescribe psychopharmacologic medications as a facet of their interdisciplinary role. Topics examined in depth include: psychopharmacologic principles, psychiatric diagnoses, advanced practice nursing interventions, legal and ethical implications of treatment. Case study analysis is used to apply the nursing process.

Credits: 3.00

**GRNU 310 - Theoretical Foundation:Nursing**

Analysis and exploration of the concepts and theories in nursing, and those relevant to advanced practice nursing with emphasis on the relationship between theory and practice. Pre/co-requisite: RN license.

Credits: 3.00

**GRNU 311 - Clinical Nutrition and Nursing**

Self-directed learning module focused on role of nutrition in health, and management of health conditions with emphasis on clinical implications of nutritiional imbalances. Prerequisite: Admission to MEPN program. Co-requisite: GRNU 302, GRNU 322.

Credits: 1.50

**GRNU 312 - Biomedical Science I**

Human physiology and principles of biochemistry provide foundation for understanding genetic and acquired pathophysiological conditions in the cardiovascular, endocrine, gastrointestinal, nervous, renal, and respiratory systems. Prerequisites: GRNU 302, GRNU 311, GRNU 322. Co-requisites: GRNU 303, GRNU 314, GRNU 316.

Credits: 4.00

**GRNU 313 - Practicum:Adults & Elders II**

80 hour supervised clinical nursing practicum provides an immersion experience in the medical/surgical acute care setting. Prerequisite: GRNU 116.

Credits: 1.25

**GRNU 314 - Sci of Nsg:Adults & Elders**

Identification and treatment of human responses to pathophysiological problems in adults with acute, chronic, or terminal conditions, with principles of general acute nursing practice emphasized. Prerequisites: GRNU 302, GRNU 311, GRNU 322. Co-requisite: GRNU 303, GRNU 312, GRNU 316.

Credits: 4.00

**GRNU 315 - Pol, Org & Fin Health Care**

This core course provides an overview of health care policies, organizational structures, and financing systems germane to advanced nursing practice nursing. These concepts will be examined from economic, social, ethical, political. and global perspectives. Contemporary health care organizations and policies will be analyzed with respect to concepts and principles of change theory, ethical decision making, policy processes and analysis. Financing of health care systems, with emphasis on the advanced practice nursing role, will also be examined. Instructor permission.

Credits: 3.00

**GRNU 316 - Practicum:Adults & Elders I**

An initial experience in the nursing lab will be followed with a supervised clinical nursing practicum of adults with acute, chronic, or terminal conditions. Pre/co-requisites: GRNU 302, GRNU 303, and GRNU 314.

Credits: 6.00

**GRNU 317 - Sci of Nsg:Mental Health**

Theories of human behavior form the foundation for understanding mental health and acute and chronic mental illnesses. Focus on assessment, treatment, and nursing care. Prerequisites: GRNU 303, GRNU 312, GRNU 314, GRNU 316. Co-requisites: GRNU 304, GRNU 313, GRNU 318, GRNU 319, GRNU 321, GRNU 329.

Credits: 3.00

**GRNU 318 - Practicum: Mental Health**

Faculty guide students in practice settings to maximize exposure to all aspects of the nursing process with adults having selected psychiatric/mental health problems. Prerequisites: GRNU 303, GRNU 312, GRNU 314, GRNU 316. Co-requisites: GRNU 304, GRNU 313, GRNU 317, GRNU 319, GRNU 321, GRNU 329.

Credits: 2.00

**GRNU 319 - Sci of Nsg:Women & Newborns**

Focus on healthy maternal-newborn care, and promotion of wellness and family integrity during transition within a family-centered framework. Prerequisite: GRNU 303, GRNU 312 , GRNU 314, GRNU 316. Co-requisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 321, GRNU 329.

Credits: 2.00

**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 321 - Practicum:Cmplx Nsg Care**

Precepted clinical practice in adult acute care. Students will focus on an area in which more depth is desired. Prerequisites: GRNU 303, GRNU 312, GRNU 314, GRNU 316. Co-requisites: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 329.

Credits: 2.50

**GRNU 322 - Human Structure and Function**

Self-directed learning module in basic Anatomy & Physiology. Reading, computer assisted instruction, online tutorials, and unit examinations enable foundational understanding of anatomy and physiology. Prerequisite: Admission to MEPN. Co-requisite: GRNU 302, GRNU 311.

Credits: 1.50

**GRNU 323 - Pathophysiological Phenom**

Exploration of pathophysiological phenomena commonly experienced in an acute care setting. Pre/co-requisite: GRNU 314.

Credits: 1.00

**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 325 - Science of Nursing:Children**

Identification and treatment of human responses to pathophysiological problems in children with acute, chronic, or terminal conditions, with principles of acute nursing care for hospitalized children emphasized. Prerequisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 321, GRNU 329. Co-requisite: GRNU 327, GRNU 337, GRNU 338.

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 327 - Practicum: Children**

Faculty guide students in practice settings to maximize exposure to all aspects of the nursing process with children having selected pathophysiological problems. Prerequisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 321, GRNU 329. Co-requisite: GRNU 325, GRNU 337, GRNU 338.

Credits: 2.00

**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 329 - Practicum:Women & Newborns**

Attention is focused on provision of nursing care to the expectant, laboring, or post-partum mother and to the newborn infant. Prerequisite: GRNU 303, GRNU 312, GRNU 314, GRNU 316. Co-requisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 321.

Credits: 1.25

**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. Pre/co-requisite: GRNU 300, GRNU 305, GRNU 310.

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: GRNU 330. Co-requisite: GRNU 315.

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. Prerequisite: GRNU 305.

Credits: 3.00

**GRNU 336 - Adv Pract Psych Mental Hlth**

Psychiatric and mental health assessment, diagnostic reasoning, and major treatment approaches to DSM psychiatric diagnoses for individuals across the lifespan for advanced practice psychiatric mental health nursing. Prerequisites: Admission to the Psychiatric Mental Health Nurse Practitioner Program or permission of the Instructor.

Credits: 3.00

**GRNU 337 - Community/Public Hlth Nsg**

Emphasis on the epidemiological and biostatistical indicators of population health, methods of community health analysis, structure and function of federal, state and local health organizations. Prerequisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 321, GRNU 329. Co-requisite: GRNU 325, GRNU 327, GRNU 338.

Credits: 2.00

**GRNU 338 - Practicum:Community Health**

Statewide population-focused community health experience involving needs assessment, program development, case management, health promotion, disease prevention, and protection strategies, with opportunities for interdisciplinary collaboration. Prerequisite: GRNU 304, GRNU 313, GRNU 317, GRNU 318, GRNU 319, GRNU 321, GRNU 329. Co-requisite: GRNU 325, GRNU 327, GRNU 337.

Credits: 2.00

**GRNU 340 - Thry&Pract Adv Comm/Pub Hlth I**

Overview of factors related to advanced community/ public health nursing with special emphasis on the determinants of health populations. Pre/co-requisite: GRNU 310, STAT 200.

Credits: 6.00

**GRNU 341 - Thry&Pract/Adv Com/Pub Hlth II**

Examines advanced practice roles in community/public health nursing related to strategies for change in the health of populations. Pre/co-requisite: GRNU 340.

Credits: 6.00

**GRNU 342 - Thry&Prac/Adv Com/Pub Hlth III**

Examines theoretic frameworks and strategies for evaluating the effectiveness of population -focused health services. Prerequisite: GRNU 341.

Credits: 6.00

**GRNU 343 - Opt Hlth & Mgt Common Hlth Iss**

Assessment and optimization of health of adolescents and adults. Diagnostic reasoning and management of common acute health conditions. Prerequisites: GRNU 305 and GRNU 333. Co-requisites: GRNU 306, GRNU 361, and GRNU 344.

Credits: 2.00

**GRNU 344 - Pract:Opt Hlth&Mgt Common Hlth**

Assessment and optimization of health of adolescents and adults. Diagnostic reasoning and management of common acute health conditions. Prerequisites: GRNU 305 and GRNU 333. Co-requisites: GRNU 306 and GRNU 343.

Credits: 1.00

**GRNU 345 - Pediatric Conc Adv Pract Nurs**

APN care to children and their families with an emphasis on the developmental, psychosocial, cultural, ethical, and spiritual needs of children and families. Prerequisite: GRNU 306. Co-requisites: GRNU 343, GRNU 344, GRNU 361, and GRNU 369.

Credits: 3.00

**GRNU 346 - Prim Care Mgt Child&Adolescents**

Focus will be on the assessment, evaluation and management of common episodic and chronic health conditions in children by the FNP. Prerequisites: GRNU 306, GRNU 343, GRNU 344, and GRNU 345. Co-requisite: GRNU 369.

Credits: 3.00

**GRNU 347 - Pract:Prim Care Mgt Child&Adol**

Application in a clinical setting(s): assessment, evaluation, diagnostic reasoning, and management of common episodic and chronic health conditions in provision of primary care to children and adolescents. Prerequisites: GRNU 306, GRNU 360, GRNU 361, and GRNU 363. Co-requisites: GRNU 346 and GRNU 369.

Credits: 1.00

**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 353 - Theory/Pract Prim Care Women**

Course provides the theoretical basis needed by ANPs for the primary care of women. Opportunities for application are provided through clinical practice (1 credit class, 1.5 credit clinical). Prerequisites: GRNU 306, GRNU 310, GRNU 351. Pre/co-requisites: GRNU 300, GRNU 307.

Credits: 2.50

**GRNU 357 - Prct Cnsder in Care Older Adlt**

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 - Pract in Primary Care ofAdults**

This course provides an opportunity for the student to choose a clinical specialty area caring for older adults to refine their assessment, diagnostic and management skills. Pre/co-requisites: GRNU 367, GRNU 368, GRNU 360, and GRNU 361.

Credits: 2.00

**GRNU 359 - Pract:Prim Care in Family Prac**

Practicum course focuses on refinement of critical thinking related to diagnostic and therapeutic interventions in the provision of primary health care to individuals and families. Pre/co-requisites: GRNU 345, GRNU 346, and GRNU 347.

Credits: 2.00

**GRNU 360 - Prim Care Acute&Comm Hlth Prob**

Focus will be on the assessment, evaluation and management of common episodic conditions in primary care FNP & ANP. Prerequisites: GRNU 346, GRNU 347, GRNU 367, and GRNU 368. Co-requisite: GRNU 361.

Credits: 3.00

**GRNU 361 - Pract:Prim Cr Acute&Comm Hlth**

Practicum experience for assessment, evaluation and management of common episodic conditions in primary care FNP & ANP. Prerequisites: GRNU 346, GRNU 347, GRNU 367, and GRNU 368. Co-requisite: GRNU 360.

Credits: 1.00

**GRNU 362 - Thry & Pract in Nurs Admin**

Credits: 6.00

**GRNU 367 - Prim Care Mgt Hlth Care Women**

Advanced nursing practice focusing on the assessment, diagnosis, management, and evaluation of acute and chronic health conditions commonly encountered in the area of women's health.

Prerequisites: GRNU 343, GRNU 344, GRNU 306, GRNU 369. Co-requisite: GRNU 368.

Credits: 2.25

**GRNU 368 - Pract:Prim Care Mgt HlthCr Wom**

Practicum experience for assessment, evaluation and management of common episodic conditions of women in primary care for FNP/ANP. Prerequisites: GRNU 343, GRNU 344, GRNU 306, and GRNU 369. Co-requisite: GRNU 367.

Credits: 0.75

**GRNU 369 - Adv Neuropsychopharmacotherapy**

In-depth examination of the pharmacokinetics and pharmacodynamics of drugs used to treat individuals with acute and chronic pain, neurologic and psychiatric illnesses across the lifespan.

Pre/co-requisite: GRNU 305 recommended.

Credits: 3.00

**GRNU 372 - Thry & Pract in Nurs Educ**

Credits: 6.00

**GRNU 374 - Adv Nurs I: Ind Psychotherapy**

Bio-psycho-social-spiritual orientation provides the framework of course. Course introduces the theoretical underpinnings to the principles of advanced practice psychiatric mental health nursing.

Prerequisites: GRNU 306, GRNU 333, GRNU 336, and GRNU 369. Co-requisite: GRNU 375.

Credits: 3.00

**GRNU 375 - Pract:AdvNurs I:Ind Psychthrpy**

Practicum experience for the assessment, diagnosis, and treatment of individuals across the lifespan using psychotherapeutic modalities. Prerequisites: GRNU 306, GRNU 333, GRNU 336, and GRNU 369. Co-requisite: GRNU 374.

Credits: 2.00

**GRNU 376 - Adv Nurs II:Family Therapy**

State of the science family theories and research frame advanced practice mental health nursing to treat family systems within the context of community and ecosystems. Pre/co-requisites: GRNU 306, GRNU 333, GRNU 336, GRNU 369, and GRNU 370.

Credits: 3.00

**GRNU 377 - Pract:Adv Nurs II:Fam Therapy**

Practicum experience for the assessment and treatment of family systems within the context of community and ecosystems. Pre/co-requisites: GRNU 306, GRNU 333, GRNU 336, GRNU 369, GRNU 374, and GRNU 376.

Credits: 2.00

**GRNU 378 - Adv Nurs III:Couple/Grp/Syst**

State of the science theory and research for the delivery of advanced practice psychiatric nursing interventions to couples, groups and systems. Prerequisites: GRNU 306, GRNU 333, GRNU 336, GRNU 369, GRNU 374, GRNU 375, GRNU 376, and GRNU 377. Co-requisite: GRNU 379.

Credits: 3.00

**GRNU 379 - Pract:AdvNursIII:Couple,Grp,Sy**

Practicum experience for the assessment and treatment of couples, groups, and systems through the application of psychotherapeutic models. Prerequisites: GRNU 306, GRNU 333, GRNU 336, GRNU 369, GRNU 374, GRNU 375, GRNU 376, and GRNU 377. Co-requisite: GRNU 378.

Credits: 2.00

**GRNU 380 - Nsg Mgt of Health Care Envrnmt**

Examination of roles and responsibilities of nurse managers and organizational systems theories. Strategies to improve clinical quality and organizational effectiveness in healthcare environments are explicated. Pre/co-requisite: GRNU 300, GRNU 301.

Credits: 3.00

**GRNU 381 - Mgt of Professional Nsg Prctce**

Focus on the application of human resource management theories and processes to healthcare and role of nurse manager in developing and evaluating professional practice environments. Pre/co-requisite: GRNU 380.

Credits: 3.00

**GRNU 382 - Fin Hlth Care Mgt/Strat Plnng**

Links among mission, strategic vision management, financial management, operations management, marketing and organizational outcomes are explicated as a basis for managerial decision making. Pre/co-requisite: GRNU 381.

Credits: 3.00

**GRNU 385 - Clinical Management Practicum**

Opportunity to integrate management/administration theory, operations and research in a health care setting with a preceptor and benefit of biweekly seminars. Pre/co-requisite: GRNU 382.

Credits: 6.00

**GRNU 386 - Prim Care Chronic/Cmplx Hlth**

Focuses on the refinement diagnostic and therapeutic interventions in the provision of primary health care to individuals and families with chronic and complex health conditions. Pre/co-requisites: GRNU 358, GRNU 360, GRNU 361, and GRNU 397.

Credits: 3.00

**GRNU 387 - Pract:PrimCareChronic/Cplx ANP**

Focuses on the refinement diagnostic and therapeutic interventions in the provision of primary health care to individuals and families with chronic and complex health conditions. Practicum. Pre/co-requisites: GRNU 358, GRNU 360, GRNU 361, GRNU 388, and GRNU 397.

Credits: 2.00

**GRNU 388 - Pract:PrimCareChronic/Cplx FNP**

Focuses on the refinement diagnostic and therapeutic interventions in the provision of primary health care to individuals and families with chronic and complex health conditions. Practicum. Pre/co-requisites: GRNU 358, GRNU 360, GRNU 361, and GRNU 397.

Credits: 2.50

**GRNU 390 - Master's Project**

Self-designed clinical paper or innovative production pertinent to advanced nursing practice. Prerequisite: GRNU 300, GRNU 301, GRNU 310, GRNU 315. Co-requisite: GRAD 397.

Credits: 3.00

**GRNU 391 - Master's Thesis Research**

Prerequisite: GRNU 300, GRNU 301, GRNU 310, GRNU 315; approval of thesis committee. Co-requisite: GRAD 397.

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

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Credits: 3.00

**GRK 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: 3.00

**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: 3.00

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Graduate Courses in Greek & Latin (GKLT)

GKLT 300 - Proseminar

Introduction to philology. Students will normally take this their first semester.

Credits: 3.00

GKLT 381 - Seminar

Intensive study at the graduate level of Greek and Latin authors not read in the candidate's undergraduate program.


Credits: 3.00

GKLT 391 - Master's Thesis Research

Credits: 5.00

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Graduate Courses in Health (HLTH)

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⌵ UVM Home	<h2>2012-2013 Catalogue</h2>  <h3>Graduate Courses in Health Education (EDHE)</h3>  <div><b>EDHE 200 - Contemporary Issues</b> 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</div> <div><b>EDHE 208 - School Health Programs</b> 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: 3.00</div> <div><b>EDHE 211 - Community Health Ed</b> 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: 3.00</div> <div><b>EDHE 220 - Stress Mgmt Hlth Professionals</b> 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: 3.00</div> <div><b>EDHE 295 - Lab Experience in Educ</b> 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: 3.00</div> <div><b>EDHE 391 - Master's Thesis Research</b> Thesis topic must be approved by a faculty committee. Credits: 1.00 to 12.00</div>			
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## 2012-2013 Catalogue

### Graduate Courses in Higher Education (EDHI)

- 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 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 363 - Controversies of the Academy**

Critical and timely look at challenges confronting campus leaders. Implications for administrative practice shape seminar conversations of readings and case studies. Pre/co-requisite: Graduate standing or permission.

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

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## Graduate Courses in Historic Preservation (HP)

### 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: 3.00

### 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: 3.00

### 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: 3.00

### 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: 3.00

### 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: 3.00

### 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: 3.00

### HP 303 - Grad Internship

Participants will devote a semester to preservation within an appropriate institution or agency. Prerequisite: Historic Preservation majors only.

Credits: 3.00

Graduate Courses in Historic Preservation (HP)

- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- HP 303 - Grad Internship**

Participants will devote a semester to preservation within an appropriate institution or agency. Prerequisite: Historic Preservation majors only.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**HP 391 - Master's Thesis Research**

Total of six hours required.

Credits: 6.00

**HP 395 - Advanced Special Topics**

Credit as arranged.

Credits: 3.00

**HP 397 - Special Readings & Research**

Credit as arranged.

Credits: 3.00

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### Graduate Courses in History (HST)

- HST 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: HP 201.

Credits: 3.00
- HST 209 - 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: 3.00
- 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: 3.00
- HST 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). Prerequisites: Junior/Senior/Graduate standing; twelve hours of History. Cross-listed with: CLAS 221, CLAS 222.

Credits: 3.00
- HST 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/Graduate standing; twelve hours of History. Cross-listed with: CLAS 221, CLAS 222.

Credits: 3.00
- HST 224 - Seminar in Medieval Europe**

Selected topics on Europe from the Fall of Rome to the Renaissance. Prerequisites: Twelve hours of History including HST 015; Junior/Senior/Graduate standing.

Credits: 3.00
- 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: 3.00
- HST 226 - Seminar in Modern Europe**

Selected topics on European history from 1815 to present. Prerequisites: Twelve hours of History including HST 014 or HST 016; Minimum Junior standing. Cross-listed with: HS 226.

Credits: 3.00

**HST 227 - Seminar in Modern Europe**

Selected topics on European history from 1815 to present. Prerequisites: Twelve hours of History, including HST 014 or HST 016; Minimum Junior standing. Cross-listed with: HS 227.

Credits: 3.00

**HST 237 - Imperial Russian History**

Selected topics in Russian intellectual, social, and cultural history from the Petrine era to the end of the Romanov rule. Pre/co-requisites: Junior/Senior/ Graduate Standing; twelve hours of History including HST 137.

Credits: 3.00

**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: 3.00

**HST 240 - D2: Compar Slavery:Hst 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: 3.00

**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: 3.00

**HST 250 - D2: Seminar in East Asian Hst**

Topics in the history of East Asia. Prerequisite: Junior/ Senior/Graduate standing; twelve hours of History.

Credits: 3.00

**HST 252 - D2: 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: 3.00

**HST 265 - Seminar in Canadian History**

Topics in 19th and 20th century Canadian history; national development, regionalism, multiculturalism, and international relations. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.

Credits: 3.00

**HST 267 - Environmental History Seminar**

Advanced reading and research on the role and influence of nature on human history and how people and cultures have influenced the natural world. Prerequisites: 12 hours of History; minimum Junior standing. Cross-listed with: ENVS 267.

Credits: 3.00

**HST 271 - 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/ Prerequisite: Minimum Junior standing; twelve hours of History.  
Credits: 3.00

**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: 3.00

**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: 3.00

**HST 274 - 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: 3.00

**HST 284 - Seminar in Vermont History**

Topical approach to Vermont history through original research utilizing primary sources available at UVM, the Vermont Historical Society, and the Vermont State Archives. Prerequisite: Junior/Senior/Graduate standing; twelve hours History, including HST 184 or permission.  
Credits: 3.00

**HST 287 - Seminar in Historiography**

Topics and methods in contemporary historical writing. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.  
Credits: 3.00

**HST 295 - Special Topics Seminar**

See Schedule of Courses for specific titles. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.  
Credits: 3.00

**HST 296 - Special Topics Seminar**

See Schedule of Courses for specific titles. Prerequisite: Junior/Senior/Graduate standing; twelve hours of History.  
Credits: 3.00

**HST 300 - Graduate Tutorial**

Readings and research in a specific area; topics to be individually arranged; attendance in appropriate undergraduate courses may be required (see undergraduate catalogue). Prerequisite: Instructor Permission. Variable credit.  
Credits: 3.00

**HST 301 - Graduate Historiography**

Historical methods, philosophy of history, and the history of history writing.  
Credits: 3.00

**HST 351 - American Cultural History**

Intended primarily for students in Historic Preservation, but open to other Graduate students.  
Credits: 3.00

**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: 6.00

**HST 395 - Advanced Special Topics**  
Credits: 3.00

**HST 397 - Special Readings and Research**  
Directed individual study of areas not appropriately covered by existing courses. Variable credit.  
Credits 1-6.  
Credits: 3.00

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### Graduate Courses in Human Development & Fam Stdies (HDFS)

#### 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 - D2:Adv Gender & Sexual Iden

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 289 - Adv Theories of Human Dev

Comparative overview of major theoretical perspectives in the study of human development with particular emphasis on the interplay of method and theory and the applied implications of each theoretical model and theory. Prerequisites: HDFS 161 and HDFS 189; Junior standing.

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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Graduate Courses in Humanities (HUMN)

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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Graduate Courses in Internal Medicine (MED)

MED 395 - Advanced Special Topics

See Schedule of Courses for specific title.

Credits: 3.00

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🏠 UVM Home	<h2>2012-2013 Catalogue</h2>  <h3>Graduate Courses in Latin (LAT)</h3>  <p><b>LAT 203 - Republican Prose</b> Extensive reading in Caesar and Sallust, and in the speeches of Cicero. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 204 - Epic Poets</b> Extensive reading in Lucretius, Vergil, Ovid, and others. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 211 - Latin Prose Style</b> Readings in literary prose analyzed stylistically and imitated in composition. Required of Latin majors. Credits: 3.00</p> <p><b>LAT 212 - Latin Prose Style</b> Readings in literary prose analyzed stylistically and imitated in composition. Required of Latin majors. Credits: 3.00</p> <p><b>LAT 227 - Roman Lyric Poets</b> Selections from the works of Catullus, Horace, Propertius, and Tibullus. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 251 - Roman Letters</b> Letters of Cicero, Horace, and Pliny. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 252 - Comedy</b> Two plays of Plautus and Terence. Study of the precursors of this literary form. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 253 - Roman Oratory</b> 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: 3.00</p> <p><b>LAT 255 - Historians of the Empire</b> Historians of the Empire. Augustus, Res Gestae; Tacitus, Annals, I-IV; selections from Suetonius and Ammianus Marcellinus. Alternate years, as needed. Credits: 3.00</p> <p><b>LAT 256 - Satire</b> Selections from Horace, Persius, Juvenal, Petronius. Study of the development of this literary form.</p>			
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Alternate years, as needed.  
Credits: 3.00

**LAT 271 - Silver Latin**

Extensive reading of post-Augustan authors not included in other advanced courses. Alternate years, as needed.  
Credits: 3.00

**LAT 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: 3.00

**LAT 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: 6.00

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### Graduate Courses in Leadership and Policy Studies (EDLP)

- EDLP 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: 6.00
- EDLP 264 - Evaluation in Ed & Soc Svcs**

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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00

**EDLP 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: 3.00

**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: 3.00

**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: 3.00

**EDLP 336 - Curr Mgmt in Ed & Soc Srv Org**

Approaches to coordinating and managing curriculum or programs at the classroom, department, or organizational level; examination of factors effecting design and delivery of curriculum; developing curriculum guides and assessment methods. Prerequisite: Eighteen hours of education and related areas or appropriate professional certification.

Credits: 3.00

**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: 3.00

**EDLP 350 - Survey Research Methods**

This course introduces survey research design, implementation and planning processes.

Credits: 3.00

**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: 3.00

**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: 3.00

**EDLP 355 - System Analysis & Planning**

An analysis of and experience with planning theories and techniques that derive from General Systems Theory.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EDLP 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

**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: 3.00

**EDLP 387 - Collaborative Consultation**

Cross-listed with: EDSP 387.

Credits: 3.00

**EDLP 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee.

Credits: 3.00

**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: 3.00

**EDLP 409 - Applied Educational Research**

Introduction to philosophical and methodological foundations of interpretive and empirical-analytic research with emphasis on systems change. Preparation of critical readers and synthesizers of research studies. Prerequisite: Doctoral level standing.

Credits: 3.00

**EDLP 419 - Quantitative Research Methods**

This course provides knowledge and skill in conducting quantitative research studies for education and social services. Students apply social science research methods in a laboratory setting and produce a model study. Pre/co-requisite: EDLP 409.

Credits: 3.00

**EDLP 429 - Adv Quantitative Rsch Methods**

This course covers advanced statistical techniques that are commonly used in education and social sciences. Pre/co-requisite: EDLP 419.

Credits: 3.00

**EDLP 431 - Adv Sem Organizational Ldrshp**

Students inquire into new theories on leadership and the cognitive processes that define the intentions, values, beliefs, and future perspectives of themselves as leaders. Prerequisite: Doctoral level standing.

Credits: 3.00

**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: 3.00

**EDLP 437 - Sem on Educational Policy**

An examination of the nature and function of education policy, emphasizing the structure and processes in education policy formulation and implementation. Prerequisite: Doctoral level standing.

Credits: 3.00

**EDLP 439 - Hierarchical Linear Modeling**

This course serves as an introduction to the concepts and applications of Hierarchical Linear Modeling. Pre/co-requisites: EDLP 419 and EDLP 429.

Credits: 3.00

**EDLP 449 - Dissertation Writing Seminar**

This seminar is designed for Graduate students working on their dissertation proposals or dissertations.

Credits: 3.00

**EDLP 491 - Doctoral Dissertation Research**

Credits: 6.00

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## Graduate Courses in Library Science (EDLI)

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

Graduate Courses in Library Science (EDLI)

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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: 3.00
- 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: 3.00
- 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: 3.00
- 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: 3.00

**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: 3.00

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Graduate Courses in Linguistics (LING)

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http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=LING&agc=AGC&term=201209&SM=coursemenu.html[9/26/2018 10:17:43 AM]

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Explores the relationships between language and literacy and cultural-linguistic influences on language/literacy development. Topics include phonemic awareness, phonics instruction, fluency, comprehension, spelling and writing. Pre/co-requisite: EDLT 222; nine graduate credits in related areas; Instructor permission.  
Credits: 3.00

**EDLT 391 - Master's Thesis Research**  
Credits: 1.00 to 18.00

**EDLT 395 - Special Topics**  
Credits: 1.50

**EDLT 397 - Problems in Education**  
Credits: 3.00

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Graduate Courses in Materials Science (MATS)

MATS 391 - Master's Thesis Research

Credits: 1.00 to 18.00

MATS 491 - Doctoral Dissertation Research

Credits: 1.00 to 18.00

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### Graduate Courses in Mathematics (MATH)

- MATH 207 - Probability Theory**

Distributions of random variables and functions of random variables. Expectations, stochastic independence, sampling and limiting distributions (central limit theorems). Concepts of random number generation. Prerequisites: MATH 121; STAT 151 or STAT 153 recommended. Cross-listed with: STAT 251, BIOS 251.

Credits: 3.00
- MATH 221 - Deterministic Modls Oper Rsch**

The linear programming problem. Simplex algorithm, dual problem, sensitivity analysis, goal programming. Dynamic programming and network problems. Prerequisites: MATH 124; MATH 121 desirable. Cross-listed with: CSYS 221.

Credits: 3.00
- 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: 3.00
- MATH 224 - Algorithm Design & Analysis**

Comprehensive analysis of common algorithmic paradigms including greedy algorithms, divide and conquer, dynamic programming, graph algorithms, and approximation algorithms. Complexity hierarchies. Prerequisites: CS 124, MATH 173 recommended. Cross-listed with: CS 224.

Credits: 3.00
- 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: 3.00
- MATH 235 - Mathematical Models & Analysis**

Techniques of Undergraduate calculus and linear algebra are applied for mathematical analysis of models of natural and human-created phenomena. Students are coached to give presentations.

Prerequisites: MATH 121 and any of MATH 124, MATH 230, or MATH 271.

Credits: 3.00
- 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: MATH 230.

Credits: 3.00

**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: 3.00

**MATH 238 - Applied Computational Methods**

Direct and iterative methods for solving linear systems; numerical solution of ordinary and partial differential equations. Focus will be on application of numerical methods. Prerequisites: MATH 121; either MATH 124 or MATH 271.

Credits: 3.00

**MATH 240 - Fourier Series&Integral Trans**

Fourier series, orthogonal functions, integral transforms and boundary value problems. Prerequisite: MATH 230 or MATH 271.

Credits: 3.00

**MATH 241 - Anyl in Several Real Vars I**

Properties of the real numbers, basic topology of metric spaces, infinite sequences and series, continuity. Prerequisites: MATH 052, MATH 121, MATH 124 or Instructor permission.

Credits: 3.00

**MATH 242 - Anyl Several Real Variables II**

Differentiation and integration in n-space, uniform convergence of functions, fundamental theorem of calculus, inverse and implicit function theorems. Prerequisite: MATH 241.

Credits: 3.00

**MATH 251 - Abstract Algebra I**

Basic theory of groups, rings, fields, homomorphisms, and isomorphisms. Prerequisite: MATH 052, MATH 124, or Instructor permission.

Credits: 3.00

**MATH 252 - Abstract Algebra II**

Modules, vector spaces, linear transformations, rational and Jordan canonical forms. Finite fields, field extensions, and Galois theory leading to the unsolvability of quintic equations. Prerequisite: MATH 251.

Credits: 3.00

**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: 3.00

**MATH 257 - Topics in Group Theory**

Topics may include abstract group theory, representation theory, classical groups, Lie groups. Prerequisite: MATH 251.

Credits: 3.00

**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: 3.00

**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: 3.00

**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. Co-requisite: MATH 271 or MATH 230 or Instructor permission. Cross-listed with: CSYS 266.

Credits: 3.00

**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. Prerequisite: MATH 124, MATH 230, or Instructor permission. Cross-listed with: CSYS 268.

Credits: 3.00

**MATH 271 - Adv Engineering Mathematics**

Differential equations and linear algebra, including linear ordinary differential equations, Laplace transforms, matrix theory, and systems of differential equations. Examples from engineering and physical sciences. Prerequisite: MATH 121. Credit not granted for both MATH 230 and MATH 271. No credit for Mathematics majors.

Credits: 3.00

**MATH 272 - Applied Analysis**

Basics of Fourier series, partial differential equations of mathematical physics, functions of a complex variable, Cauchy's theorem, integral formula. Prerequisites: MATH 230 or MATH 271.

Credits: 3.00

**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: 3.00

**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: 3.00

**MATH 275 - Adv Engineering Analysis I**

Analytical methods for the solution of partial differential equations in engineering mechanics and physics, including: eigenfunction expansions; Fourier series; Sturm-Liouville theory and special functions. Prerequisites: Graduate standing in Engineering, Mathematics, or physical sciences or permission. Not available for 300-level credit for Mathematics students. Cross-listed with: CE 304 and ME 304.

Credits: 3.00

**MATH 276 - Adv Engineering Analysis II**

Advanced analytical techniques for problems in engineering mechanics and physics, including: integral transform methods, Green's functions, perturbation methods, and variational calculus. Prerequisites: ME 304 or equivalent. Not available for 300-level credit for Mathematics students.

Cross-listed with: CE 305, ME 305.

Credits: 3.00

**MATH 278 - Intro Wavelets & Filter Banks**

Continuous and discrete-time signal processing. Continuous wavelet transform. Series expansion of continuous and discrete-time signals. Perfect reconstruction, orthogonal and biorthogonal filter banks. Wavelets from filter. Pre/co-requisites: EE 171, or Instructor permission. Cross-listed with: EE 274.

Credits: 3.00

**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: 4.00

**MATH 300 - Principles of Complex Systems**

Introduction to fundamental concepts of complex systems. Topics include: emergence, scaling phenomena, and mechanisms, multi-scale systems, failure, robustness, collective social phenomena, complex networks. Students from all disciplines welcomed. Pre/co-requisites: Calculus and statistics required; Linear Algebra, Differential Equations, and Computer programming recommended but not required. Cross-listed with: CSYS 300.

Credits: 3.00

**MATH 303 - Complex Networks**

Detailed exploration of distribution, transportation, small-world, scale-free, social, biological, organizational networks; generative mechanisms; measurement and statistics of network properties; network dynamics; contagion processes. Students from all disciplines welcomed. Pre/co-requisites: MATH 300/CSYS 300, Calculus, and Statistics required. Cross-listed with: CSYS 303.

Credits: 3.00

**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: 3.00

**MATH 331 - Theory of Func of Complex Var**

Differentiation, integration, Cauchy-Riemann equations, infinite series, properties of analytic continuation, Laurent series, calculus of residues, contour integration, meromorphic functions, conformal mappings, Riemann surfaces. Prerequisite: MATH 242.

Credits: 4.00

**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: 3.00

**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: 4.00

**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: 3.00

**MATH 337 - Numerical Diff Equations**

Numerical solution and analysis of differential equations: initial-value and boundary-value problems; finite difference and finite element methods. Prerequisites: MATH 237; either MATH 230 or MATH 271 recommended.  
Credits: 3.00

**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: 3.00

**MATH 351 - Topics in Algebra**

Topics will vary each semester and may include algebraic number theory, algebraic geometry, and the arithmetic of elliptic curves. Repeatable for credit with Instructor permission. Prerequisite: MATH 252.  
Credits: 3.00

**MATH 353 - Point-Set Topology**

Topological spaces, closed and open sets, closure operators, separation axioms, continuity, connectedness, compactness, metrization, uniform spaces. Prerequisite: MATH 241.  
Credits: 3.00

**MATH 354 - Algebraic Topology**

Homotopy, Seifert-van Kampen Theorem; simplicial, singular, and Cech homology. Prerequisite: MATH 353.  
Credits: 3.00

**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: 3.00

**MATH 382 - Seminar**

Topical discussions with assigned reading. Required of M.S. degree candidates.  
Credits: 1.00

**MATH 391 - Master's Thesis Research**

Credits: 5.00

**MATH 395 - Special Topics**

Subject will vary from year to year. May be repeated for credit.  
Credits: 6.00

**MATH 491 - Doctoral Dissertation Research**

Credits: 12.00

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### Graduate Courses in Mathematics for Educators (MAED)

- MAED 205 - Math as a Second Language**

Deep conceptual understanding of the operations of arithmetic and interrelationships among arithmetic, algebra, and geometry; applications to the K-8 classroom. Pre/co-requisite: Admission to the VMI program.

Credits: 3.00
- MAED 210 - Functions/Algebra for Teaching**

Functions, graphs, inverse functions, linear functions, straight lines, linear equations and inequalities, and applications; applications to the K-8 classroom. Pre/co-requisites: MAED 205, or Instructor permission.

Credits: 3.00
- MAED 215 - Trig/Algebra for Teachers II**

Similar triangles, trigonometric functions, applications to measurement, periodic phenomena; quadratic functions; applications to the K-8 classroom. Pre/co-requisites: MAED 205 and MAED 210, or Instructor permission.

Credits: 3.00
- MAED 220 - Measure/Probabil for Teachers**

Measurement (length, area and volume), probability, application to problem solving, and the ways in which these concepts develop across the K-12 curriculum. Pre/co-requisites: MAED 205, MAED 201, and MAED 215, or Instructor permission.

Credits: 3.00
- MAED 225 - Number Theory for Teachers**

Division algorithm, prime numbers, fundamental theorem of arithmetic, factors and multiples, number bases, arithmetic progressions; emphasis on how number theory is taught in grades K-8. Pre/co-requisites: MAED 205, MAED 210, and MAED 215.

Credits: 3.00
- MAED 230 - Alg/Geom for Teachers III**

Exponents, compound interest, exponential functions, logarithms, the base e, growth and decay, research in mathematics education and K-8 curriculum projects. Pre/co-requisites: MAED 205, MAED 210 and and MAED 215, or Instructor permission.

Credits: 3.00
- MAED 235 - Calculus for Teachers I**

Limits, instantaneous change, differentiation, optimization, applications to the K-8 classroom, and K-8 curriculum projects. Pre/co-requisites: MAED 205, MAED 210, MAED 215, MAED 220, and MAED 230 or Instructor permission.

Credits: 3.00

**MAED 240 - Calculus for Teachers II**

Continued study of calculus and its relationship to the K-8 curriculum. Topics include infinite series, calculating area, the definite integral, Fundamental Theorem of Calculus. Pre/co-requisite: MAED 235, or Instructor permission.

Credits: 3.00

**MAED 300 - Statistics & Research I**

Introduction to statistics with emphasis on research in K-8 education. Representing and summarizing data, measures of relationship between variables, inference from sample data to population. Pre/co-requisites: MAED 205, MAED 210, and MAED 215, or Instructor permission.

Credits: 3.00

**MAED 305 - Statistics & Research II**

Error bars in graphs, margins of error in surveys, and confidence intervals; interpret and critique educational research studies; analysis of school assessment data activities. Pre/co-requisites: MAED 300, or Instructor permission.

Credits: 3.00

**MAED 310 - Statistics & Research III**

Regression, chi-square analysis, design of research studies, reading of research on K-8 instructional practice, design action research project. Pre/co-requisites: MAED 305, or Instructor permission.

Credits: 3.00

**MAED 315 - Capstone VMI Experience**

This course concludes the VMI's school-based-research component. Teachers synthesize their coursework and field experiences and revisit key mathematical concepts from arithmetic through calculus. Pre/co-requisite: Enrollment in VMI program.

Credits: 3.00

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## Graduate Courses in Mechanical Engineering (ME)

### 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: 3.00

### ME 207 - Bioengineering

Introduction to bioengineering including biomechanics, rehabilitation, instrumentation, imaging, biomaterials, and transport. Pre/co-requisites: Senior/Graduate standing in Engineering; Instructor permission.

Credits: 3.00

### ME 208 - Biomechanics: Tissue Engr

Solid biomechanics including structure, function and mechanical properties of biological tissues. Tissue engineering involving cell mechanics, scaffold materials, and signaling. Current literature topics are covered. Pre/co-requisites: Senior/Graduate standing in Engineering; Instructor permission.

Credits: 3.00

### ME 209 - Biomechanics: Transport Proc

Transport and kinetic processes to vascular biology, respiratory mechanics and medicine. Steady and unsteady laminar flow, pulse wave reflections, curved and collapsible tube flow, turbulence. Pre/co-requisites: Senior/Graduate standing in Engineering; Instructor permission.

Credits: 3.00

### ME 210 - 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. Prerequisites: EE 171 or ME 111. Cross-listed with: EE 210.

Credits: 3.00

### ME 230 - Orbital Mechanics

Motion of spacecraft in a central gravitational field. Two and restricted three-body problems; Kepler's equation; orbital maneuvers and rendezvous; interplanetary and lunar trajectories. Prerequisite: ME 012. Co-requisites: ME 111 or Instructor permission.

Credits: 3.00

### 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: 3.00

**ME 237 - Turbulence**

Description of turbulent flows; statistical and modeling of turbulent flows; Navier Stokes as a dynamical system; experimental and numerical approaches. Prerequisite: ME 143.

Credits: 3.00

**ME 238 - Energy Systems Engineering**

Engineering assessment of both potentially sustainable and unsustainable practical primary energy systems. Examination of options of meeting demand and impacts on the environment. Prerequisite: ME 042.

Credits: 3.00

**ME 239 - Rocket Propulsion**

Flight mechanics and propulsion requirements for atmospheric and space flight. Thermochemistry of fuels and propellants. Operating principles of chemical, electrical and nuclear propulsion systems. Pre/co-requisites: ME 143/ME 240 recommended or permission of the Instructor.

Credits: 3.00

**ME 240 - Compressible Flow**

Theory of compressible flow. Normal and oblique shocks; expansion waves; unsteady wave motion; method of characteristics; linearized external flows; conical and 3D flows. Prerequisite: ME 143 or equivalent.

Credits: 3.00

**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: 3.00

**ME 242 - Adv Engr Thermodynamics I**

Foundations of statistical mechanics. Gases and crystals. Chemical equilibrium. Irreversible processes. Prerequisite: Senior/Graduate standing or permission.

Credits: 3.00

**ME 243 - Incompressible Flow**

Intermediate treatment of incompressible fluid flow; Navier- Stokes equations; two-dimensional potential flows; wing theory; vorticity and vortex structures; laminar and turbulent boundary layers. Prerequisites: ME 143 or equivalent.

Credits: 3.00

**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: 2.00

**ME 245 - Advanced Heat Transfer I**

Analytical methods for multidimensional steady and transient heat conduction; phase change and moving boundaries. Thermal radiation exchange in enclosures; view factors; emitting/absorbing gases. Prerequisites: ME 144 or equivalent, or by Instructor permission.

Credits: 3.00

**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: 2.00

**ME 247 - Centrifugal Pumps**

Centrifugal pump design principles and practice; performance limits; cavitation; design tools and pump design optimization. Prerequisite: ME 244.

Credits: 2.00

**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: 2.00

**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.

Prerequisite: ME 143 or equivalent.

Credits: 3.00

**ME 252 - Mechanical Behavior Materials**

Isotropic and anisotropic elasticity; theory of plasticity; deformation mechanisms in crystalline solids; dislocation theory; creep behavior; advanced fatigue and fracture mechanisms. Prerequisites: ME 101; Instructor permission.

Credits: 3.00

**ME 255 - Adv Engineering Materials**

Advanced material processing; physical and mechanical principles of high-temperature alloys, light-weight materials, thin films, nanomaterials, and biomedical materials; elements of computational materials design. Prerequisites: Senior/Graduate standing; or Instructor permission.

Credits: 3.00

**ME 257 - Composite Materials**

Fibers, matrices. Unidirectional and short fiber composites. Experimental characterization.

Prerequisite: ME 101.

Credits: 3.00

**ME 265 - Integrated Product Developmnt**

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. Cross-listed with: BSAD 293.

Credits: 3.00

**ME 270 - Structural Dynamics**

Vibrations, matrices, earthquake engineering, stability and wave propagation. Prerequisites:

Senior/Graduate standing in Engineering or physical sciences, or Instructor permission. Cross-listed with: CE 272.

Credits: 3.00

**ME 271 - Micro and Nano Systems**

Operating principles, fabrication and design of engineered systems with submillimeter dimensions.

Prerequisites: Senior/Graduate standing in Engineering or physical sciences.

Credits: 3.00

**ME 281 - Seminar**

Presentation and discussion of advanced mechanical engineering problems and current developments. Prerequisite: Senior/Graduate engineering enrollment.

Credits: 1.00

**ME 282 - Seminar**

Presentation and discussion of advanced mechanical engineering problems and current developments. Prerequisite: Senior/Graduate engineering enrollment.

Credits: 1.00

**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: 2.00

**ME 285 - Biomedical Engineering Seminar**

Presentation and discussion of advanced biomedical engineering problems and current research developments. Prerequisite: Senior/Graduate engineering enrollment.

Credits: 1.00

**ME 295 - Advanced 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: Senior/Graduate standing.

Credits: 6.00

**ME 304 - Adv Engineering Analysis I**

Analytical methods for the solution of partial differential equations in engineering mechanics and physics, including: eigenfunction expansions; Fourier series; Sturm-Liouville theory and special functions. Prerequisites: Graduate standing in engineering, mathematics, or physical sciences or permission. Cross-listed with CE 304 and MATH 275.

Credits: 3.00

**ME 305 - Adv Engineering Analysis II**

Advanced analytical techniques for problems in engineering mechanics and physics, including: integral transform methods Green's functions, perturbation methods, and variational calculus.

Prerequisite: ME 304 or equivalent. Cross-listed with: CE 305/MATH 276.

Credits: 3.00

**ME 312 - Adv Bioengineering Systems**

Advanced bioengineering design and analysis for current biomedical problems spanning molecular, cell, tissue, organ, and whole body systems including their interactions and emergent behaviors.

Cross-listed with: CSYS 312.

Credits: 3.00

**ME 321 - Special Problems in Fluid Mech**

Advanced topics in fluid mechanics in which there is a particular student and staff interest.

Credits: 3.00

**ME 323 - Special Prob in Thermodynamics**

Advanced topics in thermodynamics in which there is a particular student and staff interest.

Credits: 3.00

**ME 325 - Special Problems in Materials**

Advanced topics in behavior of materials in which there is a particular student and staff interest.

Credits: 3.00

**ME 330 - Matrix Meth in Struct Dynamics**

Matrices, eigenvalue problems, forced vibration, wave propagation.

Credits: 3.00

**ME 333 - Stress Analysis**

Theory and experimental method of measuring static and dynamic stress and strain.

Credits: 3.00

**ME 336 - Continuum Mechanics**

Tensors, conservation laws, field equations for solids and fluids.

Credits: 3.00

**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: 3.00

**ME 343 - Advanced Fluid Dynamics**

Stress in continuum; kinematics, dynamics; potential fields; Wing theory; Navier-Stokes equation; hydrodynamic stability; turbulence; laminar, turbulent boundary layer theory; transient flows; free laminar, turbulent flows; mixing.

Credits: 3.00

**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: 3.00

**ME 345 - Advanced Heat Transfer II**

Advanced treatment of forced and free convection; thermal boundary layers; analytical and approximate solution methods. Phase change heat transfer. Micro/nano-scale heat transfer.

Prerequisite: ME 245 or equivalent.

Credits: 3.00

**ME 346 - Advanced Gas Dynamics**

Transonic flows; hypersonic flows and shock relations; boundary layer interactions; high-temperature gases and aerothermodynamics; rarefied flows; computational methods. Prerequisite: ME 240 or equivalent.

Credits: 3.00

**ME 350 - Multiscale Modeling**

Computational modeling of the physics and dynamical behavior of matter composed of diverse length and time scales. Molecular simulation. Coarse-graining. Coupled atomistic/continuum methods.

Cross-listed with: CSYS 350.

Credits: 3.00

**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: 4.00

**ME 372 - Systems Engineering**

Advanced course in systems engineering, reliability, maintainability, safety, and human factors engineering. Case studies. Prerequisites: ME 371 or Instructor permission.

Credits: 3.00

**ME 373 - Integr Mechanism Design Anyl**

Application of system analysis, rigid body dynamics, finite elements, fatigue analysis and structural dynamics to an integrated approach to mechanisms design. Prerequisites: ME 371 or Instructor permission.

Credits: 3.00

**ME 391 - Master's Thesis Research**

Credits: 3.00

**ME 395 - Advanced Special Topics**

Advanced topics in recently developed technical areas. Prerequisites: three hours with Instructor permission.

Credits: 3.00

**ME 491 - Doctoral Dissertation Research**

Credits: 0.00 to 18.00

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Graduate Courses in Medical Lab & Radiation Sci (MLRS)

MLRS 242 - Immunology

Lecture dealing with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. Prerequisite: One semester of Biochemistry.

Credits: 3.00

MLRS 244 - Immunology Lab

Laboratory experience dealing with cellular and humoral immunity, B cells and T cells, autoimmunity, immunodeficiency. Laboratory covers immunological techniques and applications. Co-requisites: MLRS 242; one semester of Biochemistry.

Credits: 1.00

MLRS 281 - Applied Molecular Biology

Lecture course focused on application of molecular biology techniques to diagnostic testing and biotechnology. Prerequisite: CHEM 042 or CHEM 141.

Credits: 4.00

MLRS 282 - Applied Molecular Biology Lab

Laboratory course focused on application of molecular biology techniques to diagnostic testing and biotechnology. Prerequisites: CHEM 042 or CHEM 141. Co-requisite: MLRS 281.

Credits: 1.00

MLRS 391 - Masters Thesis Research

Pre/co-requisite: Instructor Permission.

Credits: 1.00 to 6.00

MLRS 395 - Advanced Topics

Pre/co-requisite: Instructor Permission.

Credits: 3.00

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Graduate Courses in Medical Laboratory Science (MLS)

MLS 221 - Clinical Chemistry I

Lectures and laboratory experiences introduce basic principles in clinical quantitative analysis and laboratory instrumentation; test results are correlated with clinical case studies. Prerequisites: CHEM 031 and CHEM 032; CHEM 141 or CHEM 042; ANPS 019 & ANPS 020 or Instructor permission.

Credits: 4.00

MLS 222 - Clinical Chemistry II

Advanced instruction in body chemistry and pathophysiology of disease with emphasis on diagnostic lab techniques in chemistry. Prerequisites: MLS 221, PATH 101, or Instructor permission.

Credits: 4.00

MLS 231 - Hematology

Advanced theory and analysis of blood cell physiology and related pathology. Concepts of hemostasis and clinical assessment methods.

Credits: 4.00

MLS 255 - Clinical Microbiology II

Comprehensive study of non-bacterial microorganisms and their disease states in humans. Includes medical mycology, parasitology and virology. Laboratory sessions provide experience in identifying these pathogens. Prerequisites: MMG 065 or MMG 101 or equivalent.

Credits: 4.00

MLS 262 - Immunohematology

Advanced theory and experience related to human blood groups and transfusion practice. Prerequisite: One semester of immunology.

Credits: 4.00

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## Graduate Courses in Micr & Molecular Genetics (MMG)

### 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: MMG 104 or BIOC 207 or Instructor permission. Fall.  
Credits: 4.00

### 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: BCOR 103 or MMG 104, Permission of Coordinator. Alternate years. Spring.  
Credits: 4.00

### 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. Prerequisite: CHEM 142 or CHEM 144. Cross-listed with: BIOC 205, CHEM 205. Fall.  
Credits: 3.00

### MMG 206 - Biochemistry II

Continuation of Biochemistry I. Biochemistry of nucleic acids; nucleic acid based processes, such as replication and transcription; cellular information transfer, genomics, and proteomics. Prerequisite: MMG 205. Cross-listed with: BIOC 206, CHEM 206. Spring.  
Credits: 3.00

### MMG 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-requisites: MMG 205 or MMG 206. Cross-listed with: BIOC 207 and CHEM 207.  
Credits: 3.00

### 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: 3.00

### MMG 220 - Environmental Microbiology

The activities of microorganisms, primarily bacteria, in air, soil, and water. Prerequisite: A previous course in microbiology. Alternate years.

Credits: 3.00

**MMG 222 - Clinical Microbiology I**

Comprehensive study of human pathogenic microorganisms and their disease states in humans, which includes pathogenic bacteriology and medical mycology. Laboratory sessions provide practical experience in handling and identifying these pathogens. Prerequisites: MMG 065 or MMG 101 or equivalent or Instructor permission. Alternate years. Spring.

Credits: 4.00

**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 permission. Alternate years, Spring.

Credits: 3.00

**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: MMG 101 or MMG 104 or equivalent. Alternate years. Fall.

Credits: 3.00

**MMG 231 - Programming for Bioinformatics**

Introductory course on computing (including scripting, database, and statistical analysis) for developing bioinformatics applications. Particular emphasis is given to comparative genomics and systems biology scenarios. Prerequisites: STAT 151, STAT 153, or Instructor permission. Cross-listed with: CS 231. Alternate Years. Spring.

Credits: 3.00

**MMG 232 - Methods in Bioinformatics**

This course provides a methodological survey of bioinformatics. Particular emphasis is given to algorithms associated with sequential analysis, comparative genomics, structural biology, and systems biology. Prerequisites: STAT 151, STAT 153, or Instructor permission. Cross-listed with: CS 232. Alternate Years. Spring.

Credits: 3.00

**MMG 295 - Advanced Special Topics**

Supervised investigations in microbiology or molecular genetics. Prerequisite: Instructor permission. Credit as arranged.

Credits: 3.00

**MMG 296 - Advanced Special Topics**

Supervised investigations in microbiology or molecular genetics. Prerequisite: Instructor permission. Credit as arranged.

Credits: 3.00

**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: 2.00

**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: 3.00

**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: 4.00

**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: 1.00

**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: 3.00

**MMG 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**MMG 491 - Doctoral Dissertation Research**

Credits: 1.00 to 18.00

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## EDML 207 - Adoles Lrng&amp;Beh&amp;Cog Perspect

Credits: 3.00

## Credits: 6.00

## Credits: 3.00

## Credits: 6.00

## Credits: 12.00

## Credits: 3.00

## Credits: 3.00

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## Graduate Courses in Molecular Physiology & Biophys (MPBP)

## MPBP 301 - Human Physiology &amp; Pharm I

An integrated examination of the physiology and pharmacology of the peripheral nervous, muscle and cardiovascular systems in the human body. Pre/co-requisites: CHEM 032 and CHEM 042 or equivalent, two semesters general physics, and two semesters calculus. May not be taken for credit with MPBP 306.

Credits: 8.00

## MPBP 302 - Human Physiology &amp; Pharm II

An integrated examination of the physiology and pharmacology of the endocrine, digestive, renal and respiratory systems in the human body. Pre/co-requisites: CHEM 032 and CHEM 042 or equivalent; two semesters general physics, two semesters calculus, MPBP 301 or Instructor permission. May not be taken for credit with MPBP 306.

Credits: 4.00

## MPBP 303 - Critical Reading

Critical reading of the current literature, team taught by the faculty in the Dept. of Molecular Physiology & Biophysics, giving broad exposure to the expertise present in the department.

Credits: 1.00

## MPBP 306 - Medical Physiology

Function in the whole human organism, and at the cellular, tissue, and organ levels, considered biologically and physically. Pre/co-requisite: Permission of Department Chair. May not be taken for credit with MPBP 301 or MPBP 302.

Credits: 8.00

## MPBP 308 - Biometrics &amp; Applied Statistic

The rationale and application of biostatistical methods in the biological, health and life sciences with emphasis on interpreting and reporting results. Prerequisite: STAT 141 or equivalent. Cross-listed with: BIOS 308, STAT 308.

Credits: 3.00

## 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 - Biophysical Techniques

In depth analysis of biophysical techniques. Topics: Introductory statistics, optics, microscopy, motility, optical tweezers, FRET, light-scattering, SAXS and electron microscopy (single-particles, 2D-crystals, helices). Alternate years. Pre/co-requisite: Basic mathematics including matrices,

differentiation and integration.  
Credits: 4.00

**MPBP 333 - 3D Electron Microscopy&Img Prc**

In depth study of the theory of 3D electron microscopy and image processing of single particles.  
Topics: Fourier transforms. Convolution. Correlation. 2D alignment. Radon transforms. 3D reconstruction techniques. The electron microscope. Specimen preparation and data collection.  
Alternate years. Pre/co-requisites: Basic mathematics including matrices, differentiation and integration.  
Credits: 1.00

**MPBP 381 - Seminar**

Presentation and discussion by advanced students, staff, and invited speakers, of current topics in physiology. Prerequisite: Department permission.  
Credits: 1.00

**MPBP 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**MPBP 395 - Special Topics in MPBP**

Topics of interest to Graduate students beyond the scope of existing courses.  
Credits: 3.00

**MPBP 491 - Doctoral Dissertation Research**

Credits: 1.00 to 18.00

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Graduate Courses in Music (MU)

**MU 211 - Senior Music History Project**

Directed readings and research. Research project. Prerequisites: Senior standing as a Music History major; permission of the Instructor.

Credits: 1.00

**MU 231 - A & B Jazz Combos**

Small groups (a rhythm section and three to five solo instruments) in which students improve their improvisational skills while learning jazz repertory.

Credits: 1.00

**MU 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

**MU 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

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### Graduate Courses in Natural Resources (NR)

- 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: 3.00
- NR 228 - Ecosystem Ecology**

(Cross-listed with Forestry 228.) 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: 3.00
- NR 235 - Legal Aspects Envir Planning**

Comparison of environmental planning law at local, state, and national levels. Case studies in environmental and natural resource planning and land use controls. Pre/co-requisite: Senior Standing.

Credits: 3.00
- NR 238 - Ecological Landscape Design**

Studio course synthesizing work from fields of landscape ecology and landscape design, exploring ecological design alternatives at multiple scales, and developing multifunctional landscape solutions. Pre/co-requisites: minimum Junior standing, PSS 137 or one course in ecology plus one course in design or drawing. Cross-listed with: CDAE 238, ENVS 238, PSS 238.

Credits: 3.00
- NR 242 - Adv Geospatial Techniques**

Advanced course encompassing a wide range of topics in GIS, remote sensing, GPS, modeling, and visualization designed to provide technical expertise in geospatial techniques. Prerequisites: Introductory GIS (NR 143 or GEOG 184 or NR 343) or remote sensing (NR 146, NR 346, GEOG 185) course as determined by Instructor.

Credits: 1.00 to 3.00
- NR 243 - GIS Practicum**

An applied course in geospatial technology with a focus on ESRI's ArcGIS software suite. Prerequisite: NR 143/NR 343.

Credits: 3.00
- NR 245 - Integrating GIS & Statistics**

Advanced approaches in integrating Geographic Information Systems (GIS) and statistical methods to analyze quantitatively spatial patterns and relationships. Prerequisites: Senior/Graduate standing,

one introductory GIS course, one introductory Statistics course.

Credits: 3.00

**NR 250 - Limnology**

Ecology of lakes and reservoirs, including their origin, physics, chemistry and biology, and the effects of anthropogenic perturbations. Field and laboratory experience. Prerequisites: One year Biology; one year Chemistry; ecology course.

Credits: 4.00

**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: 3.00

**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: 3.00

**NR 260 - Wetlands Ecology & Mgmt**

Structure, dynamics and values of natural and artificial wetlands; wetlands management and issues.

Prerequisite: BIOL 001 and BIOL 002; an upper-level ecology course.

Credits: 3.00

**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: 3.00

**NR 265 - Environment & Human Behavior**

Applies social psychological frameworks--attitudes, exchange theory, symbolic interaction, group processes, social cognition, discourse theory--to help understand environmentally related behaviors, conflict, and management. Prerequisite: Junior standing.

Credits: 3.00

**NR 268 - Soil Ecology**

Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles, and ecological functions of soil.

Prerequisites: BCOR 102 or NR 103, PSS 161. Cross-listed with: PSS 268.

Credits: 4.00

**NR 270 - Toxic&Hrds 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: 3.00

**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: 3.00

**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: 3.00

**NR 280 - Stream Ecology**

Ecology of streams including hydrodynamics, morphology, sediment transport, chemistry, biology and human impacts. Field and laboratory experience. ecology course. Prerequisites: One year Biology; one year Chemistry;

Credits: 4.00

**NR 285 - Advanced Special Topics**

Advanced special topics in natural resource planning beyond the scope of existing formal courses. Prerequisite: Graduate/Senior standing; Instructor permission.

Credits: 6.00

**NR 288 - Ecol Design & Living Technol**

The course explores the potential for ecological design to shape a sustainable future. It analyzes living technologies for food production, waste management and environmental restoration. Pre/co-requisites: Junior/Senior standing, background in ecology/systems theory.

Credits: 3.00

**NR 289 - Advanced Ecological Design**

A problem-based, cross-disciplinary design course in which existing conditions are integrated with the redesign of place and system in alignment with ecological design principles.

Credits: 3.00

**NR 306 - Envisioning a Sust Future**

Seminar orienting graduate students to RSEN and providing frameworks for collaborative leadership, whole systems thinking, and intercultural competency.

Credits: 2.00

**NR 333 - Professional Writing**

Writing workshop that explores essay and report writing, as published in both popular and professional journals that examine the natural world and its resources. Prerequisites: None, but preference is given to Field Naturalist and Ecological Planning Graduate students; other students may enroll with instructor permission. Cross-listed with: PBIO 333.

Credits: 1.00

**NR 334 - Professional Writing**

Writing workshop that explores essay and report writing, as published in both popular and professional journals that examine the natural world and its resources. Prerequisites: None, but preference is given to Field Naturalist and Ecological Planning Graduate students; other students may enroll with Instructor permission. Cross-listed with: PBIO 334.

Credits: 1.00

**NR 343 - Fndmtls of Geog Info Systems**

Concepts and methods in Geographic Information Systems (GIS) presented at an accelerated pace for Graduate students using ArcGIS software. Pre/co-requisites: Graduate standing.

Credits: 3.00

**NR 346 - Digital Image Processing**

Principles and applications of digital image processing of remotely sensed imagery. Hands-on analyses of satellite imagery will address environmental issues using ERDAS Imagine software.

Credits: 2.00

**NR 354 - Seminar:Envrmtl Policy & Mgmt**

Seminar examining contemporary environmental policy at local, state, national, and international levels; policy formulation, implementation and design relative to current environmental problems.

Prerequisties: Graduate standing.

Credits: 3.00

**NR 356 - Conservation, Systems&Sustain**

Conservation concepts and practice, viewed through the lens of history, systems, and sustainability. From site to landscape scale, with case studies and practioner interviews. Prerequisites: An upper-level ecology or field science course. Cross-listed with: PBIO 356.

Credits: 3.00

**NR 360 - Environmental Sociology**

An in-depth exploration of how sociologists understand the relationship between a) the physical environment's effects on society, and b) society's effects on the natural environment. Prerequisite: Graduate standing; or Insturctor permission. Fall. Alternate years.

Credits: 3.00

**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: 2.00

**NR 375 - NR Planning: Laboratory**

Experiential laboratory applying natural resource planning 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: 1.00

**NR 376 - Graduate Teaching Practicum**

Natural Resource teaching practicum for doctoral students in the Rubenstein School. Course is required if students are following the academic option. Should be taken concurrently or one semester in advance of completion of the doctoral teaching requirement. Prerequisite: doctoral standing.

Credits: 2.00

**NR 377 - Land Use Policy & Economics**

Economic and social forces that drive urban and suburban land use patterns, such as urban sprawl, and the policy mechanisms designed to intervene in those processes. Pre/co-requisites: Grad standing or instructor permission.

Credits: 3.00

**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: 3.00

**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: 2.00

**NR 382 - Seminar in Research Planning**

Discussions of the planning and activities associated with Graduate student projects and research.  
Prerequisite: Instructor permission. Cross-listed with: FOR 382.  
Credits: 1.00

**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: 3.00

**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: 3.00

**NR 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**NR 392 - Master's Project Research**

Credits: 1.00 to 12.00

**NR 491 - Doctoral Dissertation Research**

Credits: 1.00 to 18.00

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Graduate Courses in Neurology (NEUR)

NEUR 491 - Doctoral Dissertation Research

Credit as assigned for research towards a doctoral degree in Neuroscience.

Credits: 1.00

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Graduate Courses in Neuroscience (NSCI)

NSCI 391 - Master's Thesis Research

Credits: 1.00 to 18.00

NSCI 491 - Doctoral Dissertation Research

Credits: 3.00

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Graduate Courses in Nursing & Health Sciences (NH)

NH 301 - Clin Ethics for Hlthcare Prof.

Students will analyze clinical and organizational healthcare issues from an interdisciplinary perspective. Ethical decision-making and inter- disciplinary team skills will be developed. Pre/co-requisite: Graduate standing.

Credits: 3.00

NH 302 - Quality in Health Care

This interprofessional course provides students with the skills and knowledge needed to apply quality improvement approaches to the design and management of health care services. Cross-listed with: CTS 302.

Credits: 3.00

NH 303 - Hlth Promotion & Disease Prvnt

Students learn the value of and barriers to health promotion , health protection, and disease prevention, factors that influence personal health decisions, and preventive interventions.

Credits: 3.00

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# 2012-2013 Catalogue

## Graduate Courses in Nutrition and Food Sciences (NFS)

## 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: 4.00

**NFS 205 - Functional Foods:Prncpl & Tech**

Examines the constituents that make food products functional and provides laboratory techniques needed to create a functional food. Pre/co-requisites: NFS 153, NFS 154, or Instructor permission. Credits: 3.00

## NFS 208 - Sensory Evaluation of Foods

Practical study of the methods and protocols used to evaluate the sensory quality of food in the industry and research world. Prerequisite: NFS 053.

Credits: 4.00

**NFS 223 - Nutrition Educ & Counseling**

Use of appropriate education theory, techniques, and media in nutrition education and counseling theories and negotiation, interviewing and counseling skills in individual and group counseling.  
Pre/co-requisites: NFS 043, NFS 053, NFS 054, NFS 143.  
Credits: 3.00

## NFS 243 - Advanced Nutrition

Study of nutrients and their specific functions in metabolic process integrating cellular physiology, biochemistry, and nutrition. Prerequisites: NFS 043; PBI0 201 or equivalent; ANPS 019 or equivalent; Junior standing. Spring.

Credits: 3.00

## NFS 244 - Nutr in Hlth &amp; Disease Prevntn

Examination of dietary planning, nutrition assessment, genetics, drug-nutrient interactions, CAM therapies and nutrition related to health and prevention of disease. Pre/co-requisites: CHEM 042, ANPS 020, NFS 053, NFS 054, NFS 143.

Credits: 3.00

## NFS 250 - Foodservice Systems

Emphasis on the foodservice system model for understanding quality control; food procurement, production, and marketing; management and evaluation of foodservice facilities, human and financial resources. Prerequisites: BSAD 065 and BSAD 120.

Credits: 4.00

## NFS 260 - Diet and Disease

Examination of the physiologic, biochemical, and psychosocial basis of several disease states and the application of medical nutrition therapy in treatment. Prerequisite: NFS 053, NFS 143, NFS 243, NFS 244.

Credits: 3.00

**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: 3.00

**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: 3.00

**NFS 295 - Advanced Special Topics**

Lectures, laboratories, readings, or projects relating to contemporary areas of study. Credits negotiable. Enrollment may be more than once, maximum of twelve hours in NFS 195 and NFS 295 combined. Prerequisite: Department permission.

Credits: 5.00

**NFS 296 - Field Experience**

Professionally-oriented field experience under joint supervision of faculty and business or community representative. Prerequisite: Departmental permission. Credit negotiable. Maximum of fifteen hours in NFS 196 and NFS 296 combined.

Credits: 4.00

**NFS 311 - Supervised Practice I**

Through lecture, discussion, presentations, and practical experience, students develop competencies in clinical dietetics, community nutrition, and food service management. Prerequisite: Acceptance into MS D program.

Credits: 4.00

**NFS 312 - Supervised Practice II**

Through lecture, discussion, presentations, and practical experience, students develop competencies in clinical dietetics, community nutrition, and food service management. Prerequisite: Acceptance into MS D program.

Credits: 4.00

**NFS 350 - Nutrition&Food Science Seminar**

Credits: 1.00

**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. Pre/Co-requisites: Permission of the Instructor.

Credits: 3.00

**NFS 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**NFS 392 - Evidence-based Practice Prjct**

On site identification, review of literature for background and possible solutions, data collection and analysis, and writing and presenting the results and conclusions of a research problem. Pre/co-requisites: NFS 360, MS in Dietetics.

Credits: 1.00 to 2.00

**NFS 395 - Special Topics**

Credits: 4.00

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Graduate Courses in Obstetrics & Gynecology (OBGY)

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Graduate Courses in Orthopedic Surgery (ORTH)

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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Graduate Courses in Parks, Recreation and Tourism (PRT)

PRT 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. Prerequisite: Advanced standing in Parks, Recreation and Tourism or Instructor permission.

Credits: 3.00

PRT 240 - Park and Wilderness Management

History, philosophy, and management of wilderness, national parks, and related areas. Prerequisite: Junior/Senior standing in Parks, Recreation and Tourism.

Credits: 3.00

PRT 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. Prerequisites: Advanced standing in Parks, Recreation and Tourism or Instructor permission.

Credits: 3.00

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## 2012-2013 Catalogue

### Graduate Courses in Pathology (PATH)

**PATH 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.  
Credits: 3.00

**PATH 303 - Translational Pathology**

A course providing an introduction to anatomic and clinical pathology, classes and hands-on training in essential pathology translational research techniques and exposure to their clinical laboratory applications. Prerequisites: Instructor approval.  
Credits: 3.00

**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: 3.00

**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: 1.00

**PATH 391 - Master's Thesis Research**

Credits: 1.00 to 18.00

**PATH 395 - Special Topics**

Special Topics in Pathology. Prerequisites: Graduate Students, Department Permission Immunology (MMG 223) desirable. Alternate year course with PATH 305.  
Credits: 5.00

2012-2013 Catalogue

## PHRM 201 - Introduction to Pharmacology

Credits: 3.00

## Credits: 3.00

## Credits: 3.00

## Credits: 3.00

## Credits: 2.00

## Credits: 2.00

**PHRM 328 - Principles of Drug Discovery**

Important classes of drugs are surveyed. Emphasis on random and rational approaches to lead discovery and strategies in drug optimization. Prerequisites: organic chemistry, Biochemistry, or Instructor permission. Open to undergraduates with Instructor permission.

Credits: 3.00

**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: 3.00

**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: 2.00

**PHRM 381 - Seminar**

Current developments in pharmacology are presented for discussion by students. Prerequisite: Instructor Permission.

Credits: 1.00

**PHRM 391 - Master's Thesis Research**

Credits: 1.00 to 12.00

**PHRM 491 - Doctoral Dissertation Research**

Credits: 1.00 to 12.00

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🏠 UVM Home	<div>2012-2013 Catalogue</div> <div>Graduate Courses in Philosophy (PHIL)</div> <div><div><div><b>PHIL 217 - Philosophy of Language</b><p>Philosophical study of the nature of language. Prerequisite: One Philosophy course at 100-level. Recommended: PHIL 013. Credits: 3.00</p></div><div><b>PHIL 221 - D2: Topics in Chinese Phil</b><p>Detailed examination of a classical Chinese philosophical text or school. Prerequisite: PHIL 121. Credits: 3.00</p></div><div><b>PHIL 235 - Topics in Phil of Religion</b><p>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.) Prerequisite: PHIL 101, PHIL 102 or PHIL 135. Credits: 3.00</p></div><div><b>PHIL 240 - Contemporary Ethical Theory</b><p>In-depth study of metaethics, emphasizing recent work. Topics include moral objectivity, moral language, moral epistemology, and the relationship between morality and reasons. Prerequisite: One Philosophy course at the 100-level. Credits: 3.00</p></div><div><b>PHIL 241 - Contemp Social&amp;Political Phil</b><p>The ideas of leading contemporary philosophers concerning freedom, tolerance, economic justice, international relations, and the relationship between the individual, the community and the state. Prerequisite: PHIL 140, PHIL 142, PHIL 143, or PHIL 144. Credits: 3.00</p></div><div><b>PHIL 242 - Justice &amp; Equality</b><p>An examination of contemporary normative theories of distributive justice and equality. Prerequisites: POLS 041 and either a 100-level POLS course, or PHIL 140, PHIL 142, PHIL 143, or PHIL 144. Cross-listed with: POLS 241. Credits: 3.00</p></div><div><b>PHIL 295 - Advanced Special Topics</b><p>See Schedule of Courses for specific titles. Credits: 4.00</p></div><div><b>PHIL 296 - Advanced Special Topics</b><p>See Schedule of Courses for specific titles. Credits: 3.00</p></div></div></div>			
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**PHIL 297 - Adv Readings & Research**

Independent study with an instructor on a specific philosopher or philosophical problem.  
Prerequisites: Instructor permission; 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.  
Prerequisites: Instructor permission; an appropriate 200-level course in Philosophy.  
Credits: 3.00

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### Graduate Courses in Physical Education-Prof (EDPE)

- 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: 3.00
- 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: 3.00
- 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: 3.00
- EDPE 266 - Ex Prescrip:Sprt,Hlth,Fit,Perf**

Course covers basic concepts of exercise prescription and exercise program design. Particular attention is paid to individualization of exercise program to meet participant needs.

Credits: 3.00
- EDPE 267 - Sci Strength Training&Condtnng**

Course focuses on physiology of muscle adaptation following resistance or aerobic training. Particular attention is paid to specificity of metabolic adaptation for individual sports.

Credits: 3.00
- 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: 12.00
- EDPE 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee.

Credits: 1.00 to 12.00
- 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: 1.00 to 6.00

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### Graduate Courses in Physical Therapy (PT)

**PT 203 - Professional Seminar 1**

Framework for students' becoming excellent practitioners, focusing on values, principles and core documents of the physical therapy profession, and contemporary issues related to the profession.  
Pre/co-requisite: DPT majors only.  
Credits: 2.00

**PT 204 - Professional Seminar 2**

Students discuss professional issues and practices encountered in the clinical environment, allowing them to build a framework of knowledge and skills that supports excellent practice. S/U grading only.  
Pre/co-requisites: PT 203; Enrollment in DPT program.  
Credits: 0.00

**PT 205 - Professional Seminar 3**

Students discuss professional issues and practices encountered in the clinical environment, allowing them to build a framework of knowledge and skills that supports excellent practice. S/U grading only.  
Pre/co-requisites: Enrollment in DPT program.  
Credits: 0.00

**PT 206 - Professional Seminar 4**

Students discuss professional issues and practices encountered in the clinical environment, allowing them to build a framework of knowledge and skills that supports excellent practice. S/U grading only.  
Pre/co-requisite: Enrollment in DPT program.  
Credits: 0.00

**PT 207 - Professional Seminar 5**

Students discuss professional issues and practices encountered in the clinical environment, allowing them to build a framework of knowledge and skills that supports excellent practice. S/U grading only.  
Pre/co-requisite: Enrollment in DPT program.  
Credits: 0.00

**PT 213 - Movement Science I**

Students learn to apply kinesiology and biomechanical principles and concepts to the analysis of human movement, posture, joint structure and function, and gait. Pre/co-requisites: ANNB 201; enrollment in DPT program.  
Credits: 3.00

**PT 241 - Patient Mngmt Fndmntl Skills**

Introduction to principles and practices of patient/client management including fundamental patient handling skills, physical examination techniques, history taking and interviewing skills, and clinical documentation. Prerequisites: ANNB 201; Enrolled as DPT student. Co- requisite: Pharmacology and Pathophysiology.

Credits: 6.00

**PT 242 - Patient Mgmt Musculoskeletal 1**

Lecture/Lab experiences in which students will apply fundamental biomechanical and kinesiology principles of the trunk, spine, and extremities. Prerequisites: PT 241, RMS 213, Pathophysiology, Pharmacology; Enrolled as DPT student. Co-requisite: RMS 244, RMS 251.

Credits: 8.00

**PT 301 - Clin Ethics for Hlthcare Prof**

Students will analyze clinical and organizational healthcare issues from an interdisciplinary perspective. Ethical decision-making skills will be developed. Pre/co-requisite: Graduate Standing.

Credits: 3.00

**PT 302 - Quality in Health Care**

This course provides students with the skills and knowledge needed to apply quality improvement approaches to the design and management of health care services. Pre/co-requisite: Graduate Standing.

Credits: 3.00

**PT 320 - Undrstdng Evidence in PT Pract**

Students critically analyze and interpret research in terms of applicability to practice, examine methods for measuring practice outcomes and apply data to answer clinical questions. Pre/co-requisites: Statistics course; enrollment as DPT student.

Credits: 3.00

**PT 322 - Research Project**

Students learn to conduct a systematic review of the literature. The resulting paper and poster meet the comprehensive examination requirements for the DPT. Pre/co-requisites: RMS 220; Enrolled as DPT student.

Credits: 3.00

**PT 328 - Patient Independent Study**

Students work with faculty member to assist in research, applying previously learned skills in critical appraisal, library searches, research methods and writing. Pre/co-requisites: RMS 220 or PT 320 or equivalents; enrollment in DPT program.

Credits: 3.00

**PT 330 - Psychosocial Issues in Health**

Psychosocial dimensions of health, illness and disability will be examined from lifespan and multicultural perspectives. Pre/co-requisites: Psychology course; enrolled as DPT student.

Credits: 3.00

**PT 331 - Practice Management in PT**

This course introduces students to the fundamental nature and functions of general business organizations, particularly physical therapy practices. Pre/co-requisite: Enrollment in DPT program.

Credits: 3.00

**PT 345 - Patient Mgt-Neuromuscular 1**

Lecture and laboratory experiences re evidence-based medical and physical therapy management of adults with neuromuscular conditions including stroke, multiple sclerosis, and spinal cord injury. Pre/co-requisites: PT 215, Pathophysiology, Pharmacology; Enrolled as DPT student.

Credits: 6.00

**PT 346 - Patient Mgt-Neuromuscular 2**

Lecture and laboratory experiences re evidence-based medical and physical therapy management of children with neuromuscular conditions such as cerebral palsy and adults with developmental disabilities. Pre/co-requisites: PT 345, Pathophysiology, Pharmacology; Enrolled as DPT student.  
Credits: 5.00

**PT 347 - Patient Mgt:Cardiopulmonary**

Students explore disease risk and prevention, as well as medical, surgical, pharmacological, psychological, and physical therapies in the management of individuals with cardiopulmonary related diseases. Pre/co-requisites: ANNB 201, PT 241, GRNU 303, RMS 251, pathophysiology; enrollment in DPT program.  
Credits: 5.00

**PT 348 - Patient Mgt:Medical/Surgical**

Students explore medical, surgical, pharmacological, psychological, and physical therapies in the management of individuals with vascular, integumentary, lymphatic disorders and cancer. Pre/co-requisites: PT 241, PT 347, Pathophysiology, Pharmacology; Enrolled as DPT student.  
Credits: 4.00

**PT 349 - Patient Mgt:Musculoskeletal 2**

Lecture/lab applying foundational and advanced biomechanical, neurophysiological, kinesiological, and anatomical principles of the trunk, TMJ, spine, and extremities. Pre/co-requisites: PT 242; Enrolled as DPT student.  
Credits: 4.00

**PT 360 - Integrated Patient Mgmt Sem**

Students integrate information learned in prior clinical and foundational science courses, as well as contemporary research findings, into a comprehensive patient management model. Pre/co-requisites: DPT student standing; successful completion of all previous DPT courses.  
Credits: 1.00

**PT 370 - Clinical Internship 1**

Full-time (six weeks) Clinical Education Internship in an out-patient Orthopedic clinical setting. Pre/co-requisite: Completion of year one DPT curriculum.  
Credits: 3.00

**PT 371 - Clinical Internship 2**

Full-time (ten weeks) Clinical Education Internship in various practice settings including out-patient, acute care, rehabilitation, home health, pediatric, long term care and specialty practices. Pre/co-requisite: Completion of all academic courses in DPT curriculum.  
Credits: 5.00

**PT 372 - Clinical Internship 3A**

Full-time (four weeks) Clinical Education Internship in various practice settings including out-patient, acute care, rehabilitation, home health, pediatric, long term care and specialty practices. Pre/co-requisite: Completion of all academic courses in DPT curriculum.  
Credits: 2.00

**PT 373 - Clinical Internship 3B**

Full-time (two weeks) Clinical Education Internship in various practice settings including out-patient, acute care, rehabilitation, home health, pediatric, long term care and specialty practices. Pre/co-requisite: Completion of all academic courses in DPT curriculum.  
Credits: 1.00

**PT 374 - Clinical Internship 3C**

Full-time (four weeks) Clinical Education Internship in various practice settings including out-patient, acute care, rehabilitation, home health, pediatric, long term care and specialty practices. Pre/co-requisite: Completion of all academic courses in DPT curriculum.  
Credits: 2.00

**PT 375 - Clinical Internship 4**

Full-time (ten weeks) Clinical Education Internship in various practice settings including out-patient, acute care, rehabilitation, home health, pediatric, long term care and specialty practices. Pre/co-requisite: Completion of all academic courses in DPT curriculum.  
Credits: 5.00

**PT 395 - Advanced Special Topics**

Credits: 6.00

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## Graduate Courses in Physics (PHYS)

## PHYS 201 - Experimental Physics I

Experiments in classical and modern physics. Prerequisites: PHYS 128; MATH 121; Junior standing.  
Credits: 3.00

## PHYS 202 - Experimental Physics II

Experiments in classical and modern physics. Prerequisites: PHYS 128; MATH 121; Junior standing.  
Credits: 3.00

## PHYS 211 - Classical 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: PHYS 152, MATH 121.

Credits: 3.00

## PHYS 213 - Electricity &amp; 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: PHYS 152, MATH 121. Credit not given for more than one of PHYS 213 or EE 141.  
Credits: 3.00

## PHYS 214 - Electromagnetism

Introduction to time dependent electromagnetic fields. Maxwell's equations in vacuum and in matter. Electromagnetic waves and radiation. Prerequisite: PHYS 213. Credit not given for more than one of PHYS 214 or EE 241.

Credits: 3.00

## PHYS 222 - Biological Physics

Physical laws, processes, and interactions pertaining to biological systems. Prerequisites: PHYS 012 or PHYS 152; MATH 121.

Credits: 3.00

## 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: 3.00

## PHYS 257 - Modern Astrophysics

Stellar structure and evolution, compact objects, the interstellar medium, galactic structure, gravitational theory, and cosmology, the formation of our solar system and terrestrial life.

**Prerequisite:** One 100-level course in physical science or engineering. **Cross-listed with:** ASTR 257.

Credits: 3.00

**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: 3.00

**PHYS 264 - Nuclear & Elem Particle Physic**

Introduction to theoretical and experimental aspects of nuclear and elementary particle physics. Prerequisite: PHYS 128; Junior standing.

Credits: 3.00

**PHYS 265 - Thermal & Statistical Physics**

Thermodynamics, kinetic theory, statistical mechanics. Prerequisites: PHYS 152, MATH 121.

Credits: 3.00

**PHYS 273 - Quantum Mechanics I**

Introduction to nonrelativistic quantum mechanics. Schrodinger equation and applications to simple systems. Prerequisite: PHYS 128, PHYS 211.

Credits: 3.00

**PHYS 274 - Applictns of Quantum Mechanics**

Applications of Quantum Mechanics including Quantum Statistical Mechanics, Time-Independent and Time- Dependent Perturbation Theory, WKB Approximation, Variational Principle and Scattering. Pre/co-requisite: PHYS 273.

Credits: 3.00

**PHYS 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

**PHYS 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

**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: 3.00

**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: 1.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**PHYS 391 - Master's Thesis Research**

Credits: 1.00 to 12.00

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About Catalogue Courses	<b>PSS 209 - Organic Farm Practicum</b>			
Browse Courses by Subject	As an experiential learning course, students will gain experience in implementing their business and farm management plans generated from the spring course, Organic Farm Planning. Pre/co-requisites: PSS 021 and one 100-level PSS course, equivalent experience, or Instructor permission.			
Course Search	Credits: 4.00			
Courses Approved for Graduate Credit	<b>PSS 212 - Advanced Agroecology</b>			
Courses Approved for Diversity Credit	This course presents an in-depth overview of research and applications in the field of agroecology, including current ecological and social dynamics in agricultural landscapes in Vermont and abroad. Pre/co-requisites: PSS 021 and one semester ecology at the 100-level or above or Instructor permission. Cross-listed with: ENVS 212.			
Academic Offerings	Credits: 4.00			
Colleges and Schools	<b>PSS 232 - Biological Control</b>			
Policies and General Information	Describes theory and application of biological control of insects, disease, and weeds. Discuss ecological factors that contribute to the success of classical, augmentative, and conservation approaches to biological control. Approved for Graduate credit. Prerequisites: Course in entomology, ecology, or relevant experience.			
Faculty and Administration	Credits: 3.00			
Search the Catalogue	<b>PSS 238 - Ecological Landscape Design</b>			
Catalogue Archives	Studio course synthesizing work from fields of landscape ecology and landscape design, exploring ecological design alternatives at multiple scales, and developing multifunctional landscape solutions. Pre/co-requisites: minimum Junior standing, PSS 137 or one course in ecology plus one course in design or drawing. Cross-listed with: CDAE 238, ENVS 238, NR 238.			
	Credits: 4.00			
	<b>PSS 261 - Soil Morph Class &amp; Land Use</b>			
	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 Instructor permission. Alternate years.			
	Credits: 3.00			
	<b>PSS 264 - Chemistry of Soil &amp; Water</b>			
	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 Instructor permission. Alternate years.			
	Credits: 4.00			
	<b>PSS 266 - Soil Water Movement</b>			
	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			

Instructor permission. Alternate years.

Credits: 3.00

**PSS 268 - Soil Ecology**

Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles, and ecological functions of soil.

Pre/co-requisites: BCOR 102 or NR 103; PSS 161. Cross-listed with: NR 268.

Credits: 4.00

**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. Prerequisites: PSS 161 or Instructor permission. Alternate years.

Credits: 3.00

**PSS 295 - Advanced 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: Instructor permission.

Credits: 4.00

**PSS 296 - Advanced 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: Instructor permission.

Credits: 4.00

**PSS 298 - Advanced Independent Study**

Individual projects under direction of a faculty member. Project may involve original research, readings, internship, or assisting in teaching. Prerequisite: Instructor permission; more than a total of six credits per semester requires Chair permission.

Credits: 5.00

**PSS 301 - Professional Skills Colloquium**

Presentation and peer review of oral and written communication. Professional development skills including technical writing, literature review, mentorship, scientific integrity, grant proposals, and job market.

Credits: 1.00

**PSS 302 - Soil Science Colloquium**

Graduate student and faculty discussion of current research topics in soil science.

Credits: 1.00

**PSS 381 - Graduate Special Topics**

Advanced readings and discussion of horticulture, crops, or soils research literature.

Credits: 3.00

**PSS 391 - Master's Thesis Research**

Credits: 3.00

**PSS 393 - Seminar Series**

Presentations of personal research by faculty, Graduate students and outside guest speakers. Attendance and oral presentations are required of Graduate students in Plant and Soil Science. Repeatable 2 times for M.S. students and 4 times for Ph.D. students.

Credits: 1.00

**PSS 394 - Seminar Series**

Presentations of personal research by faculty, Graduate students, and outside guest speakers.  
Attendance and oral presentations are required of Graduate students in Plant and Soil Science.  
Repeatable 2 times for M.S. students and 4 times for Ph.D. students.

Credits: 1.00

**PSS 395 - Advanced Special Topics**

Credits: 4.00

**PSS 491 - Doctoral Dissertation Research**

Credits: 1.00 to 18.00

## Graduate Courses in Plant Biology (P BIO)

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: 4.00

**PBIO 275 - Global Change Ecology**

Survey of global climate change including its causes, mechanisms, and ecological and societal impacts. Prerequisite: BCOR 102 or equivalent.  
Credits: 3.00

**PBIO 281 - Botany Seminar**

Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of plant biology Graduate students and Seniors in botanical research programs. Without credit.  
Credits: 0.00

**PBIO 282 - Botany Seminar**

Presentations of personal research by faculty, graduate students, and outside guest speakers. Attendance required of plant biology Graduate students and Seniors in botanical research programs. Without credit.  
Credits: 0.00

**PBIO 295 - Advanced 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: Department permission.  
Credits: 4.00

**PBIO 311 - Field Naturalist Practicum**

Landscape analysis; planning and designing field projects; integrated problem solving. Prerequisite: Enrollment in the Field Naturalist program. Variable hours up to three.  
Credits: 3.00

**PBIO 333 - Professional Writing**

Writing workshop that explores essay and report writing, as published in both popular and professional journals that examine the natural world and its resources. Prerequisites: None, but preference is given to FN and EP graduate students; other students may enroll with Instructor permission. Cross-listed with: NR 333.  
Credits: 1.00

**PBIO 334 - Professional Writing**

Writing workshop that explores essay and report writing, as published in both popular and professional journals that examine the natural world and its resources. Prerequisite: None, but preference is given to FN and EP graduate students; other students may enroll with Instructor permission. Cross-listed with: NR 334.  
Credits: 1.00

**PBIO 369 - Field Botany for NR Profession**

Identification of flowering plants and ferns; survey of prominent Vermont plant families; natural communities, ecological determinants of plant distribution, especially soils; preparation of herbarium specimens. Prerequisite: Graduate Standing; Instructor Permission.  
Credits: 2.00

**PBIO 381 - Adv Topics in Plant Biology**

Subject matter varies. Topics will stress current graduate student and faculty research interests in a

journal review or presentation-discussion format. Prerequisite: Instructor permission.  
Credits: 4.00

**PBIO 391 - Master's Thesis Research**  
Credit as arranged.  
Credits: 2.00

**PBIO 392 - Master's Project Research**  
Credit as arranged.  
Credits: 0.00 to 3.00

**PBIO 491 - Doctoral Dissertation Research**  
Credit as arranged.  
Credits: 1.00 to 15.00

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Graduate Courses in Political Science (POLS)

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http://www.uvm.edu/academics/catalogue2012-13/?Page=CatalogueCourses&subject=POLS&agc=AGC&term=201209&SM=coursemenu.html[9/26/2018 10:44:14 AM]

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Academic Offerings	<b>PSYC 205 - Learning</b> Analysis of theory and research on the basic learning process and behavior. Prerequisite: PSYC 109. Credits: 3.00			
Colleges and Schools	<b>PSYC 206 - Motivation</b> 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: 3.00			
Policies and General Information	<b>PSYC 207 - Cognition</b> Research and theories on the major areas within cognition: perception, attention, pattern recognition, memory, knowledge representations, mnemonic strategies, problem-solving and neurocognition. Prerequisite: PSYC 109. Credits: 3.00			
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	<b>PSYC 215 - Cognition &amp; Aging</b> Changes in both sensory and cognitive aspects of aging, including changes in vision, hearing, perception, learning, and memory. Prerequisite: 208 or permission of instructor. Credits: 3.00			
	<b>PSYC 220 - Animal Behavior</b> Behavior of animals under controlled experimental conditions and in their natural environments. Consideration of evolution, development, function, and control of behavior. Prerequisite: PSYC 109 or BCOR 102. Credits: 3.00			
	<b>PSYC 221 - Physiological Psychology I</b> Structure and function of mammalian nervous system, emphasizing neurological correlates of sensory experience and perception. Individual laboratory experience. Prerequisite: 109. Credits: 4.00			
	<b>PSYC 222 - Sel Topics Behavioral Neurosci</b> Selected topics examining the role of the central nervous system in determining behavior, including innate behaviors, arousal, motivation, learning, and memory. Prerequisite: PSYC 121 or PSYC 221. Credits: 3.00			
	<b>PSYC 223 - Psychopharmacology</b> 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: 3.00			

**PSYC 224 - Hormones and Behavior**

A study of the involvement of hormones in cognition, emotion, the stress response, circadian and homeostatic mechanisms that affect mental state, psychopathology, and reproductive behavior.  
Pre/co-requisites: PSYC 121 and PSYC 109, or permission from the Instructor.  
Credits: 3.00

**PSYC 230 - Advanced Social Psychology**

Advanced survey of current research on the behavior of individuals in social situations. Prerequisite: PSYC 109 or PSYC 130.  
Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**PSYC 260 - Self and Social Cognition**

An advanced course in social psychology that covers theory and research on the self and social cognition. Pre/co-requisites: PSYC 109 and PSYC 130.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**PSYC 267 - Adolescence**

Analysis of current theory and research in adolescent development. Covers biological, cognitive, and social changes; family, peer, and school influences; and normative and problematic development. Pre/co-requisites: PSYC 109 and PSYC 161.

Credits: 3.00

**PSYC 268 - Psychology Adult Dev & Aging**

Psychological development in the final third of the life span emphasizing theory and research concerning social, cognitive, perceptual, and mental health transitions and support interventions. Prerequisites: PSYC 001, and HDFS 020 or HDFS 195/HDFS 295 or Instructor permission.

Credits: 3.00

**PSYC 295 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

**PSYC 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.

Credits: 3.00

**PSYC 301 - Faculty Seminar**

Introduction to specialized areas of psychology.

Credits: 0.00

**PSYC 302 - Faculty Seminar**

Introduction to specialized areas of psychology.

Credits: 0.00

**PSYC 303 - Biobehavioral Proseminar**

Advanced survey and analysis of behavioral and biological psychology, with special emphasis on learning theory and behavioral neuroscience.

Credits: 3.00

**PSYC 305 - Seminar in Learning Theory**

Credits: 3.00

**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: 3.00

**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: 3.00

**PSYC 346 - Analysis of Longitudinal Data**

Statistical methods for the analysis of data collected over time, with an emphasis on linear mixed models (LMMs) in applied psychological research. Prerequisites: PSYC 340 and PSYC 341 or equivalent.

Credits: 3.00

**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: 3.00

**PSYC 350 - Family Therapy**

An exploration of current theories and techniques in family therapy, through readings and discussion, as well as observation of taped and live family therapy sessions. Prerequisite: Graduate standing in Clinical Psychology; or Instructor Permission.

Credits: 3.00

**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: 3.00

**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: 3.00

**PSYC 353 - Clinical Human Neuropsychology**

Clinical seminar on effects on human behavior of neocortical dysfunction. Review of theoretical,

clinical approaches to brain function, emphasis on recent developments in diagnostic techniques, ensuing theoretical developments. Prerequisite: PSYC 221, PSYC 222, or equivalent.

Credits: 3.00

### **PSYC 354 - Psychopathology I**

An advanced course dealing with models of classification, diagnosis, epidemiology of behavior disorders in children. Prerequisite: Instructor Permission.

Credits: 3.00

### **PSYC 355 - Psychopathology II**

An advanced course dealing with models of classification, diagnosis, epidemiology of behavior disorders in adults. Prerequisite: Instructor Permission.

Credits: 3.00

### **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: Graduate standing.

Credits: 3.00

### **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: 3.00

### **PSYC 361 - Developmental Psychopathology**

Provides an overview of theoretical, methodological, and analytic approaches in developmental psychopathology. Seminar format. Prerequisite: Graduate student in Psychology.

Credits: 3.00

### **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: Instructor Permission.

Credits: 3.00

### **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: 3.00

### **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: 3.00

### **PSYC 365 - Developmental Proseminar**

This seminar focuses on key issues in developmental psychology, including an examination and critique of psychological theories, methods, and research in child and adolescent development.

Prerequisite: Graduate student in Psychology.

Credits: 3.00

**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: 3.00

**PSYC 367 - Social Development**

This course will include an examination and critique of psychological theories, methods, and research about social development from infancy through young adulthood. Prerequisite: Graduate student in Psychology.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 0.00

**PSYC 374 - Advanced Clinical Practicum**

Year-long, 20 hours/week supervised service delivery involving psychological intervention assessment and consultation. May be repeated for credit. Pre/co-requisites: Enrollment in Ph.D. program in Clinical Psychology; Instructor permission.

Credits: 1.00

**PSYC 375 - Internship in Clinical Psyc**

Credits: 0.00

**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: 3.00

**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: 3.00

**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: 1.00

**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: 3.00

**PSYC 391 - Master's Thesis Rsch**

Credits: 1.00 to 18.00

**PSYC 395 - Special Topics**

Credits: 3.00

**PSYC 410 - Preliminary Examination**

Credits: 3.00

**PSYC 491 - Doctoral Dissertation Research**

Credits: 1.00 to 18.00

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## Graduate Courses in Public Administration (PA)

### 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: 3.00

### PA 295 - Advanced Special Topics

Current issues and new developments in public policy and public administration. Prerequisite: Permission.

Credits: 3.00

### PA 301 - Foundations of Public Admin

Survey of major elements of management in the public and nonprofit sectors with special attention given to problems arising from political imperatives generated by a democratic society.

Credits: 3.00

### PA 302 - Org Theory & Behavior

Examination of basic classical and contemporary theory, research on human relations, internal structures, environments, types, diverse workplaces, general properties of complex organizations and bureaucracies.

Credits: 3.00

### PA 303 - Research & Evaluation Methods

Conceptualization, collection and analysis of primary and secondary data; interpretation, and communication of results of applied research and/or evaluation studies for decision makers. Separate lab required.

Credits: 3.00

### PA 305 - Public and Nonprofit Budgeting

A focus on the budget as the primary policy and planning document in public and nonprofit organizations.

Credits: 3.00

### PA 306 - Policy Systems

The study and application of system-level public policy frameworks, theories and models to contemporary policy problems and solutions.

Credits: 3.00

### 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: 3.00

**PA 308 - Decision Making Models**

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**PA 314 - Administrative Law**

Examines legal foundations of public administration focusing on legal issues of most importance to present or future administrators.

Credits: 3.00

**PA 315 - Hlth Srvs & Med Care in US**

Defines the milieu of issues and challenges faced by managers in the health services setting.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**PA 320 - Local Government Admin**

This course is a primer on local government administration in the US using the case method to experience the complexity of the challenges one confronts in the field.

Credits: 3.00

**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: 3.00

**PA 323 - Non-Profit Administration**

Course reviews the history of, and managerial challenges inherent to, the non-profit sector in the United States and explores sector's relationship to the governmental and business sectors.

Credits: 3.00

**PA 325 - Health Care Policy**

This course addresses policy issues affecting the structure, performance and change in the U.S. health care system, with a specific focus on the role of health care managers. Pre/co-requisite: CDAE 102, CDAE 124, or Instructor permission.

Credits: 3.00

**PA 326 - Community Economic Development**

Examines how rural and urban communities address poverty, unemployment and other economic problems through job creation and retention, workforce training and support, and other development strategies. Cross-listed with: CDAE 326.

Credits: 3.00

**PA 334 - Organizational Behav&Cultures**

Credits: 3.00

**PA 380 - Internship**

Supervised administrative experience culminating in a written report.

Credits: 3.00

**PA 391 - Master's Thesis Research**

Thesis topic must be approved by faculty advisor.

Credits: 6.00

**PA 395 - Special Topics**

For advanced students within areas of expertise of the faculty. Varied course offerings. Contemporary topics. Instructor Permission.

Credits: 6.00

**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: 6.00


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	<h2>Graduate Courses in Public Health (PH)</h2> <p><b>PH 301 - Public Health &amp; Health Policy</b> Course focuses on current public health issues, barriers to improving population health, and policy tensions between science, economics, education, politics, government, media, and public health. Credits: 3.00</p> <p><b>PH 302 - Epidemiology I</b> Epidemiology is the study of disease distribution and determinants in populations; we will define populations and estimate the distribution of health-related conditions and their determinants. Pre/co-requisites: Bachelor's degree and college-level mathematics course. Credits: 3.00</p> <p><b>PH 303 - Biostatistics I:App Rsch in PH</b> Biostatistics I (Applied Research Methods in Public Health) includes biostatistics, research designs, and qualitative approaches, and includes emphasis on evaluating research articles in public health. Pre/co-requisites: Bachelor's degree and college-level mathematics course. Credits: 3.00</p> <p><b>PH 304 - Environmental Public Health</b> This course explores major areas of environmental public health (EPH), including environmental hazards, exposures, and related health outcomes, including emerging topics in environmental public health. Co-requisite: PH 302. Credits: 3.00</p> <p><b>PH 310 - Public Health Law and Ethics</b> Public health law examines the government's authority, at various jurisdictional levels, to improve the health of the general population within societal limits and norms. Prerequisite: Bachelor's degree. Credits: 3.00</p> <p><b>PH 311 - Global Public Health</b> This course explores global public health challenges affecting people primarily in developing or resource- constrained coutries. Cultural competency concepts will be embedded. Prerequisite: Bachelor's degree. Credits: 3.00</p> <p><b>PH 312 - Food Systems &amp; Public Health</b> This course explores food systems' influence on public health, and how technology, policy, biology, epidemiology, and historical knowledge can support a healthier food system. Prerequisite: Bachelor's degree. Credits: 3.00</p> <p><b>PH 395 - Special Topics</b></p>			

See Schedule of Courses for specific titles.  
Credits: 3.00

**PH 396 - Advanced Special Topics**

See Schedule of Courses for specific titles.  
Credits: 3.00

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Graduate Courses in Public Serv Tech Gen (PSTG)

PSTG 300 - Nurse Midwifery Grad Program

Credits: 6.00

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## Graduate Courses in Rehabilitation & Movement Sci (RMS)

## RMS 213 - Biomechanics of Human Movement

Students learn to apply kinesiology and biomechanical principles and concepts to the analysis of human movement, posture, joint structure and function, and gait. Pre/co-requisites: ANPS 019/ANPS 020, and Undergraduate Physics.

Credits: 3.00

## RMS 220 - Research I

Focus is on critical analysis of research literature. Emphasis on critically reading and interpreting published research regarding applicability to the practice of health care professionals. Pre/co-requisite: Undergraduate Statistics.

Credits: 3.00

## RMS 244 - Patient Mgmt Therapeutic Modal

Lecture/laboratory experience re theory and application skills for therapeutic modalities including heat, cold, light, water, sound, electricity, massage, traction, pneumatic pressure, and biofeedback.  
Pre/co-requisite: ANPS 019/ANPS 020.

Credits: 3.00

## RMS 303 - Hlth Promotion &amp; Disease Prvnt

Students learn the value of and barriers to health promotion health protection and disease prevention, factors that influence personal health decisions, and preventive interventions.

Credits: 3.00

## RMS 351 - Exercise in Health and Disease

Effects of exercise on physiological function, emphasizing muscular, skeletal, cardiovascular, pulmonary, neurological and endocrine systems, and the relationship of diet/exercise to health/wellness across the lifespan. Prerequisites: DPT major or Graduate standing; Anatomy/Physiology recommended.

Credits: 3.00

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Graduate Courses in Religion (REL)

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

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## 2012-2013 Catalogue

### Graduate Courses in Secondary Education (EDSC)

#### 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: 3.00

#### EDSC 207 - Development:Theory & Applctn

Participants in this class examine adolescent developmental and learning theories. A Service Learning requirement allows students to apply understanding in the context of instructional settings. Prerequisites: EDTE 001 or EDFS 002 or instructor permission.

Credits: 4.00

#### EDSC 209 - Practicum in Teaching

Field-experience in secondary setting. Focus on school culture and student needs while documenting effectiveness in one-on-one teaching. Professional attributes/dispositions are critically assessed. Pre/co-requisite: EDFS 203/EDSC 207.

Credits: 4.00

#### EDSC 215 - Reading in Secondary Schools

Theory and methods of reading/writing explored in the context of literacy. Focus on reading, writing, speaking and critical thinking across disciplines. Cultural contexts explored. Pre/co-requisites: EDSC 207 and EDSC 209.

Credits: 4.00

#### EDSC 216 - Curr,Instr&Assmt Sec Schl Tchr

Development of methods related to secondary school teaching. Study and application of constructivist learning theory, differentiation, authentic assessment in planning. Focus on cross-disciplinary collaboration. Co-requisite: EDSC 215.

Credits: 3.00

#### 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: 3.00

#### EDSC 226 - Teaching Internship

Collaboration with professional teachers in design and implementation of effective instruction, with special focus on developing programs in a high school setting. Prerequisite: EDSC 203, EDSC 207, EDSC 209, EDSC 215, EDSC 216, and Special Methods.

Credits: 12.00

**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: 3.00

**EDSC 230 - Teaching for Results**

Analysis of planning, curriculum design, teaching, evaluation and classroom management from the perspective of research and practice. Individual tasks culminate in production of a licensure portfolio. Co-requisite: EDSC 226.

Credits: 3.00

**EDSC 257 - Tchng 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: 3.00

**EDSC 259 - Tchng 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 licensure program.

Credits: 3.00

**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: 5.00

**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: 1.00 to 6.00

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# 2012-2013 Catalogue

## Graduate Courses in Social Work (SWSS)

## 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: 3.00

## SWSS 212 - Social Work Practice I

A comprehensive introduction to concepts and skills employed by social workers in interactions and interventions with individuals, families, and groups is provided. Prerequisite: MSW standing; or Instructor permission.

Credits: 3.00

## SWSS 213 - Social Work Practice II

Knowledge and skills of social work practice with organizations and communities is emphasized.  
Prerequisite: Completion of SWSS 212; MSW advanced standing; or Instructor permission.

Credits: 3.00

## SWSS 216 - Th Found of Hum Beh&amp;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: 3.00

## SWSS 217 - Th Found Hum Beh&amp;Soc Envr II

Focus is on theories regarding the nature and functioning of human service organizations and communities in relation to meeting human needs. Prerequisite: SWSS 216 or Instructor permission.

Credits: 3.00

## SWSS 220 - Soc Welfare Pol &amp; Services I

An introduction to history and philosophy of social work and social welfare and the structure of service programs is provided. Prerequisite: MSW standing or Instructor permission.

Credits: 3.00

## SWSS 221 - Soc Welfare Pol &amp; 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: 3.00

## SWSS 224 - Child Abuse &amp; 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: 3.00

**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: 3.00

**SWSS 226 - Assessment Theory Social Work**

An MSW foundation elective analyzing competing and complementary assessment theories and their implications in social work in health/mental health and with children and families. Prerequisite: MSW standing or Instructor permission.  
Credits: 3.00

**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: 3.00

**SWSS 229 - D2:Soc Work&Disability Rights**

A multi-cultural, age, gender, economic and international exploration of having a disability in terms of language, labeling, rights, social location, legislation, services and personal narratives.  
Credits: 3.00

**SWSS 290 - Foundation Yr Field Practicum**

Supervised field-based learning of 15-20 hours per week. Students are placed in human service agencies and organizations and learn the purposeful application of generalist social work theory, ethics, and skills. Prerequisite: Permission of Coordinator of Field Education.  
Credits: 3.00 to 4.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**SWSS 314 - Transformative Social Work I**

Advanced practice in transformative social work will focus on developing relational, profound, and generative meanings for change across populations, fields of practice and social issues. Prerequisite: Completion of Foundation Year.  
Credits: 3.00

**SWSS 315 - Transformative Social Work II**

Advanced practice in Transformative Social Work II will focus on practical applications across populations at risk, field of practice and social issues. Prerequisite: Completion of Foundation Year.  
Credits: 3.00

**SWSS 316 - Integrative Appr Transform SW**

In this course students will synthesize their exploration of their area of focus in transformative social work through scholarly reading, research and classroom presentations. Prerequisite: Completion of Foundation Year.  
Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**SWSS 331 - Feminist Social Work Practice**

An advanced MSW concentration elective that analyzes practice conceptions and dilemmas of feminist social work in a global context and emphasizes professional activism and leadership. Prerequisite: Completion of MSW foundation course work; or Instructor permission.  
Credits: 3.00

**SWSS 332 - SW w/Battered Women&Children**

An advanced MSW concentration elective that investigates theoretical and practical issues of social work practice with battered women and their children and develops related recommendations.

Prerequisite: Completion of MSW foundation course work; or Instructor permission.  
Credits: 3.00

**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: 3.00

**SWSS 334 - Intrdsc Sem Neurodev Disabil I**

Seminar exploring interdisciplinary process, collaborative teaming, cultural competence and family-centered care as they relate to children and families affected by neurodevelopmental and related disabilities. Pre/co-requisites: Permission of Instructor, Graduate standing.  
Credits: 3.00

**SWSS 335 - Intrdsc Sem Neurodev Disabil 2**

Seminar exploring interdisciplinary process, collaborative teaming, cultural competence and family-centered care as they relate to children and families affected by neurodevelopmental and related disabilities. Pre/co-requisite: Graduate standing.  
Credits: 3.00

**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: 4.00

**SWSS 390 - Concentration Yr Field Pract**

Supervised field-based learning of 15-20 hours per week. Students are placed in human service agencies and organizations and apply advanced social work practice related to an area of concentration. Prerequisite: Completion of all Foundation Year Graduate Level Coursework; permission of Field Education Coordinator.  
Credits: 3.00

**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: 3.00

**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: 1.00

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## Graduate Courses in Sociology (SOC)

## 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 SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission. Cross-listed with: CDAE 218.

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 in the arenas of criminal justice, the labeling of criminal offenders, and other issues related to crime, punishment, and justice. Prerequisites: SOC 001 and SOC 100, or SOC 101.  
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, including SOC 001 and SOC 100, or SOC 001 and SOC 101, or Instructor permission.  
Credits: 3.00

**SOC 219 - D1: 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 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 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 the public.  
Prerequisites: Six hours of Sociology including SOC 001 and SOC 100, or SOC 001 and SOC 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 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 of 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 - D2: 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 - Qualitative Research Methods**

Principles of qualitative research design and ethics and data collection, analysis, and presentation. Students will complete a research project over the course of the semester. Prerequisites: six hours of Sociology including SOC 001 and SOC 100, 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. Prerequisites: six hours of Sociology including SOC 001 and SOC 100, 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. Prerequisites: Six hours of Sociology including SOC 001 and SOC 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 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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Credits: 3.00

**SPAN 298 - Advanced Readings & Research**

Permission of Chair required. Prerequisite: SPAN 140.

Credits: 3.00

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## 2012-2013 Catalogue

### Graduate Courses in Special Education (EDSP)

- 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: 3.00
- EDSP 201 - D2:Foundations of Special Ed**

Examination of historical and current trends in the treatment of individuals with disabilities including effects of discrimination, advocacy, litigation, legislation and economic considerations on educational services and community inclusion. Prerequisite: Twelve hours in Education and related areas, or Instructor permission.

Credits: 3.00
- EDSP 202 - Severe Disabil Char&Intervent**

Physical, sensory, health, intellectual and behavioral characteristics of developmental disabilities. Educational approaches and supports from various professional disciplines to educate students with severe disabilities. Prerequisite: Permission of Instructor.

Credits: 3.00
- EDSP 216 - Curr&Instruct in Special Ed**

Introduction to curriculum and instruction for individuals who present academic and behavioral challenges. Emphasis on assessment, evaluation, curriculum, instruction, theories of learning and social development. Pre/co-requisite: Instructor Permission.

Credits: 3.00
- EDSP 217 - Behavior Analysis in SpecialEd**

Individualized instruction for learners with significant disabilities emphasizing learning principles, behavior analysis, and research based instruction and interventions. Prerequisite: Instructor Permission.

Credits: 3.00
- 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: 3.00
- EDSP 228 - Adv Methods & Instr Special Ed**

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: 3.00

**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: 3.00

**EDSP 290 - Early Lit and Math Curriculum**

Study of curriculum and technology areas related to development, adaptation, and assessment of early literacy and mathematics instruction for elementary age students with disabilities. Prerequisite: Instructor Permission.

Credits: 3.00

**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: 6.00

**EDSP 296 - Laboratory Exp in Education**

Credit as arranged.

Credits: 6.00

**EDSP 297 - Adolescent Lit & Math Curric**

Development, adaptation and assessment of literacy and mathematics curriculum for adolescent age students with disabilities. Prerequisite: Instructor Permission.

Credits: 3.00

**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: 3.00

**EDSP 301 - Historic Trend Issues Services**

Study treatment of individuals with disabilities, including effects of discrimination, advocacy, litigation, legislation, sociological perspectives and economic considerations in education, vocational, residential service systems. Prerequisite: Instructor permission.

Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EDSP 307 - Prev&Interv Strategy:Students**

This course covers effective prevention and intervention strategies with, or at-risk, for emotional and behavioral disorders. It covers such topics as classroom management, social skills training, anger management, internalizing disorders. Prerequisite: BA in Education/related field.  
Credits: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**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: 3.00

**EDSP 319 - Intern Sp Personnel in Spec Ed**

Students will undertake an approved internship in an institution which reflects the particular area of interest and needs of the student. Prerequisite: Permission. for special education services.  
Prerequisite: Instructor permission.  
Credits: 6.00

**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: 3.00

**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: 3.00

**EDSP 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

**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: 3.00

**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: 3.00

**EDSP 391 - Master's Thesis Research**

Thesis topic must be approved by a faculty committee.

Credits: 1.00 to 6.00

**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: 3.00

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### Graduate Courses in Statistics (STAT)

- STAT 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. Prerequisites: STAT 111, STAT 141 or STAT 143; or STAT 211. Cross-listed with: BIOS 200.

Credits: 3.00
- STAT 201 - Stat Analysis Via Computers**

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: STAT 111 with Instructor permission, or STAT 141. Co-requisite: STAT 211.

Credits: 3.00
- STAT 211 - Statistical Methods I**

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. Cross-listed with: BIOS 211.

Credits: 3.00
- STAT 221 - Statistical Methods II**

Cross-listed with: BIOS 221. Multiple regression and correlation. Basic experimental design. Analysis of variance (fixed, random, and mixed models). Analysis of covariance. Computer software usage. Prerequisites: STAT 141 or STAT 143, or STAT 211.

Credits: 3.00
- STAT 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. Prerequisites: Any 200-level Statistics course; STAT 221 or STAT 225 recommended; matrix algebra recommended. Cross-listed with: BIOS 223.

Credits: 3.00
- STAT 224 - Stats for Quality&Productivity**

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: STAT 141 or STAT 143, or STAT 211.

Credits: 3.00
- STAT 225 - Applied Regression Analysis**

Simple linear and multiple regression models; least squares estimates, correlation, prediction, forecasting. Problems of multicollinearity and influential data (outliers).

Credits: 3.00

**STAT 227 - Adv Statistical Methods II**

Cross-listed with: PSYC 341. 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. Prerequisites: STAT 211 with computer experience or PSYC 340.

Credits: 3.00

**STAT 229 - Survival Analysis**

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. Cross-listed with: BIOS 229.

Credits: 3.00

**STAT 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 surface optimization. Prerequisites: STAT 211, STAT 221 recommended.

Credits: 3.00

**STAT 233 - Survey Sampling**

Design and data analysis for sample surveys. Simple random, stratified, systematic, cluster, multistage sampling. Practical issues in planning and conducting surveys. Prerequisites: STAT 211; or STAT 141 or STAT 143 with Instructor permission.

Credits: 3.00

**STAT 235 - Categorical Data Analysis**

Measures of association and inference for categorical and ordinal data in multiway contingency tables. Log linear and logistic regression models. Prerequisite: STAT 211. Cross-listed with: BIOS 235.

Credits: 3.00

**STAT 237 - Nonparametric Statistical Mthd**

Nonparametric and distribution free methods; categorical, ordinal, and quantitative data; confidence intervals; rank and chi-square hypothesis tests; computer-intensive procedures (bootstrap, exact tests). Prerequisite: STAT 211; or STAT 141 or STAT 143 with Instructor permission.

Credits: 3.00

**STAT 241 - Statistical Inference**

Introduction to statistical theory: related probability fundamentals, derivation of statistical principles, and methodology for parameter estimation and hypothesis testing. Prerequisites: STAT 151 or STAT 153 or STAT 251, STAT 141 or equivalent, MATH 121. Cross-listed with: BIOS 241.

Credits: 3.00

**STAT 251 - Probability Theory**

Distributions of random variables and functions of random variables. Expectations, stochastic independence, sampling and limiting distributions (central limit theorems). Concepts of random number generation. Prerequisites: MATH 121; STAT 151 or STAT 153 recommended. Cross-listed with: MATH 207, BIOS 251.

Credits: 3.00

**STAT 252 - Appl Discr Stochas Proc Models**

Markov chain models for biological, social, and behavioral systems models. Random walks, transition

and steady-state probabilities, passage and recurrence times. Prerequisite: STAT 151, STAT 153, or STAT 251.

Credits: 1.00

**STAT 253 - Appl Time Series & Forecasting**

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. Prerequisites: STAT 211 or STAT 225; or STAT 141 or STAT 143 with Instructor permission. Cross-listed with: CSYS 253.

Credits: 3.00

**STAT 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 MATH 271, STAT 153 or equivalent, and computer programming. Cross-listed with: CS 256, CSYS 256.

Credits: 3.00

**STAT 261 - Statistical Theory**

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: STAT 251 or either STAT 151 or STAT 153 with Instructor permission. Cross-listed with: BIOS 261.

Credits: 3.00

**STAT 265 - Integrated Product Development**

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. Cross-listed with: BSAD 293.

Credits: 3.00

**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 STAT 200, STAT 201, STAT 221 through STAT 237, or STAT 253; Some statistical software experience preferred. No credit for Graduate students in Statistics or Biostatistics.

Credits: 3.00

**STAT 295 - Advanced Special Topics**

For advanced students. Lectures, reports, and directed readings on advanced topics. Prerequisite: As listed in course schedule.

Credits: 4.00

**STAT 308 - Applied Biostatistics**

The rationale and application of biostatistical methods in the biological, health and life sciences with emphasis on interpreting and reporting results. sciences. Prerequisite: STAT 141 or equivalent.

Cross-listed with: MPBP 308, BIOS 308.

Credits: 5.00

**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: 1.00

**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: 1.00

**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: 1.00

**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: 1.00

**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: 1.00

**STAT 330 - Bayesian Statistics**

Introduction to Bayesian inference. Posterior inference, predictive distributions, prior distribution selection. MCMC algorithms. Hierarchical models. Model checking and selection. Use of computer software. Pre/co-requisites: STAT 241 or STAT 251 or Instructor permission.

Credits: 3.00

**STAT 360 - Linear Models**

Theory of linear models, least squares and maximum likelihood estimation, fixed, random and mixed models, variance component estimation, introduction to generalized linear models, bootstrapping. Prerequisites: STAT 261 and knowledge of matrix algebra or Instructor permission.

Credits: 3.00

**STAT 380 - Sem:Statistics & Biostatistics**

Presentation and discussion of current topics, methodological research and applications in Statistics and Biostatistics by graduate students, faculty and guest speakers. Prerequisite: Instructor Permission.

Credits: 0.50

**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: 3.00

**STAT 385 - Consulting Practicum**

Supervised field work in statistical consulting. Experiences may include advising UVM faculty and students or clients in applied settings such as industry and government agencies. Prerequisites: Second year Graduate standing in Statistics or Biostatistics and permission of Statistics Program Director.

Credits: 3.00

**STAT 391 - Master's Thesis Research**

Credits: 3.00

**STAT 395 - Advanced Special Topics**

Lectures or directed readings on advanced and contemporary topics not presently included in other statistics courses. Prerequisites: As listed in course schedule. Cross-listed with: BIOS 395.

Credits: 3.00

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Graduate Courses in Surgery (SURG)

**SURG 200 - Introduction to CTS I**

Introduction to research in Clinical & Translational Science (CTS) with a laboratory focusing on human subjects research in Emergency Medical Services (EMS). Prerequisite: Junior status or instructor permission; completion of mandatory hospital training at least one month before semester.

Credits: 4.00

**SURG 201 - EMS Research**

Advanced discussion and research training in Emergency Medical Services (EMS), with continued emergency department-based human subjects laboratory. Prerequisite: SURG 200 or CTS 200.

Credits: 4.00

**SURG 220 - Adv Topics in EMS Research**


Emergency Medical Services (EMS) research under guidance of a faculty member. Prerequisites: SURG 200, 201 and/or faculty permission.

Credits: 3.00

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Graduate Courses in Teacher Education (EDTE)

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Graduate Courses in Transportation Rsch Ctr (TRC)

TRC 310 - Transportation Systems Seminar

Introduction to the complex interconnections of engineering, policy, science and social science that characterize mobility systems. Seminar emphasizes academic research, articles and student writing. Prerequisites: Graduate standing and Instructor permission. Credits: 1.00

TRC 312 - Crit Issues in Transportation

Introduction to the complex interconnection of engineering, policy, science and social science that characterize transportation systems, mobility problems and solutions. Interdisciplinary teams conduct case studies. Prerequisite: Instructor permission. Credits: 3.00

TRC 314 - Travel, Safety & Human Factors

In-depth examination of human, environmental and vehicle factors in transportation crashes. Students develop safety research proposals and statistical measurements of risk and rates. Prerequisite: Instructor permission. Credits: 3.00

TRC 395 - Advanced Special Topics

See Schedule of Courses for specific titles. Credits: 3.00

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Graduate Courses in Vermont Studies (VS)

VS 295 - Advanced Special Topics

See Schedule of Courses for specific titles. Prerequisite: Advanced undergraduate or Graduate standing.

Credits: 3.00

VS 296 - Advanced Special Topics

See Schedule of Courses for specific titles. Prerequisite: Advanced undergraduate or Graduate standing.

Credits: 4.00

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Graduate Courses in Water Resources (WR)

WR 391 - Master Thesis Rsch

Credit as arranged.

Credits: 1.00 to 12.00

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Credits: 4.00

**WFB 311 - Ecology of Fishes**

Structure of fish assemblages, zoogeography, morphology, life history strategies, bioenergetics, competition, predation, and fish effect on ecosystems. Prerequisites: Graduate standing or Instructor permission; NR 140 or STAT 201; an ecology course.

Credits: 3.00

**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: 4.00

**WFB 387 - 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: 3.00

**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: 3.00

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Accountancy (M.Acc.)

Affiliated with: Graduate College, School of Business Administration

Animal Science (M.S.)

Affiliated with: Animal Science Department, College of Agriculture and Life Sciences, Graduate College

Animal, Nutrition and Food Science (Ph.D.)

Affiliated with: Nutrition and Food Sciences Department, Animal Science Department, College of Agriculture and Life Sciences, Graduate College

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Biochemistry (M.S.)  
Affiliated with: Biochemistry Department, Graduate College

Biochemistry (Ph.D.)  
Affiliated with: Biochemistry Department, Graduate College

Bioengineering (Ph.D.)  
Affiliated with: School of Engineering, College of Engineering and Mathematical Sciences, College of Medicine, Graduate College

Biology (M.S.)  
Affiliated with: Biology Department, College of Arts and Sciences, Graduate College

Biology (M.S.T.)  
Affiliated with: Biology Department, College of Arts and Sciences, Graduate College

Biology (Ph.D.)  
Affiliated with: Biology Department, College of Arts and Sciences, Graduate College

Biostatistics (M.S.)  
Affiliated with: Mathematics and Statistics Department, College of Engineering and Mathematical Sciences, Graduate College

Business Administration (M.B.A.)  
Affiliated with: Graduate College, School of Business Administration

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- Cell and Molecular Biology (M.S.)  
Affiliated with: Cell and Molecular Biology Program, Graduate College
- Cell and Molecular Biology (Ph.D.)  
Affiliated with: Cell and Molecular Biology Program, Graduate College
- Chemistry (M.S.)  
Affiliated with: Chemistry Department, College of Arts and Sciences, Graduate College
- Chemistry (Ph.D.)  
Affiliated with: Chemistry Department, College of Arts and Sciences, Graduate College
- Civil and Environmental Engineering (M.S.)  
Affiliated with: Civil Engineering Program, School of Engineering, College of Engineering and Mathematical Sciences, Graduate College
- Civil and Environmental Engineering (Ph.D.)  
Affiliated with: Civil Engineering Program, School of Engineering, College of Engineering and Mathematical Sciences, Graduate College
- Clinical and Translational Science (Ph.D.)  
Affiliated with: Center for Clinical and Translational Science , Graduate College
- Clinical and Translational Science (Certificate of Graduate Study)  
Affiliated with: Center for Clinical and Translational Science , Graduate College
- Clinical and Translational Science (M.S.)  
Affiliated with: Center for Clinical and Translational Science , Graduate College
- Communication Sciences and Disorders (M.S.)  
Affiliated with: Communication Sciences and Disorders Department, College of Nursing and Health Sciences, Graduate College
- Community Development and Applied Economics (M.S.)  
Affiliated with: Community Development and Applied Economics Department, College of Agriculture and Life Sciences, Graduate College
- Complex Systems (Certificate of Graduate Study)  
Affiliated with: College of Engineering and Mathematical Sciences, Graduate College
- Computer Science (M.S.)  
Affiliated with: Computer Science Department, College of Arts and Sciences, Graduate College
- Computer Science (Ph.D.)

Affiliated with: Computer Science Department, College of Engineering and Mathematical Sciences, Graduate College

Counseling (M.S.)

Affiliated with: Leadership and Developmental Sciences Department, College of Education and Social Services, Graduate College

Counseling (Post-Master's Certificate)

Affiliated with: Leadership and Developmental Sciences Department, College of Education and Social Services

Curriculum and Instruction (M.A.T.)

Affiliated with: Education Department, College of Education and Social Services, Graduate College

Curriculum and Instruction (M.Ed.)

Affiliated with: Education Department, College of Education and Social Services, Graduate College

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Dietetics (M.S.D.)

Affiliated with: Nutrition and Food Sciences Department, College of Agriculture and Life Sciences, Graduate College

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Food Systems (M.S.)  
Affiliated with: Nutrition and Food Sciences Department, College of Agriculture and Life Sciences, Graduate College

French (M.A.)  
Affiliated with: Romance Languages and Linguistics Department, College of Arts and Sciences, Graduate College

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Geology (M.S.)  
Affiliated with: Geology Department, College of Arts and Sciences, Graduate College

German (M.A.)  
Affiliated with: German and Russian Department, College of Arts and Sciences, Graduate College

Greek and Latin (M.A.)  
Affiliated with: Classics Department, College of Arts and Sciences, Graduate College

Greek and Latin (M.A.T.)  
Affiliated with: Classics Department, College of Arts and Sciences, Graduate College

Greek and Latin Languages (GKLT) (Certificate of Graduate Study)  
Affiliated with: Classics Department, Graduate College

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

Affiliated with: Leadership and Developmental Sciences Department, College of Education and Social Services, Graduate College

Historic Preservation (M.S.)

Affiliated with: History Department, College of Arts and Sciences, Graduate College

History (M.A.)

Affiliated with: History Department, College of Arts and Sciences, Graduate College

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Integrated Studies (Post-Master's Certificate)  
Affiliated with: Leadership and Developmental Sciences Department, Education Department, College of Education and Social Services

Interdisciplinary (M.Ed.)  
Affiliated with: Leadership and Developmental Sciences Department, College of Education and Social Services, Graduate College

Interdisciplinary Study of Disabilities (ISD) (Certificate of Graduate Study)  
Affiliated with: College of Education and Social Services, Graduate College

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Master's Entry Program In Nursing (Pre-License/M.S.) (M.S.)  
Affiliated with: Nursing Department, College of Nursing and Health Sciences

Materials Science (M.S.)  
Affiliated with: Materials Science Program, College of Arts and Sciences, College of Engineering and Mathematical Sciences, Graduate College

Materials Science (Ph.D.)  
Affiliated with: Materials Science Program, College of Arts and Sciences, College of Engineering and Mathematical Sciences, Graduate College

Mathematical Sciences (Ph.D.)  
Affiliated with: Mathematics and Statistics Department, College of Engineering and Mathematical Sciences, Graduate College

Mathematics (M.S.)  
Affiliated with: Mathematics and Statistics Department, College of Engineering and Mathematical Sciences, Graduate College

Mathematics (M.S.T.)  
Affiliated with: Mathematics and Statistics Department, College of Engineering and Mathematical Sciences, Graduate College

Mechanical Engineering (M.S.)  
Affiliated with: Mechanical Engineering Program, School of Engineering, College of Engineering and Mathematical Sciences, Graduate College

Mechanical Engineering (Ph.D.)  
Affiliated with: Mechanical Engineering Program, School of Engineering, College of Engineering and Mathematical Sciences, Graduate College

Microbiology and Molecular Genetics (M.S.)  
Affiliated with: Microbiology and Molecular Genetics Department, College of Agriculture and Life Sciences, Graduate College

Microbiology and Molecular Genetics (Ph.D.)  
Affiliated with: Microbiology and Molecular Genetics Department, Graduate College

Molecular Physiology and Biophysics (M.S.)  
Affiliated with: Molecular Physiology and Biophysics Department, College of Agriculture and Life Sciences, Graduate College

Molecular Physiology and Biophysics (Ph.D.)

Affiliated with: Molecular Physiology and Biophysics Department, College of Agriculture and Life Sciences,  
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- Natural Resources (Ph.D.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Aquatic Ecology and Watershed Science (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Environment, Society and Public Affairs (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Environmental Thought and Culture (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Forestry (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Master of Environmental Law and Policy/Master of Science in Natural Resources (MELP/MSNR) (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Natural Resources: Wildlife Biology (M.S.)  
Affiliated with: Natural Resources Program, Graduate College, The Rubenstein School of Environment and Natural Resources
- Neuroscience (M.S.)  
Affiliated with: Anatomy and Neurobiology Department, Neuroscience Program, College of Arts and Sciences, College of Nursing and Health Sciences, Graduate College
- Neuroscience (Ph.D.)  
Affiliated with: Anatomy and Neurobiology Department, Neuroscience Program, College of Arts and Sciences, College of Nursing and Health Sciences, Graduate College
- Nursing (M.S.)  
Affiliated with: Nursing Department, College of Nursing and Health Sciences, Graduate College
- Nutrition and Food Sciences (M.S.)  
Affiliated with: Nutrition and Food Sciences Department, College of Agriculture and Life Sciences, Graduate College

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Affiliated with: Education Department, College of Education and Social Services, Graduate College

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Colleges and Schools > Graduate College

### Graduate College (GC)

#### Contact Information

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

Phone: (802) 656-3160  
Fax: (802) 656-0519  
Email: [gradcoll@uvm.edu](mailto:gradcoll@uvm.edu)

Web Site ☐

#### 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 of the Graduate College is 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 over 50 different master's programs of study and over 20 doctoral programs. During the 2010-2011 academic year, 391 master's and 97 doctoral degrees were awarded. The college enrolls approximately 1,500 students, more than 500 of these pursuing the doctorate.

The Graduate College also administers seven Certificate of Graduate Study programs in various disciplines.

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 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.

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- Complex Systems (CGS)
- Ecological Design (CGS)
- Ecological Economics (CGS)
- Greek and Latin Languages (GKLT) (CGS)
- Interdisciplinary Study of Disabilities (ISD) (CGS)
- Sustainable Transportation Systems and Mobility (CGS)

## Accelerated Masters Program (A.M.P.)

- Animal Science (A.M.P.)
- Biology (A.M.P.)
- Biostatistics (A.M.P.)
- Civil and Environmental Engineering (A.M.P.)
- Computer Science (A.M.P.)
- Curriculum and Instruction (A.M.P.)
- Electrical Engineering (A.M.P.)
- Materials Science (A.M.P.)
- Mathematics (A.M.P.)
- Mathematics: Statistics (A.M.P.)
- Mechanical Engineering (A.M.P.)
- Microbiology and Molecular Genetics (A.M.P.)
- Nursing (A.M.P.)
- Physics (A.M.P.)
- Public Administration (A.M.P.)

## Master of Arts (M.A.)

- English (M.A.)
- French (M.A.)
- German (M.A.)
- Greek and Latin (M.A.)
- History (M.A.)
- Psychology (M.A.)

## Master of Accountancy (M.Acc.)

- Accountancy (M.Acc.)

## Master of Arts in Teaching (M.A.T.)

- [Curriculum and Instruction \(M.A.T.\)](#)
- [Greek and Latin \(M.A.T.\)](#)

## Master of Business Administration (M.B.A.)

- [Business Administration \(M.B.A.\)](#)

## Master of Education (M.Ed.)

- [Curriculum and Instruction \(M.Ed.\)](#)
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- [Educational Studies \(M.Ed.\)](#)
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- [Interdisciplinary \(M.Ed.\)](#)
- [Reading and Language Arts \(M.Ed.\)](#)
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## Master of Public Administration (M.P.A.)

- [Public Administration \(M.P.A.\)](#)

## Master of Science (M.S.)

- [Animal Science \(M.S.\)](#)
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- [Biology \(M.S.\)](#)
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- [Natural Resources: Environment, Society and Public Affairs \(M.S.\)](#)
- [Natural Resources: Environmental Thought and Culture \(M.S.\)](#)
- [Natural Resources: Forestry \(M.S.\)](#)
- [Natural Resources: Master of Environmental Law and Policy/Master of Science in Natural Resources \(MELP/MSNR\) \(M.S.\)](#)
- [Natural Resources: Wildlife Biology \(M.S.\)](#)
- [Neuroscience \(M.S.\)](#)
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- [Nutrition and Food Sciences \(M.S.\)](#)
- [Pathology \(M.S.\)](#)
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- [Plant and Soil Science \(M.S.\)](#)
- [Plant Biology \(M.S.\)](#)
- [Statistics \(M.S.\)](#)

**Master of Science in Dietetics (M.S.D.)**

- [Dietetics \(M.S.D.\)](#)

**Master of Science for Teachers (M.S.T.)**

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**Master of Social Work (M.S.W.)**

- [Social Work \(M.S.W.\)](#)

**Doctor of Education (Ed.D.)**

- [Educational Leadership and Policy Studies \(Ed.D.\)](#)

**Doctor of Physical Therapy (D.P.T.)**

- [Physical Therapy \(D.P.T.\)](#)

**Doctor of Philosophy (Ph.D.)**

- [Animal, Nutrition and Food Science \(Ph.D.\)](#)
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## Master's Entry Program (M.S.)

- [Master's Entry Program In Nursing \(Pre-License/M.S.\)](#)

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Clinical and Translational Science (Certificate of Graduate Study)

Overview

Clinical and Translational Science (CTS) comprises a body of knowledge spanning basic biology, clinical medicine, and community health policy that applies this knowledge to develop new systems to improve human health.

The Certificate of Graduate Study in CTS requires nineteen credits of core, foundational courses in the discipline, along with attendance at seminars in clinical and translational research.

More information on the Certificate is available from the [Center for Clinical and Translational Science](#) ☐.

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Center for Clinical and Translational Science](#).

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Complex Systems (Certificate of Graduate Study)

Overview

The Certificate of Graduate Study in Complex Systems requires fifteen graduate credits, including two core courses, one course on core complex systems methodologies, and two approved and related complex systems electives. It may be earned either in conjunction with or independent of a UVM graduate degree program.

Additional information on the Certificate of Graduate Study in Complex Systems is available from the [Complex Systems Center](#) in the College of Engineering and Mathematics.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).

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Ecological Design (Certificate of Graduate Study)

Overview

Ecological Design connects many different fields of study and the Certificate of Graduate Study provides students with an opportunity to participate in both concentrated studies in a traditional discipline, and project or solution-oriented learning. The CGS in Ecological Design requires fifteen credits including four core courses and one approved elective. Students may earn the Certificate either in conjunction with a UVM master's or doctoral degree, or independent of a degree.

More information is available from the Program's [Gund Institute](#) website.

Affiliations

- Colleges and Schools: [Graduate College](#). [The Rubenstein School of Environment and Natural Resources](#).

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Ecological Economics (Certificate of Graduate Study)

Specific Requirements

Ecological Economics connects many different fields of study and the Certificate of Graduate Study provides students with an opportunity to participate in both concentrated studies in a traditional discipline, and project or solution-oriented learning. The CGS in Ecological Economics requires fifteen credits, including three core courses and two approved electives. Students may earn the Certificate either in conjunction with a UVM master's or doctoral degree, or independent of a degree.

More information on the Certificate is available from the Program's [Gund Institute](#) website.

Affiliations

- Colleges and Schools: [Graduate College](#). [The Rubenstein School of Environment and Natural Resources](#).

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## Greek and Latin Languages (GKLT) (Certificate of Graduate Study)

### Overview

Students and scholars in many disciplines (e.g. classics, history, English, Medieval studies, religious studies, philosophy) need proficiency in Latin and Greek to carry out research. Other students come to classics too late in their undergraduate career to acquire language proficiency at a level which qualifies them for Ph.D. or MAT programs. Still other students are high school teachers who want to expand their repertoire of teaching subjects or who simply want to improve their mastery of their subject matter. Every year, excellent students inquire about the M.A. program who do not have sufficient Greek or Latin. This certificate offers an intensive language experience designed for such students.

### Specific Requirements

A minimum of fifteen credits chosen from the following:

- \* three to six credits of [GKLT 381A](#): Latin Seminar
- \* three to six credits of [GKLT 381B](#): Greek Seminar
- \* six credits in Greek Prose Style or Latin Prose Style ([GRK 211](#), [GRK 212](#) and [LAT 211](#), [LAT 212](#))

### Curriculum

- [GKLT 381](#): Seminar. Intensive study at the graduate level of Greek or Latin authors not read in the candidate's undergraduate program. Credit as arranged (usually three per semester).
  - This course is conventionally labeled 381A for Latin and 381B for Greek iterations. This course meets concurrently with LAT 211/212 or GRK 211/212 but students enrolled at the 381 level are held to higher standards and do more work.
  - Two sections of [GKLT 381](#), one in each language, are offered every semester.
- [GRK 211](#) and [GRK 212](#): Greek Prose Style. Readings in literary prose analyzed stylistically and imitated in composition (three credits each).
- [LAT 211](#) and [LAT 212](#): Latin Prose Style. Readings in literary prose analyzed stylistically and imitated in composition (three credits each).
  - The courses are taught in the following sequence, one per semester: [LAT 211](#) Fall, [GRK 212](#) Spring, [GRK 211](#) Fall, [LAT 212](#) Spring, then begin the cycle again. Thus Certificate students will get at least one semester of each sequence, with those who do the three-semester option getting three semesters. Occasionally, the order in a given academic year is reversed (e.g. [LAT 212](#) Fall, then [GRK 211](#) Spring), but that does not affect students' ability to fulfill the certificate program's requirements, as the courses need not be taken in sequence.
- Certificate students are strongly encouraged to sit in on intermediate level classes or higher level classes which they are not taking for credit, though no credit will be given toward the certificate. Students will do daily preparation in these classes but not take exams or do projects.
  - [LAT 101](#) and [LAT 102](#): Survey Latin Literature. Selections from principal Roman authors.
  - [GRK 051](#): Intermediate Greek. Review of syntax plus readings from Plato, Herodotus, and Euripides.
  - [GRK 052](#): Intermediate Greek. Review of syntax and readings from Homer.

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## Greek and Latin Languages (GKLT) (Certificate of Graduate Study)

### Overview

Students and scholars in many disciplines (e.g. classics, history, English, Medieval studies, religious studies, philosophy) need proficiency in Latin and Greek to carry out research. Other students come to classics too late in their undergraduate career to acquire language proficiency at a level which qualifies them for Ph.D. or MAT programs. Still other students are high school teachers who want to expand their repertoire of teaching subjects or who simply want to improve their mastery of their subject matter. Every year, excellent students inquire about the M.A. program who do not have sufficient Greek or Latin. This certificate offers an intensive language experience designed for such students.

### Specific Requirements

A minimum of fifteen credits chosen from the following:

- \* three to six credits of [GKLT 381A](#): Latin Seminar
- \* three to six credits of [GKLT 381B](#): Greek Seminar
- \* six credits in Greek Prose Style or Latin Prose Style ([GRK 211](#), [GRK 212](#) and [LAT 211](#), [LAT 212](#))

### Curriculum

- [GKLT 381](#): Seminar. Intensive study at the graduate level of Greek or Latin authors not read in the candidate's undergraduate program. Credit as arranged (usually three per semester).
  - This course is conventionally labeled 381A for Latin and 381B for Greek iterations. This course meets concurrently with LAT 211/212 or GRK 211/212 but students enrolled at the 381 level are held to higher standards and do more work.
  - Two sections of [GKLT 381](#), one in each language, are offered every semester.
- [GRK 211](#) and [GRK 212](#): Greek Prose Style. Readings in literary prose analyzed stylistically and imitated in composition (three credits each).
- [LAT 211](#) and [LAT 212](#): Latin Prose Style. Readings in literary prose analyzed stylistically and imitated in composition (three credits each).
  - The courses are taught in the following sequence, one per semester: [LAT 211](#) Fall, [GRK 212](#) Spring, [GRK 211](#) Fall, [LAT 212](#) Spring, then begin the cycle again. Thus Certificate students will get at least one semester of each sequence, with those who do the three-semester option getting three semesters. Occasionally, the order in a given academic year is reversed (e.g. [LAT 212](#) Fall, then [GRK 211](#) Spring), but that does not affect students' ability to fulfill the certificate program's requirements, as the courses need not be taken in sequence.
- Certificate students are strongly encouraged to sit in on intermediate level classes or higher level classes which they are not taking for credit, though no credit will be given toward the certificate. Students will do daily preparation in these classes but not take exams or do projects.
  - [LAT 101](#) and [LAT 102](#): Survey Latin Literature. Selections from principal Roman authors.
  - [GRK 051](#): Intermediate Greek. Review of syntax plus readings from Plato, Herodotus, and Euripides.
  - [GRK 052](#): Intermediate Greek. Review of syntax and readings from Homer.

These intermediate-level courses include a good deal of syntax review and vocabulary building. As such, they admirably complement the graduate-level courses. The pace is slower and there is more emphasis on explaining syntax and building vocabulary.

The aim of auditing lower level courses concomitantly with their credit-bearing work is to give certificate students something closer to a language immersion experience.

In some cases, other graduate courses may be used in fulfillment of requirements, with explicit approval from the classics faculty. Certificate students must maintain a GPA of 3.00.

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Arts and Sciences](#).
- Departments and Programs: [Classics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Interdisciplinary Study of Disabilities (ISD) (CGS)

Interdisciplinary Study of Disabilities (ISD) (Certificate of Graduate Study)

Overview

The Certificate of Graduate Study in ISD provides education and healthcare professionals, also people with disabilities and their family members, access to a cohesive and relevant series of courses to enhance their education and instructional needs in disability studies. The Certificate includes a total of eighteen credits, nine in core courses and nine in approved elective courses. Two options are offered:

1. Establish a general understanding of interdisciplinary practice across disabilities;

2. Combine the core courses with the focused study of a specific disability or related practice area.

Additional information about this program in the ISD is available from the [Certificate of Graduate Study](#)

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).

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Colleges and Schools > Graduate College > Academic Offerings > Sustainable Transportation Systems and Mobility (CGS)

Sustainable Transportation Systems and Mobility (Certificate of Graduate Study)

Overview

Transportation is a transdisciplinary field of study that broadly examines the movement of people and goods over space as well as the economic, public health, environmental and social impacts of those systems.

Local, regional and global transportation systems are vital to building community, the economy, and quality of life. Transportation designs, programs and policies impact the environment, energy, culture, equitable mobility between regions and groups, as well as quality of life. Critical transportation system issues and problems in the 21<sup>st</sup> century will require interdisciplinary teams to design innovative solutions. The overall goal of certificate is to establish a baseline of transportation system knowledge and to develop advanced critical thinking around interdisciplinary partnerships addressing problems in planning for transportation and mobility.

Specific Requirements

The Certificate of Graduate Study in Sustainable Transportation Systems and Mobility requires fifteen graduate credits distributed as follows:

- TRC 312 Critical Issues in Transportation\*
- TRC 314 Travel Safety and Human Factors\*
- NR 377 Land Use Policy and Economics
- Two additional courses (six credits total) selected from the list of electives

*\*These credits may be earned either in conjunction with or independent of a UVM graduate degree program.*

Additional information on the Certificate of Sustainable Transportation Systems and Mobility is available from the [CGS in Sustainable Transportation Systems and Mobility](#) website.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [College of Arts and Sciences](#). [College of Education and Social Services](#). [College of Engineering and Mathematical Sciences](#). [College of Nursing and Health Sciences](#). [Graduate College](#). [School of Business Administration](#). [The Rubenstein School of Environment and Natural Resources](#).

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Colleges and Schools > Graduate College > Academic Offerings > Animal Science (A.M.P.)

Animal Science (Accelerated Masters Program)

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 Science, can be obtained from the Department of Animal Science, 102 Terrill Hall, (802) 656-0155.

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.

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

The applicant must satisfy the requirements of the Graduate College and complete one semester with satisfactory performance in graduate courses or courses prescribed by the Graduate Committee.

Minimum Degree Requirements

Option A (Thesis): Thirty credits of study with a minimum of fifteen credits in courses in animal science or related fields and a minimum of nine credits of thesis research. Students are required to attend and participate in [ASCI 301](#), Graduate Journal Club, and [ASCI 302](#), Graduate Seminar every semester the courses are offered. Students must also prepare a research proposal.

Students are expected to meet with their graduate studies committee during their second and third semester and during the final semester for their thesis defense. Students are also expected to have one publication ready to submit or already submitted to an appropriate journal at the time of their defense. Students are also required to participate in at least one semester of teaching.

Option B (Non-Thesis): Thirty credits of study with twenty-four credits in courses in animal science or related fields and a minimum of six credits of literature research. Students are required to attend and participate in [ASCI 301](#), Graduate Journal Club, and [ASCI 302](#), Graduate Seminar, every semester the courses are offered.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Animal Science Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biology (A.M.P.)

Biology (Accelerated Masters Program)

Overview

A master's degree in biology can be earned in a shortened time by careful planning in the junior and senior years of undergraduate work. Biology B.S. majors should discuss this possibility with the department's 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, from among [BIOL 202](#), [BIOL 203](#), [BIOL 205](#), [BIOL 208](#), [BIOL 209](#), [BIOL 212](#), [BIOL 217](#), [BIOL 219](#), [BIOL 223](#), [BIOL 225](#), [BIOL 238](#), [BIOL 246](#), [BIOL 254](#), [BIOL 255](#), [BIOL 263](#), [BIOL 264](#), [BIOL 265](#), [BIOL 267](#), [BIOL 270](#), and [BIOL 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 GPA typically higher than 3.10 overall and 3.30 in biology courses. Following admission, students are required to take at least three credits of undergraduate research. After graduation with the B.S. degree, students are eligible to become candidates for the M.S. degree.

Specific Requirements

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

Satisfactory completion of a qualifying examination.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Biology Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biostatistics (A.M.P.)

Biostatistics (Accelerated Masters Program)

Overview

A master's degree in Mathematics, Statistics or Biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the M.S. could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently toward the M.S. degree requirements.

Students must declare their wish to enter the Accelerated Master's Program in Mathematics in writing to the chair of the Department of Mathematics and Statistics before the end of their sophomore year, and before they have taken MATH 241. They would apply to the Graduate College for admission, noting their interest in the Accelerated Master's Program. They can receive concurrent undergraduate and graduate credit for one or two courses, once admitted. Please refer to Section 13 of the Handbook for Graduate Studies in Mathematics ☐ for detailed information.

Students should discuss the possibility of an Accelerated Master's Program in statistics or in biostatistics with the director of the Statistics program as soon as they think they may be interested in this program.

Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Mathematics and Statistics Department.

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Colleges and Schools > Graduate College > Academic Offerings > Civil and Environmental Engineering (A.M.P.)

Civil and Environmental Engineering (Accelerated Masters Program)

Specific Requirements

Qualified undergraduate students who plan to earn a master's degree in civil and environmental engineering may enroll in the Accelerated Master's Program, which enables students to begin working on a master's degree while still an undergraduate. Students apply to the program in the second semester of their junior year. Upon entering the program, students may take up to nine graduate credits before conferral of the B.S. degree and no later than August before the start of their senior year. Of these, a maximum of six credits can be counted toward both the B.S. and the M.S. degrees, subject to approval of the student's graduate advisor. Students in the program typically begin work toward their master's thesis starting in the summer following their junior year.

To apply to the program, students must have a cumulative grade point average of at least 3.20 at the time of application, must submit a letter of application to the Graduate Program coordinator naming a faculty member who has agreed to serve as their graduate advisor and list the courses proposed for graduate credit. Applicants must also complete the Graduate College application.

Students pursuing an M.S. degree in civil and environmental engineering may choose either a thesis or non-thesis based program.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Civil Engineering Program](#). [School of Engineering](#).

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Computer Science (Accelerated Masters Program)

Overview

The Accelerated Master's Program (AMP) in computer science allows students with strong ability and motivation to complete a bachelor's 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.

Specific Requirements

The first four years of the AMP consist of a complete undergraduate program in computer science, satisfying the curricular requirements for either (i) the Bachelor of Science in Computer Science, (ii) the Bachelor of Science, major in Computer Science and Information Systems, or (iii) the Bachelor of Arts, major in Computer Science. 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 credits of courses taken during an AMP student's senior year can be applied simultaneously toward 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.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Computer Science Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Curriculum and Instruction (A.M.P.)

Curriculum and Instruction (Accelerated Masters Program)

Overview

The Accelerated Master's Program leading to an M.A. in Teaching for middle level and secondary is designed for those students who aspire to earn both a master's degree and a license to teach in public middle or secondary schools. Students will prepare for licensure to teach in grades five through nine or seven through twelve in one summer and academic year.

UVM students who are in their third year of study for a Bachelor's degree may apply to the Accelerated Master of Arts in Teaching program. These students, when accepted, may complete nine credits of graduate level coursework, six of which may be counted toward both the minimum requirements for the Master of Arts degree, as well as toward the undergraduate degree. Qualified candidates will need a major or its equivalent in an approved licensing endorsement.

Requests for further information and application instructions may be obtained by contacting the Middle Level or Secondary Education Program; 411 Waterman Building, (802) 656-1411.

Specific Requirements

All applicants to the Accelerated Master on Arts in Teaching Program must meet the following entrance criteria:

- For Middle Level Education, a minor or its equivalent in two of the following areas:
  - English, Science, Social Studies or Math.
- For Secondary Education, a major or its equivalent in a State-approved licensing area:
  - Sciences: Earth Science, Biology, Chemistry and Physics
  - Social Studies: Geography, History, Political Science, Economics
  - English, Mathematics, French, German, Latin or Spanish
- For both Middle Level and Secondary Education:
  - A minimum overall grade point average of 3.00 in undergraduate coursework as well as a 3.00 in the State-approved licensing area (major)
  - A demonstrated commitment to working with young people

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Electrical Engineering (A.M.P.)

Electrical Engineering (Accelerated Masters Program)

Specific Requirements

Qualified undergraduate students who plan to earn a master's degree in Civil and Environmental, Electrical, or Mechanical Engineering may enroll in the Accelerated Master's Program, which enables students to begin working on a master's degree while still an undergraduate. Students apply for the Accelerated Master's Program in the second semester of their junior year. Upon entering the Accelerated Master's Program, students may take up to nine credits of courses for graduate credit while still an undergraduate. Of these, up to six credits of 200-level or higher courses can be counted toward both the B.S. and the M.S. degrees, subject to approval of the student's graduate advisor. Students in the Accelerated Master's Program typically begin work toward their master's thesis starting in the summer following their junior year. To apply for the Accelerated Master's Program, students must have a cumulative grade-point average of at least 3.20 at the time of application, and they must submit a letter of application to the graduate program coordinator naming a faculty member who has agreed to serve as their graduate advisor, and they must complete the Graduate College application.

The Accelerated Master's Program is only available for electrical engineering and mechanical engineering students who are planning a thesis-based degree.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Electrical Engineering Program](#). [School of Engineering](#).

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Materials Science (Accelerated Masters Program)

Overview

The Accelerated Master's Program leads 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.

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:

Option A (Thesis): Thirty graduate credits of an approved program of study including at least eighteen credits of course work; completion of at least one three-credit 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.

Option B (Non-Thesis): Thirty graduate credits of an approved program of study; completion of at least one three-credit 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.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#). [College of Arts and Sciences](#).
- Departments and Programs: [Chemistry Department](#). [Physics Department](#). [Mechanical Engineering Program](#).

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Mathematics (Accelerated Masters Program)

Overview

A master's degree in mathematics, statistics or biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the M.S. could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently toward the M.S. degree requirements.

Students must declare their wish to enter the Accelerated Master's Program in writing to the department chair before the end of their sophomore year, and before they have taken MATH 241. They would apply to the Graduate College for admission, noting their interest in the Accelerated Master's Program. They can receive concurrent undergraduate and graduate credit for one or two courses, once admitted. Please refer to Section 13 of the Handbook for Graduate Studies in Mathematics ☐ for detailed information.

Students should discuss the possibility of an Accelerated Master's Program in mathematics, statistics or biostatistics with the respective program director as soon as they think they may be interested in this program.

Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Mathematics and Statistics Department.

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Colleges and Schools > Graduate College > Academic Offerings > Mathematics: Statistics (A.M.P.)

Mathematics: Statistics (Accelerated Masters Program)

Overview

A master's degree in mathematics, statistics or biostatistics can be earned in a shortened time by careful planning during the junior and senior years at UVM. For example, the M.S. could be earned in just one additional year, because six credits of undergraduate courses can also be counted concurrently toward the M.S. degree requirements.

Students must declare their wish to enter the Accelerated Master's Program in writing to the department chair before the end of their sophomore year, and before they have taken MATH 241. They would apply to the Graduate College for admission, noting their interest in the Accelerated Master's Program. They can receive concurrent undergraduate and graduate credit for one or two courses, once admitted. Please refer to Section 13 of the Handbook for Graduate Studies in Mathematics ☐ for detailed information.

Students should discuss the possibility of an Accelerated Master's Program in mathematics, statistics or biostatistics with the respective program director as soon as they think they may be interested in this program.

Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Mathematics and Statistics Department.

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Mechanical Engineering (A.M.P.)

Mechanical Engineering (Accelerated Masters Program)

Specific Requirements

Qualified undergraduate students who plan to earn a master's degree in mechanical engineering may enroll in the Accelerated Master's Program, which enables students to begin working on a master's degree while still an undergraduate. Students apply to the program in the second semester of their junior year. Upon entering the program, students may take up to nine graduate credits while still an undergraduate. Of these, up to six credits of 200-level or higher courses can be counted toward both the B.S. and the M.S. degrees, subject to approval of the student's graduate advisor. Students in the Accelerated Masters Program are required to follow the requirements of the *thesis option* M.S. degree, and typically begin work toward their master's thesis starting in the summer following their junior year.

To apply for the program, students must have a cumulative grade point average of at least 3.20 at the time of application, must submit a letter of application to the Graduate Program coordinator naming a faculty member who has agreed to serve as their graduate advisor and must complete the Graduate College application.

The Accelerated Master's Program is only available for electrical engineering and mechanical engineering students who are planning a thesis-based degree.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [School of Engineering](#). [Mechanical Engineering Program](#).

{Location}

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Colleges and Schools > Graduate College > Academic Offerings > Microbiology and Molecular Genetics (A.M.P.)

Microbiology and Molecular Genetics (Accelerated Masters Program)

Overview

Microbiology and Molecular Genetics (MMG), in conjunction with the School of Business Administration (SBA), offers a 4+1 Accelerated MMG-MBA Program in which outstanding students can earn a Master of Business Administration (M.B.A.) degree with just one additional year of study beyond the Baccalaureate. The MMG-MBA Program compresses the normal two years required to earn the M.B.A. degree into one year, allowing students to save a year's tuition and reach the job market one year sooner than usual.

Students typically apply to the MMG-MBA Program in the spring of their third year of undergraduate study, therefore having completed three years of study before entering the program. Applicants must also have a GPA of at least 3.00 in their first three years of study to be eligible for the program. Finally, in accordance with Graduate College guidelines, applicants should arrange to take the GRE exam in the spring of their third year.

Specific Requirements

The total credit requirement for a B.S. degree in Microbiology or Molecular Genetics is 120 credits. Of those 120 credits, the student must take the MMG Program core requirements and the advanced electives. In addition, the following economics and business courses are required: [EC 011](#), [EC 012](#), [BSAD 065](#), [BSAD 120](#), [BSAD 132](#), [BSAD 141](#), [BSAD 150](#), [BSAD 173](#) and [BSAD 180](#). The total credit requirement for an M.B.A. degree is thirty advanced business credits, taken in the 5th year.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Microbiology and Molecular Genetics Department](#).

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Nursing (A.M.P.)

Nursing (Accelerated Masters Program)

Overview

An R.N.-B.S.-M.S. program is available for current registered nurses. More details can be found under the B.S. in Nursing Science (for Registered Nurses).

Affiliations

- Colleges and Schools: [College of Nursing and Health Sciences](#). [Graduate College](#).
- Departments and Programs: [Nursing Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Physics (A.M.P.)

Physics (Accelerated Masters Program)

Overview

Students must apply for the Accelerated Master's Program (AMP) during spring semester of their junior year. Students interested in the AMP can request information in writing from the physics 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 year.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Physics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Public Administration (A.M.P.)

Public Administration (Accelerated Masters Program)

Overview

The Accelerated Master's Program in Public Administration (AMP-PA) offers University of Vermont students the opportunity to secure a sound undergraduate and graduate program of study in five rather than a minimum of six years. The program closely integrates 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 science and related disciplines requiring graduate work in administration, or planning and policy capacities in the public service. Application to the program is typically made during a student's junior year. More information on the AMP-PA program can be found on the [Master of Public Administration](#) website. Inquiries can be made through email [mpa@uvm.edu](mailto:mpa@uvm.edu) or by phone (802-656-0009).

Specific Requirements

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

Successful completion of thirty-six credits, including core courses [PA 301](#), [PA 302](#), [PA 303](#), [PA 305](#) and [PA 306](#), and an approved sequence of elective courses which may include up to nine credits of coursework from approved disciplines related to public administration. All graduate students in the MPA program are required to complete an approved three-credit internship as part of their sequence of courses beyond the core courses.

Satisfactory completion of the three-credit special topics course ([PA 395](#)), an evaluative device and capstone experience, is offered in the spring semester for students in their final semester of study in the AMP-PA program.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Community Development and Applied Economics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > English (M.A.)

## English (Master of Arts)

## Overview

The degree combines the history of literatures in English, from the Medieval period to the 21<sup>st</sup> century, with literary theory and cultural criticism. The department also has graduate faculty who specialize in Film and Television Studies and Rhetoric and Composition.

## General Requirements

- Requirements for the Masters Degree

## Specific Requirements

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

An undergraduate major in English or its equivalent with evidence (in the form of transcripts, letters of recommendation, and writing sample) that the applicant's undergraduate career has adequately prepared him or her for the particular demands of graduate study (please contact the director of Graduate Studies if you have questions regarding your preparedness for graduate-level study of English); satisfactory scores on the Graduate Record Examination (General test only); and demonstration of proficiency in writing (both by a statement of purpose detailing the applicant's reasons for pursuing graduate study in English and by the writing sample).

## Minimum Degree Requirements for the Degree of Master of Arts

**Option A (Thesis):** Completion of twenty-four credits of course work (normally eight courses), including [ENGS 350](#) (Survey of Literary Theory and Criticism); ONE course from [ENGS 320](#) (Studies in Literature to 1900); ONE course from [ENGS 330](#) (Studies in 20<sup>th</sup> and 21<sup>st</sup> Century Literature); and ONE course from any of the other categories: [ENGS 340](#) (Writing, Rhetoric and Composition), [ENGS 360](#) (Advanced Theory), [ENGS 370](#) (Film and Television Studies); and four additional courses. Students may take ONE 100- or 200-level course for graduate credit with approval of the course instructor, the director of Graduate Studies, and the Graduate College. (Please note that most English department Senior Seminars—course numbers 201-282—are pre-approved for graduate credit and are exempted from this restriction.) Candidates must also submit a relevant reading list, pass a four-hour written comprehensive exam based on it ([GRAD 397](#)), complete six additional credits by writing an acceptable thesis ([ENGS 391](#)), and defend the thesis successfully in a one-hour oral exam ([GRAD 399](#)).

**Option B - Comprehensive (Non-Thesis):** Completion of thirty credits of course work (normally ten courses), including [ENGS 350](#) (Survey of Literary Theory and Criticism); ONE course from [ENGS 320](#) (Studies in Literature to 1900); ONE course from [ENGS 330](#) (Studies in 20<sup>th</sup> and 21<sup>st</sup> Century Literature); TWO courses from the other categories: [ENGS 340](#) (Writing, Rhetoric and Composition), [ENGS 360](#) (Advanced Theory), [ENGS 370](#) (Film and Television Studies); and at least five additional courses. Students may take ONE 100- or 200-level course for graduate credit with approval of the course instructor, the director of Graduate Studies, and the Graduate College. (Please note that most English department Senior Seminars—course numbers 201-282—are pre-approved for graduate credit and are exempted from this restriction.) Candidates must submit three reading lists (covering three different areas of the discipline) and pass a four-hour written

comprehensive exam based on them ([GRAD 397](#)).

**Please note:**

1. All incoming Teaching Assistants are required to take [ENGS 345](#) (Practicum in the Teaching of Writing). This three-credit course does count toward the requisite number of credits for course work (for both options), but it does not count for distribution requirements.
2. The foreign language examination ([GRAD 385](#)) is NOT a degree requirement, but it is recommended, especially for students who might want to pursue a Ph.D.; students can also complete [GRAD 385](#) through approved course work.

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [English Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > French (M.A.)

French (Master of Arts)

Overview

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

General Requirements

- Requirements for the Masters Degree

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

Twenty-four credits of course work which may include a Graduate Humanities Seminar ([HUMN 300](#), [HUMN 301](#) or [HUMN 395](#)) and [EDSC 259](#) (Teaching Foreign Language in the Schools). In addition, six credits of directed research, with the following options:

Option A:

Thesis research (six credits)

Option B:

Two research papers (six credits)

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

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Romance Languages and Linguistics Department](#).

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > German (M.A.)

German (Master of Arts)

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

- Requirements for the Masters Degree

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 credits of graduate level courses including [GERM 281](#), [GERM 282](#) or [GERM 295](#), [GERM 296](#); additional courses in German, which may include two advanced courses in a related field (six credits); thesis research (six to twelve credits).

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

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [German and Russian Department](#).

[Location]

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	<p>Colleges and Schools &gt; Graduate College &gt; Academic Offerings &gt; Greek and Latin (M.A.)</p> <h2>Greek and Latin (Master of Arts)</h2> <h3>Overview</h3> <p>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; Near Eastern history; ancient music; Ovid.</p> <h3>General Requirements</h3> <ul style="list-style-type: none"><li>Requirements for the Masters Degree</li></ul> <h3>Specific Requirements</h3> <h4>Requirements for Admission to Graduate Studies in Greek and Latin for the Degree of Master of Arts</h4> <p>An undergraduate major or minor or the equivalent; a reading knowledge of a modern foreign language, usually French, German, or Italian.</p> <h4>Minimum Degree Requirements</h4> <p>Eighteen credits of advanced courses in Greek and Latin, six credits of which must be <a href="#">GKLT 381</a>; six additional credits in Greek and Latin, history, or philosophy; thesis research (normally six credits). 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.</p> <h4>Courses:</h4> <p><i>Option A (Thesis):</i></p> <p>Twenty-four credits of graded course work plus at least six credits of thesis research (<a href="#">GKLT 391</a>), and successful completion and defense of a master's thesis. The twenty-four credits of course work consist of: <a href="#">GKLT 300</a>; six credits of <a href="#">GKLT 381</a>; nine additional credits of advanced courses in Greek and Latin; six additional credits in Greek, Latin, classics, or approved credits in related fields.</p> <p>Note: The thesis option is reserved for students who have completed their first probationary year in the program and have passed the Greek and Latin sight translation exams by the beginning of the third semester. This option is, by special application, subject to Departmental permission.</p> <p><i>Option B (Non-Thesis):</i></p> <p>Thirty credits of graded course work. The thirty credits of course work consist of: <a href="#">GKLT 300</a>; six credits of <a href="#">GKLT 381</a>; fifteen additional credits of advanced courses in Greek, Latin, and Classics; six additional credits of advanced courses in Greek, Latin, Classics, or approved credits in related fields.</p>			

Note: This is the default option for the majority of students, who, in lieu of a thesis, present to the faculty a dossier of two polished term papers from their coursework.

*Both Options*

Comprehensive examinations in Greek, Latin, at least one modern foreign language, ancient history, and literature and philology are required. In addition to course work, students will have a list of ancient authors to be read in the original languages.

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Classics Department](#).

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > History (M.A.)

## History (Master of Arts)

### Overview

The Department of History offers a comprehensive program of courses in the history of the Americas, Europe, and Asia/Africa/Middle East/Global. Students may pursue the M.A. on either a part-time or full-time basis.

### General Requirements

- [Requirements for the Masters Degree](#)

### 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 humanities or social sciences with the equivalent of a minor in history. They must take the Graduate Record Examination and submit, with the application, letters of recommendation and a sample of writing, such as a research paper done in an undergraduate history course.

To be considered for admission, a candidate must have a grade point average of 3.00 (B) in his or her last two years of undergraduate study, with evidence of better work (B+/3.30) in history. Students will normally score above the 65<sup>th</sup> percentile on the Graduate Record Examination Verbal section.

#### Application Deadlines

Applicants seeking fellowships or assistantships for the upcoming fall semester must have their completed application submitted by February 15<sup>th</sup>. No applications for fall admission will be accepted after May 1<sup>st</sup>. In those rare instances when a student seeks admission for the spring semester, applications must be submitted by November 1<sup>st</sup>.

#### Minimum Degree Requirements for the Degree of Master of Arts

*Option A (Thesis):* Requires twenty-four credits of 200- and 300-level course work, six credits of [HST 391](#), Master's Thesis Research, and satisfactory performance on a comprehensive examination in two areas of historical knowledge. The thesis must be successfully defended in an oral examination.

*Option B (Non-Thesis):* Requires thirty credits of 200- and 300-level course work and the successful completion of a comprehensive examination in two areas of historical knowledge.

During their first year of study, all students enrolled in the M.A. program are required to take [HST 301](#), Graduate Historiography. While at least fifteen credits of course work must be earned in seminars, students may complete independent study courses that involve the creation of individualized reading lists and regular meetings with instructors appointed to the graduate faculty. With the consent of the student's advisor, six credits of the required course work for the M.A. may be taken in related fields outside of the history department. Students must maintain a grade point average of at least 3.30 (B+) each semester. Students

failing to maintain this average will be dismissed from the program.

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [History Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Psychology (M.A.)

## Psychology (Master of Arts)

### 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 from the [Department of Psychology](#) website, 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 December 1<sup>st</sup>.

### General Requirements

- [Requirements for the Masters Degree](#)

### 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 credits of psychology courses and seminars, including psychology: [PSYC 301](#), [PSYC 302](#), [PSYC 340](#), [PSYC 341](#); proseminar; thesis research for six credits. The requirements of the specific courses ([PSYC 301](#), [PSYC 302](#), [PSYC 340](#), [PSYC 341](#)) may be exempted by examination. There is no foreign language requirement.

### Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Psychology Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Accountancy (M.Acc.)

Accountancy (Master of Accountancy)

Overview

The Master of Accountancy provides a means of entry into the public accounting profession. The degree requires at least thirty credits beyond a bachelor's degree and completion of any of the prerequisite courses, if not completed as an undergraduate. The American Institute of Certified Public Accountants (AICPA) requires 150 academic credits for membership in the organization and most states require 150 credits for licensure as a CPA. Each state sets its own specific requirements for completing the CPA examination and the State Board should be contacted for the specific courses required by the state in which you plan to work. More information on the MAcc program can be found online at [MAcc](#) website.

Affiliations

- Colleges and Schools: [Graduate College](#). [School of Business Administration](#).

[Location]

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http://www.uvm.edu/...p&p=/Colleges\_and\_Schools/Graduate\_College/Academic\_Offerings/Accountancy\_%28M.Acc.%29&SM=collegemenu.html[9/26/2018 3:31:40 PM]

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Curriculum and Instruction (Master of Arts in Teaching)

Overview

The Master of Arts in Teaching program for middle level and secondary teachers is designed for those students who aspire to earn both a master's degree and a license to teach in public middle or 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, or mathematics, among other areas. Students will prepare for licensure to teach in grades five through nine or seven through twelve in one to two summers and one academic year.

**Accelerated Master of Arts in Teaching.** UVM students who are in their third year of study for a bachelor's degree may apply to the Accelerated Master of Arts in Teaching program. These students, when accepted, may complete nine credits of graduate level course work, six of which may be counted toward both the minimum requirements for the Master of Arts degree, as well as toward the undergraduate degree. Qualified candidates will need a major or its equivalent in an approved licensing area.

Requests for further information and application instructions may be obtained by contacting the Middle Level or Secondary Education coordinator, 405A Waterman Building, (802) 656-1411.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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## Greek and Latin (Master of Arts in Teaching)

## Overview

The MAT is designed for two groups of people: those who already have licensure as secondary school teachers and those who do not yet have licensure.

## General Requirements

- Requirements for the Masters Degree

## Specific Requirements

### Credit requirements:

Those who already have licensure must complete a minimum of thirty credits of work, with at least twenty-one in the field of specialization (Latin and related subjects) and at least six in education (consult with advisor in education). Those who are seeking licensure must complete at least twenty-one credits in the field of specialization and at least thirty credits in education (consult with advisor in Education).

In all cases, the individual program of study must be approved by advisors in Classics for the field of specialization credits and in Education for the Education credits. The twenty-one credits in the field of specialization will consist primarily of Latin courses, but also Greek and Classics courses.

## Comprehensive exams:

Students must take comprehensive exams in their field of specialization as well as in Education. Please consult with Education for details about their comprehensive exam. The student must pass general comprehensive exams before the degree may be granted including (1) a written examination in Latin, (2) an examination in ancient history (emphasis on Roman, but including Greek and, if appropriate, Near Eastern History), (3) an examination in literature and philology, and (4) an oral examination on the pedagogy of Latin.

Preferably, the sight examination will be taken at the beginning of the second year of study, the pedagogy examination at the conclusion of the practice teaching. For the ancient history examination, appropriate courses in ancient history may be substituted, if approved by Classics faculty. For the examination in literature and philology, the final examination in Greek and Latin 300 (Classics Pro-Seminar) may be substituted. Substitutions must be arranged early in the first year of study and are at the discretion of the faculty: they are not simply normal procedure. Written confirmation of specific substitutions after consultation with the graduate coordinator and relevant faculty is advised.

The format of the exams is at the discretion of the faculty. For students pursuing licensure, although students are not required to do so, it is by far best to complete these exams before the end of the second semester, because the student will be occupied fully by Education requirements in the second year, and faculty are not available to administer exams in the summer.

## Courses:

Twenty-one credits in Latin, Classics, or Greek, as follows:

- Students must complete twenty-one credits of Latin at or above the 200-level, including one course from the [LAT 211](#) / [LAT 212](#) sequence, with the following possible exceptions: one 200-level or higher course in Roman (or Greek) history, one 200-level or higher course in Roman (or Greek) Art History, and 200-level Greek courses may count, all at the discretion of the Classics faculty.
- A second foreign language is strongly recommended, either a modern one as a second teaching field, or Greek as a complement to Latin.
- The standards of performance in courses taken with the Department of Classics will be the same as for the M.A. in Greek and Latin.

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Classics Department](#).

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Courses	Overview			
Academic Offerings	<p>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.</p> <p>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.</p> <p>The MBA program is accredited by <a href="#">AACSB</a> - The Association to Advance Collegiate Schools of Business.</p>			
Colleges and Schools <ul style="list-style-type: none"><li>College of Agriculture and Life Sciences</li><li>College of Arts and Sciences</li><li>College of Education and Social Services</li><li>College of Engineering and Mathematical Sciences</li><li>College of Medicine</li><li>College of Nursing and Health Sciences</li><li>Continuing Education</li><li>Graduate College</li><li>Honors College</li><li>School of Business Administration</li><li>The Rubenstein School of Environment and Natural Resources</li><li>Studying the Environment</li></ul>	Specific Requirements			
Policies and General Information	Requirements for Admission to Graduate Studies and for Advancement to Candidacy for the Degree of Master of Business Administration			
Faculty and Administration	<p>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.</p> <p>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 GMAT, the Graduate Management Admission Test. Scores from alternative tests, such as the GRE, are also acceptable. 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, test scores, relevant work experience, writing ability, and recommendations. Accepted students are also expected to be fluent in the Microsoft Office Professional group of applications. They may obtain this through course instruction, work experience or self-instruction.</p>			
Search the Catalogue	Minimum Degree Requirements			
Catalogue Archives	<p>Students must complete all of the courses listed. Each prerequisite course normally will be satisfied by completion of an appropriate three credit undergraduate level course. 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.</p>			
	Prerequisite Courses			
	<ol style="list-style-type: none"><li>Macroeconomic Principles</li><li>Microeconomic Principles</li><li>Differential Calculus</li><li>Statistics</li></ol>			

### Core Courses (eighteen credits)

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 (thirty credits)

(Of the thirty credits in this category, at least eighteen must be in 300-level courses.)

I. Functional Area Courses (one selected from each area):

1. Accounting and Finance ([BSAD 260](#), [BSAD 261](#), [BSAD 262](#), [BSAD 263](#), [BSAD 264](#), [BSAD 266](#), [BSAD 267](#), [BSAD 268](#), [BSAD 282](#), [BSAD 285](#), [BSAD 360](#), [BSAD 365](#), [BSAD 380](#), Special Topics)
2. Economic and Political Environment (Special Topics)
3. Human Resources Management ([BSAD 222](#), [BSAD 226](#), [BSAD 331](#), [BSAD 375](#), [BSAD 376](#), [BSAD 379](#), Special Topics)
4. Marketing ([BSAD 251](#), [BSAD 252](#), [BSAD 258](#), [BSAD 352](#), Special Topics)
5. Management Information Systems ([BSAD 345](#), Special Topics)
6. Production and Operations Management and Quantitative Methods ([BSAD 270](#), [BSAD 293](#), Special Topics)

II. Electives: Nine credits of graduate business courses

III. [BSAD 396](#) Business Policy

A normal course load for full-time students is twelve credits per semester. Part-time students typically take six credits 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 fifteen credits of course work per semester. Other students with academic or career experience covering material in particular Core courses may waive such courses upon successful completion of qualifying examinations.

### Curriculum

#### Course Sequencing

For full-time students needing to complete all Core (eighteen credits) and Advanced (thirty credits) 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 (thirty credits) 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 twelve credits.

**Affiliations**

- Colleges and Schools: [Graduate College](#). [School of Business Administration](#).

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Curriculum and Instruction (Master of 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, middle and secondary level school settings, along with other educational areas. Areas of focus within the M. Ed. include Educational Technology, Library Media, Mathematics, Middle Level Multicultural and Cultural Studies, Reading and Language Arts, Physical Education, and General Curriculum Theory. The program is also appropriate for those with instructional roles in human services agencies and other educational venues.

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 atmospheres that support student learning in grades K-12, and the application of curriculum theory and development. Opportunities for independent study and research are encouraged in all specializations.

Program information and application instructions for this degree at the Middle Level can be found in the [Curriculum and Instruction for Middle Level](#) document for this level. Program information and application instructions for this degree at the Secondary Level can be found in the [Curriculum and Instruction for Secondary Education](#) document for this level. Inquiries regarding these programs can be made at (802) 656-3356.

General Requirements

- [Requirements for the 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: [EDCI 200](#), [EDCI 207](#), [EDCI 211](#), [EDCI 215](#), [EDCI 238](#), [EDCI 241](#), [EDCI 245](#), [EDCI 261](#), [EDCI 333](#), [EDCI 363](#), [EDCI 397](#)

[EDFS 200](#), [EDFS 204](#), [EDFS 205](#), [EDFS 206](#), [EDFS 207](#), [EDFS 209](#), [EDFS 255](#), [EDFS 302](#), [EDFS 303](#), [EDFS 304](#), [EDFS 309](#), [EDFS 314](#), [EDFS 322](#), [EDFS 347](#), [EDFS 348](#), [EDFS 352](#), [EDFS 354](#), [EDFS 369](#), [EDFS 377](#), [EDFS 380](#), [EDFS 397](#)

[EDLT 200](#), [EDLT 222](#), [EDLT 223](#), [EDLT 228](#), [EDLT 234](#), [EDLT 236](#), [EDLT 295](#), [EDLT 319](#), [EDLT 375](#), [EDLT 376](#), [EDLT 378](#), [EDLT 379](#), [EDLT 380](#), [EDLT 385](#)

[EDLI 200](#), [EDLI 272](#), [EDLI 273](#), [EDLI 274](#), [EDLI 275](#), [EDLI 276](#), [EDLI 277](#), [EDLI 295](#)

[EDLP 264](#), [EDLP 266](#), [EDLP 268](#), [EDLP 334](#), [EDLP 336](#)

More information about program requirements can be found at the [Curriculum and Instruction](#) website.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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	<p>Colleges and Schools &gt; Graduate College &gt; Academic Offerings &gt; Educational Leadership (M.Ed.)</p> <h2>Educational Leadership (Master of Education)</h2> <h3>Overview</h3> <p>The Master's degree in Educational Leadership is a nationally recognized program by the National Council for Accreditation for Teacher Education (NCATE). The program is designed to cultivate leaders who can apply knowledge toward leading and building learning communities designed to make a positive difference in the lives of children, youth, families, adults, and communities. The program prepares public and private school leaders, curriculum leaders, teacher leaders, leaders of educational and social service agencies, and leaders for other educational organizations. The program is designed to prepare leaders to think and act creatively, responsibly, and effectively in leadership roles.</p> <h3>Conceptual Framework</h3> <p>The master's degree Program in Educational Leadership is guided by its Conceptual Framework which is grounded in respect for diversity, social justice, and democratic community. The program is committed to the preparation of leaders who are reflective practitioners, instructional leaders, and change agents who can collaborate with other professionals to make a positive difference in schools, human service agencies, communities and in the lives of all learners. The program is directed toward preparing competent and caring professionals who:</p> <ul style="list-style-type: none"><li>• have the knowledge, skills, and professional dispositions to promote the success of all students and/or members of their educational and human service organizations</li><li>• understand alternative perspectives on leadership that support the development of more just, humane, and diverse organizations.</li><li>• construct effective ways to demonstrate caring and collaborative leadership and understand how to partner with families and other community members, responding to diverse community interests and needs, and assets</li><li>• create networks which support leadership and change and cultures of learning</li><li>• advance educational and human environments that advance social justice, equity, and democracy</li></ul> <p>The program's Conceptual Framework is guided by several principles which are aligned with the Vermont Standards for Professional Educators and the Interstate School Leaders Licensure Consortium (ISLLC) created by the National Policy Board for Educational Administration and the Educational Leadership Constituents Council (ELCC) Standards for Advanced Programs in Educational Leadership. The program is grounded in:</p> <h3>Constructivism</h3> <p>Knowledge is socially constructed through dialogue and community-based practice (constructivism).</p> <h3>Collaboration</h3> <p>Teachers and other school professionals work collaboratively to problem-solve with stakeholders (collaboration, interprofessional practice, reflective practice, excellence).</p> <h3>Human Development and Empowerment</h3> <p>Education facilitates development of human potential (developmentally appropriate practice, strengths perspective, empowerment).</p>			

## **Inclusion**

All students can learn and have value in their communities (inclusion).

## **Multiculturalism/Culturally Responsible Pedagogy**

Learning communities demonstrate respect for and honor diversity; pursue knowledge and affirmation of our diverse cultures (multiculturalism, culturally responsive pedagogy, equity).

## **Equity and Justice**

Education should advance social justice and democracy (equity).

## **Program Areas of Concentration**

While the program is designed within the broad concept of leadership, two major strands of concentration are available. The areas of concentration are:

- STRAND I: School Leader with Administrative Endorsement
  - Educational Administration
  - Curriculum Leadership
  - Teacher Leadership
  - STRAND II: Human Service, Organizational and Community Leadership
    - Leadership in Private or Nonprofit Educational Organizations
    - Leadership in human service agencies and other community/public agencies

## **General Requirements**

- [Requirements for the Master of Education Degree](#)

## **Specific Requirements**

The program requirements include:

- Thirty to thirty-six credits distributed among courses, summer seminars, independent study, action research, clinical field experiences, and internships.
- Fifteen of which comprise the core curriculum, with the remainder making up the students individual concentration. Students desiring the Vermont Administrative Licensure will take a majority of their electives in areas required through licensure standards as defined by Vermont Competencies for Administrative Endorsement and Vermont Standards for Professional Educators.
- A leadership portfolio which marks the final requirement of the program. Portfolios are presented as part of the Master's Comprehensive Orals at the completion of each student's degree program.

The M.Ed. program for administrative licensure requires thirty to thirty-six credits of courses including seminars, clinical field work, internships, and research experiences.

For students who already have a master's degree there is a Certificate of Advanced Study (C.A.S.) available. The program requirements are identical to the master's degree program and require thirty credits of course work, leading to Vermont Administrative Endorsement.

Courses with an administration/planning focus include: [EDLP 264](#), [EDLP 266](#), [EDLP 268](#), [EDLP 280](#), [EDLP 291](#), [EDLP 295](#), [EDLP 319](#), [EDLP 332](#), [EDLP 334](#), [EDLP 335](#), [EDLP 336](#), [EDLP 337](#), [EDLP 352](#), [EDLP 353](#), [EDLP 354](#), [EDLP 355](#), [EDLP 356](#), [EDLP 358](#) and [EDLP 387](#).

## **Transfer of Credit**

A maximum of nine (9) credits may be accepted in transfer into the program. Transfer credit may be completed prior to admission to the Masters 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.

Application Process

There are two application deadlines. Applications are due **November 15th** for admission the following spring and **April 1st** for admission the following summer and fall. The process for application is as follows:

- Students apply to the Graduate College through electronic submission of the application materials. Materials are available on the website for the University of Vermont, Graduate College.
- Applicants will be required to interview with the Masters Program Coordinator or program faculty member.
- Applicants will receive written notification of the status of their application from the Graduate College. Applicants are responsible for making sure all application materials have been submitted to the Graduate College.
- Once accepted, applicants will receive a letter of acceptance from the Program Coordinator and will be assigned an advisor.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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Educational Studies (Master of 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

- [Requirements for the Master of Education Degree](#)

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: [EDFS 204](#), [EDFS 205](#), [EDFS 206](#), [EDFS 209](#), [EDFS 255](#), [EDFS 295](#), [EDFS 302](#), [EDFS 303](#), [EDFS 304](#), [EDFS 309](#), [EDFS 314](#), [EDFS 322](#), [EDFS 347](#), [EDFS 348](#), [EDFS 352](#), [EDFS 354](#), [EDFS 369](#), [EDFS 377](#), [EDFS 380](#), [EDFS 391](#), [EDFS 397](#).

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
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### Higher Education and Student Affairs Administration (Master of Education)

#### Overview

The Higher Education and Student Affairs Administration (HESA) program prepares professionals to apply human development, organizational, foundational, multicultural and administrative principles to work with college students. Working closely with faculty and in-place practitioners, graduate students in the program are challenged to experience an unparalleled learning experience.

Graduates from the HESA program pursue national and international careers as professionals in colleges and universities, as well as in fields related to higher education. Professionals in this field serve as policy makers, advisors, student service providers, researchers, programmers, consultants, and administrators. Common to each functional area in student affairs and higher education is the goal to design opportunities conducive to students' growth and development.

The curriculum, including courses, practica internships, and professional practice opportunities with the university and local institutions, integrates conceptual theory with administrative practice. Students gain an understanding of the student affairs profession, social justice, college student development, history of and trends within U.S. higher education, organizational theory, and professional ethics. Social justice and pluralism, realities of American life and U.S. higher education, are emphasized in the HESA program. These emphases are expressed through course and experiential opportunities highlighting the diversity of people, experiences, perspectives, and structures.

The HESA graduate program enrolls approximately 18 students per year in the full-time two-year program. Part-time enrollment is also an option over a three- or four-year period. The small cohort size encourages strong and enduring relationships among students and faculty. A wide spectrum of undergraduate majors, geographic locations, previous experiences, and cultural backgrounds are represented in the class cohorts. These diverse perspectives enrich the educational environment and expand social awareness.

An array of 60 practicum internships, 25 graduate assistantship placements, and paid and volunteer professional practice opportunities help students integrate their conceptual knowledge with student affairs and higher education practice. Assistantships are housed in Judicial Affairs, academic deans' offices, the Center for Cultural Pluralism, ALANA Student Center, Honors College, Center for Health and Wellbeing, Office of Student Life, Orientation, Greek Life, Leadership and Civic Engagement, and Residential Life. The assistantship application process (December 15 deadline) is separate from the admissions process but interviews, upon invitation, for both are held concurrently in the spring of each year. Practica experiences (three selections during the course of the degree) are available within university and local college offices.

#### General Requirements

- [Requirements for the Master of Education Degree](#)

#### 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 twenty credits per week professional practice opportunity (e.g., volunteer position, graduate assistantship), if a full-time student. Assistantship stipends cover tuition for twenty credits of study each year and a bimonthly stipend.

Courses required for the M.Ed. degree in Higher Education and Student Affairs (EDHI) include: [EDFS 302](#), [EDHI 297](#), [EDHI 361](#), [EDHI 362](#), [EDHI 375](#), [EDHI 383](#), [EDHI 385](#), [EDHI 395](#) and [EDHI 396](#). Forty credits (including required classes, six credits of EDFs, and one EDHI elective) 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 [HESA](#)  website for HESA program information.)

Inquiries regarding this program should be addressed to Professor Deborah Hunter, 208 Mann Hall, University of Vermont, Burlington, Vermont 05405.

**Affiliations**

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Leadership and Developmental Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Interdisciplinary (M.Ed.)

Interdisciplinary (Master of 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 Professor Robert Nash ([Robert.Nash@uvm.edu](mailto:Robert.Nash@uvm.edu)) prior to making application for admission. Detailed information about the program and admissions criteria will be supplied upon request.

General Requirements

- Requirements for the Master of Education Degree

Specific Requirements

A minimum of thirty-six credits 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.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Leadership and Developmental Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Reading and Language Arts (M.Ed.)

Reading and Language Arts (Master of 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 the Department of Education at (802) 656-3356.

General Requirements

- Requirements for the Master of Education Degree

Specific Requirements

Courses in reading and language arts include: [EDLT 222](#), [EDLT 223](#), [EDLT 234](#), [EDLT 375](#), [EDLT 376](#), [EDLT 378](#), [EDLT 379](#), and [EDLT 385](#). Various independent study and special topic courses are also available.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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Special Education (Master of Education)

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, Early Childhood Special 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.

- Special Educator - 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.
- Early Childhood Special Education:* Students are prepared to provide individualized, family-centered special education services to young children with disabilities and their families through both direct and collaborative delivery systems coordinated with social service agencies in integrated home, preschool and community settings in rural areas.
- Intensive Special Education:* Students are prepared to provide direct and collaborative instruction to learners with moderate to severe disabilities on the basis of identified activities, skills, adaptations and transitions needed for learners to function in current and future integrated school, home and other community environments, with services involving learners' parents and a variety of professional disciplines.

In addition, a Certificate of Advanced Study (Post-Master's Certificate) with a usual total of 36 credit 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

- Requirements for the Master of Education Degree

Specific Requirements

Specific courses are required for each area (Special Educator - Consulting Teacher/Learning Specialist, Early Childhood Special 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.

Affiliations

- Colleges and Schools: College of Education and Social Services. Graduate College.

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- Departments and Programs: [Education Department](#). [Leadership and Developmental Sciences Department](#).

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## Public Administration (Master of Public Administration)

## Overview

The Master of Public Administration (M.P.A.) program at the University of Vermont joins vigorous study of the foundations of public administration with the practice of public administration in the real world. Vermont's small size, open local and state government and wealth of nonprofit organizations make for an ideal environment in which to directly engage with the public administration field. More information on the M.P.A. program can be found on the [Master of Public Administration](#) website. Inquiries can be made through email: [mpa@uvm.edu](mailto:mpa@uvm.edu) or by phone (802-656-0009).

### Mission:

The Master of Public Administration program is housed within the Community Development and Applied Economics Department at the University of Vermont. The M.P.A. program is a professional interdisciplinary degree that prepares pre and in-service leaders, managers and policy analysts by combining the theoretical and practical foundations of public administration focusing on the complexity of governance systems and the democratic, collaborative traditions that are a hallmark of Vermont communities.

### Traditions:

The M.P.A. program at UVM capitalizes on these unique traditions that have direct implications to our state and beyond to the public administration needs of a changing nation and world.

- The recognition and importance of community building
- The tradition of grassroots democracy
- A history of strong local governance with citizen input
- A record of fiscal conservatism combined with "progressive" positive change
- A citizen legislature with limited staff support
- An emphasis on efficiency, effectiveness, accountability and sustainability
- Administrators serving their publics as "reflective practitioners"
- A history of cooperation between private and public sectors for the public good
- A vigorous non-profit sector, supported by citizens and organizations
- A deep commitment to inclusion and cultural diversity

## 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 (GRE), three letters of recommendation attesting to the candidate's academic potential for graduate work and motivation for pursuing the M.P.A. 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.

For international students whose native language is not English or who have not completed undergraduate degrees in English, Test of English as a Foreign Language (TOEFL) scores must be submitted. Minimum acceptable scores for admission to the Graduate College at UVM: internet-based = 80; computer-based = 213; paper-based = 550. Minimum acceptable scores for a student receiving funding from UVM: internet-based = 100; computer-based = 250; paper-based = 600. Institution code for test scores for UVM is 3920.

NOTE: The application deadlines for the M.P.A. program are mid-February (for an acceptance decision by March 1) for fall funding consideration. Open enrollment for others.

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

Successful completion of thirty-six credits, including core courses [PA 301](#), [PA 302](#), [PA 303](#), [PA 305](#) and [PA 306](#), and an approved sequence of elective courses which may include up to nine credits of coursework from approved disciplines related to public administration. All graduate students in the M.P.A. program are required to complete and approved three-credit internship as part of their sequence of courses beyond the core courses.

Satisfactory completion of the written Comprehensive Examination, an evaluative device and capstone experience, offered two times per year (January and March) for students in their final semester of study in the UVM-MPA program.

**Affiliations**

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Community Development and Applied Economics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Animal Science (M.S.)

Animal Science (Master of Science)

Overview

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

General Requirements

- Requirements for the Masters Degree

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.

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

The applicant must satisfy the requirements of the Graduate College and complete one semester with satisfactory performance in graduate courses or courses prescribed by the Graduate Committee.

Minimum Degree Requirements

Option A (Thesis):

Thirty credits of study with a minimum of fifteen credits in courses in animal science or related fields and a minimum of nine credits of thesis research. Students are required to attend and participate in [ASCI 301](#), Graduate Journal Club, and [ASCI 302](#), Graduate Seminar, every semester the courses are offered. Students must also prepare a research proposal.

Students are expected to meet with their graduate studies committee during their second and third semester and during the final semester for their thesis defense. Students are also expected to have one publication ready to submit or already submitted to an appropriate journal at the time of their defense. Students are also required to participate in at least one semester of teaching.

Option B (Non-Thesis):

Thirty credits of study with twenty-four credits in courses in animal science or related fields and a minimum of six credits of literature research. Students are required to attend and participate in [ASCI 301](#), Graduate Journal Club, and [ASCI 302](#), Graduate Seminar, every semester the courses are offered.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Animal Science Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biochemistry (M.S.)

Biochemistry (Master of Science)

General Requirements

- Requirements for the Masters Degree

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-long courses in organic chemistry, physical chemistry, and physics (equivalent to [CHEM 141/CHEM 142](#) or [CHEM 143](#); [CHEM 144](#), [CHEM 162](#) and [PHYS 15/PHYS 16](#)); quantitative chemistry; mathematics preferably through differential and integral calculus; a year-long course in a biological science. If a physical chemistry course has not been taken previously, a student must take Physical Chemistry ([CHEM 162](#)) in their first year (for which they do not receive credit toward the M.S. degree).

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

Successful completion of a Phase I exam is required for advancement to candidacy.

Minimum Degree Requirements

Thirty credits, seventeen of which must be taken from graduate courses offered by the Department of Biochemistry, including [BIOC 301](#), [BIOC 302](#), [BIOC 309](#), [BIOC 381](#), and two upper level courses selected from [BIOC 351](#), [BIOC 352](#), [BIOC 353](#) or [BIOC 370](#). At least thirteen credits of Master's Thesis Research ([BIOC 391](#)).

See the [Department of Biochemistry](#) website for more details.

*Option A (Thesis):* At least thirteen credits of Master's Thesis Research ([BIOC 391](#)).

*Option B (Non-Thesis):* Up to eight credits of Independent Literature Research ([BIOC 392](#)).

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Agriculture and Life Sciences](#). [College of Medicine](#).
- Departments and Programs: [Biochemistry Department](#).

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Biology (M.S.)

## Biology (Master of Science)

### Overview

Faculty research interests fall into two broad groupings: 1) cell and molecular biology, physiology and behavior; 2) ecology and evolution. Current research projects under the first group include: molecular biology of cilia; smell and taste receptor cell function using molecular biology, calcium imaging and electrophysiology; olfactory and taste driven behavior; muscle development using biophysical, molecular and proteomic approaches; proteomics, biochemistry and cell biology applied to molecular mechanisms of signal transduction governing neuronal positioning. Current research projects under the second group include: community ecology and evolutionary ecology of carnivorous plants; genetics of malaria parasites using classical parasitology, field studies and molecular biology; ecology, zoogeography and conservation of small mammals; modeling and analysis of complex biological and environmental systems; multi-species interactions among plants, their mutualist pollinators and antagonists that include herbivores, seed predators, and competitors; developmental plasticity interactions with extreme sexual size dimorphism in spiders; evolution, ecology, and behavior of social insects; ecology and evolution of disease.

### General Requirements

- Requirements for the Masters Degree

### 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, four credits; eleven to eighteen additional credits in biology and related fields; thesis research (eight to fifteen credits) and successful defense of thesis. Each candidate must participate in the teaching of at least one undergraduate course.

### Affiliations

- Colleges and Schools: College of Arts and Sciences. Graduate College.
- Departments and Programs: Biology Department.

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Colleges and Schools > Graduate College > Academic Offerings > Biostatistics (M.S.)

## Biostatistics (Master of Science)

### 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.

Three 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 pre-clinical, 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 research requirement: a research project (STAT 381) or a thesis (STAT 391). Other opportunities for experience will arise through involvement in our Statistical Consulting Clinic (STAT 385). (See also Statistics Program and Statistical Consulting Clinic descriptions.)

### General Requirements

- Requirements for the Masters Degree

### Specific Requirements

#### Requirements for Admission to Graduate Studies and Advancement to Candidacy 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, pre-medicine 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 STAT 211) and a course including undergraduate probability (like 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

*Option A (Thesis):* A thirty credit program requiring twenty-four credits of course work. The program must include (Biostatistics) [BIOS 200](#), [BIOS 221](#), [BIOS 223](#), [BIOS 229](#), [BIOS 231](#), or [BIOS 235](#), [BIOS 251](#), [BIOS 261](#), and [BIOS 350](#); plus six credits of approved thesis research.

*Option B (Non-Thesis):* A thirty-three credit program requiring thirty credits of course work. The program must include [BIOS 200](#), [BIOS 221](#), [BIOS 223](#), [BIOS 229](#), [BIOS 231](#), or [BIOS 235](#) or [BIOS 251](#), [BIOS 261](#), and [BIOS 350](#), as well as other 200/300-level statistics/biostatistics courses (except [BIOS 211](#), [BIOS 241](#), [BIOS 281](#), [BIOS 308](#)), or (if approved) other courses in mathematics, quantitative methods, or specialized fields of application. The research project requirement is met by taking three credits of either statistical research ([BIOS 381](#)) or statistical consulting ([BIOS 385](#)).

*Under both plans, students must have or acquire a knowledge of the material in [BIOS 211](#), attend the regular colloquium series and participate in the Statistics Student Associate Journal Club as part of their training. The comprehensive examination covers knowledge acquired in the core courses of the program. Under the non-thesis option, students will be expected to take major responsibility for a comprehensive data analysis or methodological research project, and are encouraged to present the results from the project.*

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Mathematics and Statistics Department](#).

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Cell and Molecular Biology (Master of Science)

General Requirements

- Requirements for the Masters Degree

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.

Master's candidates are required to take six credits of cell biology ([CLBI 301](#) & [CLBI 302](#)), six credits of biochemistry ([BIOC 301](#) & [BIOC 302](#)), two credits of seminar ([CLBI 381](#)), and six research credits. The remaining nine credits are to be completed in combination of at least one course credit and eight research credits. Studies committee and advisor will guide student in course selection.

All students must demonstrate satisfactory progress; finish minimum course work within three years; and finish cumulative exam within prescribed times limits; participate in seminar program.

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Cell and Molecular Biology Program](#).

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Chemistry (Master of Science)

Overview

An M.S. degree in chemistry prepares students for careers in chemical sciences, biomedical sciences, catalysis, energy, environment, or materials science as well as other professional fields that apply strong research skills or basic chemical understanding. Because of the research-intensive graduate education at UVM, a description of research by classic chemical subdivision follows.

*Analytical chemistry* involves developing and applying instrumentation and chemical methods to solve problems across a range of chemistries and scientific disciplines. One focus is in electroanalytical chemistry studying redox processes of organometallic compounds, including electrocatalysis relevant to the environmental and biological applications. Another area focuses on the development of innovative methods and instruments to study the formation and chemistry of organic aerosols in the atmosphere. This work bridges the gap between analytical chemistry and atmospheric science, contributing to our understanding of the impact of aerosols on global climate through direct scattering of solar radiation and the formation of ice and water clouds. The third area develops mass spectrometry instrumentation and chemistries for addressing current problems in the biomedical sciences. Key foci are development of methods for advancing the rapidly growing field of proteomics and application of stable isotopically labeled tracers to answer questions of metabolism and metabolic diseases in humans.

*Inorganic chemistry* at UVM involves the study of main-group elements and transition metals in a variety of contexts, with applications in catalysis, energy, environment, and medicine. One example is the synthesis and characterization of inorganic particles, which can be functionalized for broad applications in heterogeneous catalysis, targeted drug delivery, and biological imaging. Another area of interest is spectroscopic and biochemical studies of metalloproteins, with the goal of using a detailed understanding of their structures to explain reaction patterns. Finally, a third example is the design of metal-based catalysts for chemical bond formation, which can be applied to the preparation of useful small molecules and novel polymeric materials.

Current research in *organic chemistry* includes the development of novel synthetic methodologies to prepare oxygen- and nitrogen-containing heterocyclic compounds, new ring fragmentation reactions and their applications in synthesis, development of efficient and stereoselective tandem/cascade reaction sequences, target-directed total synthesis of medicinally valuable natural products including macrolides, alkaloids, and terpenoids, biomimetic natural product synthesis, mechanistic studies of organic chemical reactions, development of 1,3-diaza-Claisen rearrangements and applications toward the synthesis of guanidine-containing natural products, and studies in bioorganic chemistry.

*Physical chemistry* research areas include three major areas of focus. The first is thermodynamics/kinetics of hydrogen absorption by metals, alloys, and intermetallic compounds with a view toward storage of hydrogen as a fuel. The second is utilization of TGA, IR, solid-state NMR, and powder X-ray diffraction in determining the structural features of layered zirconium phosphonates containing a mix of chromophores as pendant groups in the interlayer region. Subsequently, photophysics of the interlayer chromophores is explored via UV-vis and fluorescence spectroscopy. Third is the development of Co-59 NMR as a probe of metal tetrapyrrole electronic structure, and using NMR/MCD spectroscopies to elucidate tetrapyrrole-containing enzyme binding sites.

General Requirements

- Requirements for the Masters Degree

## Specific Requirements

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

An undergraduate major in an appropriate field, minimally with course work in the four classic subdisciplines of chemistry (analytical, inorganic, organic, and physical). This is most commonly satisfied with a B.A., B.S., or equivalent degree in chemistry. Applicants with prior research experience are preferred. Satisfactory scores on the Graduate Record Examination general (aptitude) section is required.

### 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) two credits of [CHEM 318](#); (4) at least fifteen credits of formal course work including (a) six credits of graduate-level courses in the chemical field of specialization, (b) three credits of graduate-level chemistry courses not in the area of concentration, and (c) [CHEM 381](#) (Seminar), and (5) maintenance of an overall point-hour ratio of 3.00.

### Minimum Degree Requirements

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

*Option A (Thesis):* Completion of twelve credits of Master's Thesis Research ([CHEM 391](#)) and submission of a satisfactory thesis; and completion of at least thirty credits of graduate work (courses and Master's Thesis Research).

*Option B (Non-Thesis):* Completion of six credits of Independent Literature Research Project ([CHEM 395](#)); and completion of at least thirty credits of graduate work (courses and Literature Research Project).

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

### Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Chemistry Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Civil and Environmental Engineering (M.S.)

## Civil and Environmental Engineering (Master of Science)

## 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 processes, sustainable transportation systems, geotechnical, geoenvironmental and structural analysis. Graduate students of CEE can concurrently pursue certificates of graduate education in: 1) sustainable transportation systems; 2) complex systems; and 3) ecological economics.

Research includes: groundwater contamination; modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; air pollution and related health effects; modeling of contaminant fate and transport in the environment; pathogenesis in human and environmental systems; geotechnical earthquake engineering; dynamic behavior of structures and structural health monitoring; and sustainable transportation systems.

## General Requirements

- Requirements for the Masters Degree

## Specific Requirements

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

All applicants must have an undergraduate degree from a recognized university. A Bachelor of Science degree in engineering is preferred, but applicants with a B.S. degree in one of the sciences are often accepted. The latter, however, should have a minimum of the following math and science course work prior to admission: three semesters of calculus, one semester of differential equations, one semester of calculus-based physics and one semester of chemistry. Satisfactory scores on the Graduate Record Examination general (aptitude) section are also required. 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:

**Option A (Thesis):** 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 thirty credits must be accumulated, six to nine of them in thesis research.

**Option B (Non-Thesis):** Completion of thirty-six credits 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.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Civil Engineering Program](#). [School of Engineering](#).

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Colleges and Schools > Graduate College > Academic Offerings > Clinical and Translational Science (M.S.)

Clinical and Translational Science (Master of Science)

General Requirements

- Requirements for the Masters Degree

Specific Requirements

**Concentration in Investigation:** Requires thirty-one credits including nineteen credits of core courses, continuous seminar participation, six credits of elective courses, and six research credits. Admission requirements are the same as for the doctoral program.

**Concentration in Research Management:** Requires thirty-one credits including twenty-two credits of core courses, continuous seminar participation, three credits of elective courses, and six research internship credits in a focused area of study to be approved by the faculty advisor and program director. Admission requirements are the same as for the doctoral program.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Center for Clinical and Translational Science.

[Location]

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http://www.uvm.edu/...\_Schools/Graduate\_College/Academic\_Offerings/Clinical\_and\_Translational\_Science\_%28M.S.%29&SM=collegemenu.html[9/26/2018 3:45:37 PM]

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⌵ UVM Home	<div>2012-2013 Catalogue</div> <div>Colleges and Schools &gt; Graduate College &gt; Academic Offerings &gt; Communication Sciences and Disorders (M.S.)</div> <div>Communication Sciences and Disorders (Master of Science)</div> <div>Overview</div> <p>The faculty does research in speech and language development and disorders, and sociolinguistics.</p> <p>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 (<a href="#">American Speech-Language and Hearing Association</a> <input type="checkbox"/>). The Eleanor M. Luse Center for Communication: Speech, Language, and Hearing which shares quarters with the department is a primary practicum site. Students are required to fulfill academic requirements for the Certificate of Clinical Competence-Speech Language Pathology of the American Speech-Language-Hearing Association. To do so, they will need to have at least one course in each of four areas: social sciences, biological sciences, physical sciences, and mathematics. All students are supervised by clinically certified members of the faculty of the Eleanor M. Luse Center and affiliated practicum sites.</p> <div>General Requirements</div> <ul style="list-style-type: none"><li><a href="#">Requirements for the Masters Degree</a></li></ul> <div>Specific Requirements</div> <div>Requirements for Admission to Graduate Studies for the Degree of Master of Science</div> <p>Baccalaureate degree from an accredited institution; satisfactory performance on the general (aptitude) Graduate Record Examination. Completion of courses equivalent to <a href="#">CSD 080</a> (Introduction to Linguistics), <a href="#">CSD 165</a> (Phonetic Theory &amp; Practice), <a href="#">CSD 094</a> (Development of Spoken Language), <a href="#">CSD 101</a> (Speech &amp; Hearing Science), <a href="#">CSD 281</a> (Cognitive Neuroscience) and a course in statistics. Applicants must complete prerequisite courses before entering the program. Students are also required to complete 25 observation hours obtained according to guidelines provided by the American Speech-Language-Hearing Association. Students must complete these 25 observation hours before they begin their graduate program. Additionally, the <a href="#">American Speech-Language and Hearing Association</a> <input type="checkbox"/> Standard III-A for certification requires evidence of previous course work in the biological sciences, physical sciences, mathematics, and the social/behavioral sciences.</p> <div>Requirements for Advancement to Candidacy for the Degree of Master of Science</div> <p>Satisfactory completion of the written comprehensive examination in the form of a portfolio. Students will not be admitted to candidacy if 400 practicum hours are not reached. Students may submit their comprehensive examination portfolio only in or following that semester in which they will have completed thirty-six graduate credits and 300 hours of supervised clinical practicum and four credits in clinical study. Students register for the comprehensive examination (<a href="#">GRAD 397</a>) in the last semester of their graduate study.</p> <div>Minimum Degree Requirements</div> <p>All students are required to complete mandatory course work in pursuit of the M.S. in Communication Sciences and Disorders. This course work includes content areas met by the following CSD courses:</p>			
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- [CSD 271](#) - Introduction Audiology
- [CSD 272](#) - Hearing Rehabilitation
- [CSD 313](#) - Augmentative Communication
- [CSD 320](#) - Clinical Preparation and Management
- [CSD 330](#) and [CSD 331](#) – Stuttering Assessment & Treatment
- [CSD 340](#) - Speech Sound Disorders
- [CSD 341](#) - Language Disorders
- [CSD 350](#) - Swallowing Disorders
- [CSD 352](#) - Voice Disorders
- [CSD 351](#) - Aphasia
- [CSD 353](#) - Adult Neuropathologies
- [CSD 383](#) - Seminar in Language/Learning Disabilities
- A thesis or non-thesis sequence of courses in Research Methods for Communication Sciences and Disorders (e.g., [CSD 295](#) and [CSD 360](#))

In addition, students are required to take a minimum of one credit of Clinical Study, [CSD 291](#) / [CSD 292](#), for each semester they are active in the program. In total, forty-eight credits of graduate course work are required for the non-thesis track and fifty-one credits of graduate course work for students who write a thesis. Equivalent graduate level course work, up to nine credits, may be waived if approved by the graduate program coordinator, reducing the total number of in-residence credits needed for completion of the program.

*Option A (Thesis):* The student will complete forty-five credits of graduate level courses and six additional credits ([CSD 391](#)) for conducting the research leading to an M.S. thesis.

*Option B (Non-Thesis):* The students choosing the non-thesis option will complete the forty-eight credits required for the degree. They must take at least three credits of non-thesis research ([CSD 392](#)). An additional three credits of [CSD 392](#) may be taken by students who have elective credits available or who elect to take a total of fifty-one credits.

**Affiliations**

- Colleges and Schools: [College of Nursing and Health Sciences](#). [Graduate College](#).
- Departments and Programs: [Communication Sciences and Disorders Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Community Development and Applied Economics (M.S.)

### Community Development and Applied Economics (Master of Science)

#### Overview

The Department of Community Development and Applied Economics (CDAE) supports sustainable local and international community development through interdisciplinary research, education and outreach that serves the public interest. CDAE offers a Master of Science degree in Community Development and Applied Economics. Expertise among the CDAE faculty advisors includes economics (both ecological and neoclassical), ecological design and renewable energy, public policy, community entrepreneurship, cross-cultural communication, consumer affairs, food systems and political process. CDAE's research and outreach is both global and local (e.g., dairy farming and farmers' markets in Vermont) and graduate students benefit from close affiliation with other research institutions at the University of Vermont and beyond.

#### General Requirements

- Requirements for the Masters Degree

#### Specific Requirements

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

- GPA = 3.00 or equivalent from bachelor's degree.
- Satisfactory scores from the Graduate Record Examination (GRE); official scores are required.
- Three letters of recommendation attesting to the candidate's academic potential for graduate work and motivation for pursuing the M.S. in CDAE.
- For international students whose native language is not English or who have not completed undergraduate degrees in English, Test of English as a Foreign Language (TOEFL) scores must be submitted. Minimum acceptable scores for admission to the Graduate College at UVM: internet-based = 80; computer-based = 213; paper-based = 550. Minimum acceptable scores for a student receiving funding from UVM: internet-based = 100; computer-based = 250; paper-based = 600. Institution code for test scores for UVM is 3920.

NOTE: The application deadlines for the program are mid-February (for an acceptance decision by March 1) for fall funding consideration. Open enrollment for others.

##### 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 microeconomics background.

#### Minimum Degree Requirements

The degree requires a total of thirty credits, of which twenty-four are from advanced courses in CDAE and other related fields plus six credits of thesis research. A written comprehensive examination and an oral

defense of a thesis are also required. A student's thesis research is often an integral part of faculty-led, ongoing research projects in CDAE.

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. 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.
- [CDAE 351](#) - Research Methods. Developing research projects with the scientific methods; evaluating alternative literature review, sampling, surveying and analytic methods; and reporting the results.
- One additional course in quantitative or qualitative analysis to be approved by the Studies Committee (e.g., [STAT 225](#) - Applied Regression Analysis; [STAT 223](#) - Applied Multivariate Analysis; [EDFS 347](#) - Qualitative Research Methods).
- One course in community development to be approved by the Studies Committee (e.g., [CDAE 326](#) - Community Economic Development)
- [CDAE 392](#) - Graduate Seminars. Each student is required to complete three credits of this course. Students should enroll for one credit in each of three semesters.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Community Development and Applied Economics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Computer Science (M.S.)

Computer Science (Master of 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

- Requirements for the Masters Degree

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 021 and CS 110, or equivalent), one course in computer system organization and assembly language programming (CS 121 or equivalent), one course in either programming languages (e.g., CS 125) or data structures (e.g., CS 124), two courses in differential, integral, and multivariate calculus (MATH 021, MATH 022 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

Option A (Thesis): Thirty credits, including a minimum of twenty-one credits of approved coursework, and a minimum of six credits of thesis research (CS 391).

Option B (Project): Thirty credits, including a minimum of twenty-four credits of approved coursework, and a minimum of three credits of project research (CS 392).

Option C (Non-Thesis): Thirty-three credits of approved course work.

Students in all options must (a) take, or have completed the equivalent of, the core sequence: Computer Science (CS 201, CS 222, CS 224, and CS 243); (b) pass a comprehensive exam covering material from the core sequence; and (c) fulfill the credit requirements with approved graduate level course work in computer science or related areas.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#). [College of Engineering and Mathematical Sciences](#).
- Departments and Programs: [Computer Science Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Counseling (M.S.)

Counseling (Master of Science)

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. There are two tracks of study in the Counseling program: the school counseling track (48 credits) and the mental health track (60 credits). Students may elect to enroll in both programs of study - the Dual option, which is 67 credits. The Counseling program (both tracks) is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP). The school counseling track meets the requirements set by the State of Vermont Department of Education for preparing school counselors (K-12) for licensure in Vermont, and the mental health counseling track meets 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 and in additional areas in their specialized track of study. A supervised internship in an appropriate field setting is a requirement in the program for each track of study.

The specific composition of a student's program, designed with the assistance of a faculty advisor, is based on university, college, and program requirements in accordance with licensure and accreditation standards. Learning experiences consist of a balance between theory and supervised practice.

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 visit our [Graduate Counseling](#) website or contact the University of Vermont, Counseling Program, Mann Hall, 208 Colchester Avenue, Burlington, VT 05405-1757 (802-656-3888 or email: [Counseling.Program@uvm.edu](mailto:Counseling.Program@uvm.edu))

General Requirements

- [Requirements for the Masters Degree](#)

Specific Requirements

The Counseling Program offers two specialty tracks: school counseling and mental health counseling. Students may also select the dual option which includes preparation in both specialty tracks. Forty-eight credits are required for completion of the school counseling track, sixty credits are required for the mental health counseling track and sixty-seven credits are required for the dual option. (Note: school counselor licensure in Vermont requires that the individual have at least a thirty-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.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Leadership and Developmental Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Electrical Engineering (M.S.)

## Electrical Engineering (Master of Science)

### Overview

Typically candidates have obtained the Bachelor of Science degree in Electrical Engineering prior to application but those who haven't are encouraged to apply for 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 biomedical engineering, machine vision, mechatronics, computer engineering, solid state physical electronics, electromagnetics, information processing, communication theory, semiconductor materials, devices and integrated circuits (VLSI).

### General Requirements

- Requirements for the Masters Degree

### Specific Requirements

#### Requirements for Admission to Graduate Studies for the Degree 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 (eighteen to twenty-four credits) with at least fifteen credits appropriately distributed in approved areas of study in the Electrical and Computer Engineering departments. Thesis research (six to twelve credits).

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 which constitute a non-thesis option. 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.

In either case, successful completion of the M.S. degree will require passing a comprehensive examination. This examination will be based on course work that was taken in the pursuit of the M.S. degree. Thesis option students will be tested orally at the time of their thesis proposal. Non-thesis option students will be asked to make a report, both written and oral on a design or research topic of current interest which relates to course work taken at UVM. The presentation must be understandable to engineers and scientists, not just professionals working directly on the particular topic.

### Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.

Colleges and Schools > Graduate College > Academic Offerings > Electrical Engineering (M.S.)

## Electrical Engineering (Master of Science)

### Overview

Typically candidates have obtained the Bachelor of Science degree in Electrical Engineering prior to application but those who haven't are encouraged to apply for 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 biomedical engineering, machine vision, mechatronics, computer engineering, solid state physical electronics, electromagnetics, information processing, communication theory, semiconductor materials, devices and integrated circuits (VLSI).

### General Requirements

- [Requirements for the Masters Degree](#)

### Specific Requirements

#### Requirements for Admission to Graduate Studies for the Degree 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 (eighteen to twenty-four credits) with at least fifteen credits appropriately distributed in approved areas of study in the Electrical and Computer Engineering departments. Thesis research (six to twelve credits).

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 which constitute a non-thesis option. 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.

In either case, successful completion of the M.S. degree will require passing a comprehensive examination. This examination will be based on course work that was taken in the pursuit of the M.S. degree. Thesis option students will be tested orally at the time of their thesis proposal. Non-thesis option students will be asked to make a report, both written and oral on a design or research topic of current interest which relates to course work taken at UVM. The presentation must be understandable to engineers and scientists, not just professionals working directly on the particular topic.

### Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).

- Departments and Programs: [Electrical Engineering Program](#). [School of Engineering](#).

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Food Systems (Master of Science)

Overview

In the Food Systems graduate program, you'll learn about contemporary food systems through a unique curriculum that links transdisciplinary research with real-world problem-solving and practical experience.

Our program brings a wide range of academic disciplines to the study of food systems, integrating:

- Food production, distribution, and marketing
- Policy development at federal, state, and local levels
- Managing the interplay of food and health
- Environmental, social, and economic sustainability
- Ensuring access to adequate food for all citizens
- Understanding the complex dynamics of local to global food markets

Food Systems M.S. graduates leave with a broad and deep understanding of our contemporary food system, as well as a set of applied skills and experience – preparing them to succeed.

For more information please visit the [Master of Science in Food Systems](#) website.

General Requirements

- [Requirements for the Masters Degree](#)

Specific Requirements

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

Please see the [Master of Science in Food Systems](#) website.

Minimum Degree Requirements for the Degree of Master of Science

Please see the [Master of Science in Food Systems](#) website.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Nutrition and Food Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Geology (M.S.)

Geology (Master of Science)

Overview

The Master of Science in Geology is a rigorous research thesis program with grounding in related course work. Research programs include environmental geology, geomorphology, water resources, mineralogy, sedimentary, igneous and metamorphic environments, geochronology, and structural evolution of orogenic belts. Examples of 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, crystal chemistry and crystallography, geochemical cycling, tectonic evolution of deformed continental margins and interiors, petrofabric and structural analysis of deformed rocks, partial melting processes, mineral structure analysis, stratigraphy and sedimentary environments of lower Paleozoic sandstones and carbonates.

General Requirements

- [Requirements for the Masters Degree](#)

Specific Requirements

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

- Bachelor's degree in Geology or related field from an accredited institution with year-long courses in chemistry, physics, biology, and mathematics preferred. The M.S. program is also open to undergraduate majors in physics, chemistry, biology, engineering or mathematics who have accumulated twelve semester hours of course work in geology. Required remedial course work in geology, if any, will be established by the student and the faculty during the admission process and during advising at the beginning of the first semester.
- Strong undergraduate record, letters of recommendation, and satisfactory basic GRE scores.
- Applicants should identify a potential faculty advisor (or advisors) and include research interests in the application statement.
- Application to the program is a competitive process and admission is dependent upon available Teaching and/or Research Fellowships.

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

Advancement to candidacy requires satisfactory completion of a comprehensive examination. The comprehensive examination includes both a written and oral 1) research thesis proposal and 2) progress report during the second and third semesters of enrollment, respectively.

Minimum Degree Requirements for the Degree of Master of Science

*Option A (Thesis):* Successful writing, oral presentation and defense of a research thesis are required. Satisfactory completion will be determined by the candidate's thesis committee. Advanced courses in geology must total at least thirty semester hours, including at least one 300-level course and six to nine

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credits for thesis research. A minimum of fifteen graded credits used in compilation of the graduate GPA must be taken in residence at UVM. Advanced courses in related sciences are encouraged and may be substituted for some selected geology courses on approval by the departmental advisor. 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.

*Option B (Non-Thesis):* Advanced courses in geology must total at least thirty semester hours, including at least one 300-level course. A minimum of fifteen graded credits used in compilation of the graduate GPA must be taken in residence at UVM. Advanced courses in related sciences are encouraged and may be substituted for some selected geology courses on approval by the departmental advisor. With the prior approval of their department and the Graduate College, students may apply one 100/200-level, three-credit undergraduate course toward 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.

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
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Historic Preservation (Master of Science)

General Requirements

- Requirements for the Masters Degree

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 writing sample

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 credits of course work. A minimum of thirty-three credits (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. The internship or thesis may be undertaken upon completion of two or three semesters of concentrated course work. (4) Historic Preservation ([HP 200](#), [HP 201](#), [HP 204](#), [HP 205](#), [HP 206](#), [HP 302](#), [HP 304](#), [HP 305](#), [HP 306](#), [HP 307](#) and [HP 303](#) or [HP 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 credits is required for [HP 391](#).

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [History Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Materials Science (M.S.)

Materials Science (Master of Science)

General Requirements

- Requirements for the Masters Degree

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 (Thesis): thirty graduate credits of an approved program of study including at least eighteen credits of course work; completion of at least one three-credit 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 (Non-thesis): thirty credits of an approved program of study; completion of at least one three-credit 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.

Affiliations

- Colleges and Schools: College of Arts and Sciences. College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Materials Science Program.

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Colleges and Schools > Graduate College > Academic Offerings > Mathematics (M.S.)

Mathematics (Master of Science)

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science 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.

Departmental 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

- Requirements for the Masters Degree

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 of Science

Each student must complete one of the following options:

*Option A (Thesis):* 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

*Option B (Non-Thesis):* 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 [MATH 333](#), and must satisfactorily complete at least four 300-level mathematics courses and the seminar [MATH 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 credits 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 credits of thesis credit towards these nine credits. In both options students must also select a minor concentration consisting of at least three approved credits of

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advanced mathematics complementary to the major area. With approval of the student's advisor up to six credits of courses outside mathematics may be used to fulfill the major, minor, or degree requirements.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Mathematics and Statistics Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Mechanical Engineering (M.S.)

# Mechanical Engineering (Master of Science)

## Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encouraged 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

- Requirements for the Masters Degree

## Specific Requirements

## Requirements for Admission to Graduate Studies for the Degree 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 3.00 or better for the first nine credits of graduate course work.

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

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 thirty credits. 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 [Mechanical Engineering](#) website.

**Option A (Thesis):** 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 credits of independent thesis research; those opting for a six-credit thesis must complete an additional three credits of approved course work.

*Option B (Non-Thesis):* 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.

**Affiliations**

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [School of Engineering](#). [Mechanical Engineering Program](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Microbiology and Molecular Genetics (M.S.)

# Microbiology and Molecular Genetics (Master of Science)

## 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

- Requirements for the Masters Degree

## 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 [PHYS 011](#) and [PHYS 012](#)); one year of inorganic chemistry and one year of organic chemistry (equivalent of [CHEM 031](#), [CHEM 032](#), [CHEM 141](#) and [CHEM 142](#)); mathematics through calculus (equivalent of [MATH 019](#) and [MATH 020](#)); 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 of Science

Thirty total credits to include six credits of Thesis Research ([MMG 391](#)) and twenty-four 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 sixteen 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 College of Medicine, 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.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Microbiology and Molecular Genetics Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Molecular Physiology and Biophysics (M.S.)

# Molecular Physiology and Biophysics (Master of Science)

## Overview

The department offers a highly flexible program of doctoral study (biophysics track and molecular physiology track) for individuals embarking on a career in biomedical research and teaching. Students can study crucial biological processes using state of the art biophysical techniques in a unique setting. Biological research interest: Cytokinesis and cell division; heart failure, insect flight, and various muscle-dependent processes; structure and function of metabolic enzymes, structural biology and biophysics of contractile and cytoskeletal proteins, structure and function of bacterial adhesins. Biophysical Techniques: cell imaging (time lapse, confocal microscopy), fluorescence spectroscopy, high resolution electron microscopy (3D, single particles, tomography), single molecule detection techniques (optical trap, TIRF, AFM), X-ray crystallography.

## General Requirements

- Requirements for the Masters Degree

## Specific Requirements

## Requirements for Admission to Graduate Studies for the Masters of Science Degree

MPBP usually only accepts students applying for the Ph.D. program. Applicants must demonstrate excellent undergraduate academic performance in physical and biological sciences and satisfactory scores on the general aptitude portion of the Graduate Record Examination (GRE). Foreign students must also show good proficiency in the English language (TOEFL). Students with outstanding performance on either physical or biological sciences but lacking the necessary background to successfully fulfill the common core requirements might be accepted. These students will be required to successfully complete the necessary remedial courses ([MATH 021](#) / [MATH 022](#); [CHEM 141](#) / [CHEM 142](#); [BCOR 011](#) / [BCOR 012](#) or [MPBP 019](#) / [MPBP 020](#)) during their first year of graduate studies.

## Requirements for Advancement to Candidacy for the Degree of Masters of Science

Students will be advanced to candidacy if they have successfully completed core course requirements, have performed satisfactorily on their teaching assignments and have favorably completed the departmental comprehensive examination. Students will select a Thesis advisor and a Thesis Committee will be assembled, both approved by the faculty of the department.

Students who are not admitted to candidacy for the doctoral degree will be permitted to complete studies for the master's degree if requirements for that program are met.

## Minimum Degree Requirements for the Degree of Masters of Science

A minimum of forty-one credits are required to confer the Masters of Science Degree with at least eight credits of dissertation research . Molecular Physiology and Biophysics graduate students are required to take a minimum of thirty-one course credits: sixteen fulfilled with the common core courses ([MPBP 301](#), [MPBP 303](#), [ANNB 327](#), [MPBP 323](#); [BIOC 301](#)) and the additional fifteen depending on the chosen track, either molecular physiology or biophysics. Elective courses will be determined for each individual after consultation with the Studies Committee. Students should also fulfill their teaching assignments, oral presentation

requirements, and successfully complete the comprehensive examination and Thesis dissertation.

**Affiliations**

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Molecular Physiology and Biophysics Department](#).

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## 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Aquatic Ecology and Watershed Science (M.S.)

### Natural Resources: Aquatic Ecology and Watershed Science (Master of Science)

#### Overview

The Aquatic Ecology and Watershed Science concentration provides students with advanced understanding of aquatic ecosystems and their watersheds, and the skills and methodologies required to analyze and solve technical problems concerning the effects of human activities on these systems. Current areas of research emphasis include watershed processes and management; stream and lake ecology; fish ecology and fisheries management; aquatic ecotoxicology; pollutant studies; biogeochemical dynamics, and the modeling of aquatic systems, processes and populations.

#### General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

#### Specific Requirements

#### Minimum Degree Requirements

In addition to the general M.S. in Natural Resources requirements, this concentration requires enrollment in a one credit special topics seminar organized by faculty and students in the concentration, and at least twelve additional credits of course work in the aquatic and watershed sciences, or supportive fields (approved by the student's studies committee). Students in this concentration pursue a thesis.

#### Affiliations

- Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.
- Departments and Programs: Natural Resources Program.

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Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Environment, Society and Public Affairs (M.S.)

Natural Resources: Environment, Society and Public Affairs (Master of Science)

Overview

Through the M.S. concentration in Environment, Society, and Public Affairs, graduate students build theoretical understanding, analytical skills, and applied knowledge in the social dimensions of environmental and natural resource issues. Specific areas in which students may build understanding, skills, and knowledge include:

- environmental policy and planning
- community studies, human behavior, and environmental sociology
- ecological economics
- park and wilderness management
- public participation, conflict resolution, and decision making
- geospatial analysis

General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

Specific Requirements

Minimum Degree Requirements

In addition to the general M.S. in Natural Resources requirements, this concentration requires twenty-one to twenty-four credits of advanced courses (including a methods course, three courses from an approved list of courses reflecting this concentration's emphasis, and one ecology course), and three to six credits of project work or six credits of thesis research. Students pursue a project or thesis.

Affiliations

- Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.
- Departments and Programs: Natural Resources Program.

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Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Environmental Thought and Culture (M.S.)

Natural Resources: Environmental Thought and Culture (Master of Science)

Overview

In this concentration graduate students build interdisciplinary analytical skills and theoretical understanding of environmental and natural resource issues, with a focus on their human, ethical, and cultural dimensions. Specific areas include: environmental communication and cultural studies; environmental education and interpretation; environmental ethics and philosophy; environment, development, peace, and global justice studies; environmental politics and advocacy; religion and environment; sustainability and sustainable development.

General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

Specific Requirements

Minimum Degree Requirements

In addition to the general M.S. in Natural Resources requirements, this concentration requires eighteen to twenty-one credits of advanced courses including Vermont Field Studies and fifteen credits in a specialization within environmental thought and culture, and six to nine credits of thesis/project research. Students pursue a thesis or project.

Affiliations

- Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.
- Departments and Programs: Natural Resources Program.

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Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Forestry (M.S.)

### Natural Resources: Forestry (Master of Science)

#### Overview

The goal of this Master of Science concentration is to provide graduate students with advanced training in forest 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 ecology, management, pathology, physiological ecology, sustainable forestry, and community forestry.

#### General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

#### Specific Requirements

#### Minimum Degree Requirements

In addition to the general M.S. in Natural Resources requirements, this concentration requires eighteen to twenty-one credits of advanced forestry and related courses, a comprehensive examination with both a written and oral component, and six to nine credits of thesis/project research. Students pursue a thesis or project.

#### Affiliations

- Colleges and Schools: [Graduate College](#). [The Rubenstein School of Environment and Natural Resources](#).
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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Master of Environmental Law and Policy/Master of Science in Natural Resources (MELP/MSNR) (M.S.)

**Natural Resources: Master of Environmental Law and Policy/Master of Science in Natural Resources (MELP/MSNR) (Master of Science)**

## Overview

## Dual Degree Program with Vermont Law School

The Master of Environmental Law and Policy (M.E.L.P.)/Masters of Science in Natural Resources (M.S. - Natural Resources) Dual Degree Program offered by Vermont Law School's Environmental Law Center and the University of Vermont's Rubenstein School of Environment and Natural Resources gives students an opportunity to deepen their graduate education by integrating significant aspects of the complementary disciplines of environmental law, policy, and science.

For more information about this program, visit the [MELP/MSNR Program website](#).

## General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

## Specific Requirements

## Course of Study

Students in the Dual Degree Program may earn both degrees with a total of forty-two credits. Students must meet each school's degree requirements, including required courses and thesis preparation. Students take a minimum of twenty-one credits at VLS toward the M.E.L.P. degree and a minimum of twenty-one credits at UVM toward the M.S. (Natural Resources) degree. Students may transfer a maximum of nine credits between the two programs. Courses to be transferred must meet the requirements of the Dual Degree Program. Transferred credits may be applied toward both degrees.

Students have a maximum of five years to complete the Dual Degree Program. Course credits to be transferred must be taken within that five year period.

## Admissions

Students interested in the Dual Degree Program are required to apply separately to each school. Each school admits students according to its own criteria for admission. Dual Degree applicants may be discussed and coordinated by admissions officials at both schools, when appropriate. Students may apply for admission to the Dual Degree Program at any time prior to the awarding of the degrees.

## Advisors

Students admitted to the Dual Degree Program are assigned academic advisors in each school. These advisors assist with curriculum planning, program requirements, and similar matters. Advisors are faculty members familiar with the course requirements for both schools.

Grades

Each school applies its own grading system to students in the program. Students must be in good academic standing at both schools to remain in the program. Each school issues its own transcript.

Graduation

After completing the requirements for either degree, students will receive a diploma from the appropriate school and may attend graduation.

Affiliations

- Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.
- Departments and Programs: Natural Resources Program.

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Colleges and Schools > Graduate College > Academic Offerings > Natural Resources: Wildlife Biology (M.S.)

### Natural Resources: Wildlife Biology (Master of Science)

#### Overview

This Master of Science concentration is designed to provide a vehicle for a wildlife biologist to develop research abilities and pursue a specialized course of study. Current areas of research emphasis include applied avian ecology, behavioral ecology, game management, nongame wildlife populations, reserve design, and landscape ecology.

#### General Requirements

- Natural Resources Requirements (M.S.)
- Requirements for the Masters Degree

#### Specific Requirements

#### Minimum Degree Requirements

In addition to the general M.S. in Natural Resources requirements, the Wildlife Biology concentration requires eighteen to twenty-one credits of course work in wildlife and related fields, a comprehensive examination with both a written and oral component, and three to six credits of thesis/project research. Students pursue a thesis or project.

#### Affiliations

- Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.
- Departments and Programs: Natural Resources Program.

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Table of Contents	Natural Resources Requirements (M.S.)			
Courses	Overview			
Academic Offerings	The masters of science in natural resources prepares students to pursue studies in advanced disciplinary topics. They will learn scientific and practical methods and develop technical skills for understanding ecological, physical, social, political, and economic aspects of environmental and natural resource issues.			
Colleges and Schools	Students choosing to pursue research in the Masters program will take fifteen to twenty-four credits of advanced course work and write and defend a thesis or project. This experience will further their knowledge and proficiency in natural resource fields including five areas of concentration:			
College of Agriculture and Life Sciences	1. Aquatic Ecology and Watershed Science			
College of Arts and Sciences	2. Environment, Society and Public Affairs			
College of Education and Social Services	3. Environmental Thought and Culture			
College of Engineering and Mathematical Sciences	4. Forestry			
College of Medicine	5. Wildlife Biology			
College of Nursing and Health Sciences	Other areas of studies can be pursued through the general degree in Natural Resources including interdisciplinary research not included in the above concentrations. Students and their Graduate Studies Committee work closely together to design these individualized curricula.			
Continuing Education	Students may also pursue a MELP/MSNR dual degree with the Vermont Law School.			
Graduate College	Students choosing to emphasize advanced course work (twenty-seven credits) will pursue academic and work experiences leading to development of professional skills emphasizing conservation leadership, ecological planning, and sustainable forestry. A three credit project/internship experience will complement the academic course work.			
Honors College	Requirements for Admission to Graduate Studies for the Degree of Master of Science			
School of Business Administration	Undergraduate degree in an appropriate field in the sciences, social sciences, or humanities/fine arts; satisfactory scores on the General Test of the Graduate Record Examination; 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 strong academic credential and experience in an environmental or natural resource-related job, internship, or other related activity.			
The Rubenstein School of Environment and Natural Resources	Minimum Degree Requirements			
Studying the Environment	The Master of Science program requires from 15 to 27 hours of course work in related fields (including NR 378, and NR 306), a public research seminar presented at the annual graduate student symposium, a research proposal, a comprehensive examination, and three to fifteen credits of thesis/project research. An oral defense of the thesis/project is required of all students.			
Policies and General Information	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.			
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## Natural Resources Requirements (M.S.)

### Overview

The masters of science in natural resources prepares students to pursue studies in advanced disciplinary topics. They will learn scientific and practical methods and develop technical skills for understanding ecological, physical, social, political, and economic aspects of environmental and natural resource issues.

Students choosing to pursue research in the Masters program will take fifteen to twenty-four credits of advanced course work and write and defend a thesis or project. This experience will further their knowledge and proficiency in natural resource fields including five areas of concentration:

1. [Aquatic Ecology and Watershed Science](#)
2. [Environment, Society and Public Affairs](#)
3. [Environmental Thought and Culture](#)
4. [Forestry](#)
5. [Wildlife Biology](#)

Other areas of studies can be pursued through the general degree in Natural Resources including interdisciplinary research not included in the above concentrations. Students and their Graduate Studies Committee work closely together to design these individualized curricula.

Students may also pursue a [MELP/MSNR dual degree](#) with the Vermont Law School.

Students choosing to emphasize advanced course work (twenty-seven credits) will pursue academic and work experiences leading to development of professional skills emphasizing conservation leadership, ecological planning, and sustainable forestry. A three credit project/internship experience will complement the academic course work.

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

Undergraduate degree in an appropriate field in the sciences, social sciences, or humanities/fine arts; satisfactory scores on the General Test of the Graduate Record Examination; 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 strong academic credential and experience in an environmental or natural resource-related job, internship, or other related activity.

### Minimum Degree Requirements

The Master of Science program requires from 15 to 27 hours of course work in related fields (including [NR 378](#), and [NR 306](#)), a public research seminar presented at the annual graduate student symposium, a research proposal, a comprehensive examination, and three to fifteen credits of thesis/project research. An oral defense of the thesis/project is required of all students.

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.

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Colleges and Schools > Graduate College > Academic Offerings > Neuroscience (M.S.)

Neuroscience (Master of Science)

General Requirements

- Requirements for the Masters Degree

Specific Requirements

The Neuroscience Program only awards an M.S. to students who have matriculated into the Ph.D. granting program, but cannot continue to the Ph.D. These individuals must be recommended by their advisory committee for the M.S., and are required to complete the minimum requirements for the M.S. as defined by the university, and must write a research-based master's thesis.

Affiliations

- Colleges and Schools: College of Arts and Sciences. College of Nursing and Health Sciences. Graduate College. College of Medicine.
- Departments and Programs: Anatomy and Neurobiology Department. Neuroscience Program.

[Location]

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Table of Contents	Nursing (Master of Science)			
Courses	Overview			
Academic Offerings	<p>The Department of Nursing offers a graduate program leading to a Master of Science degree in nursing that prepares nurses to assume leadership roles within health care systems in a variety of settings, to expand knowledge of the discipline of nursing, to develop expertise in a specialized area of nursing, and to acquire the foundation for doctoral study and continued professional development. The ability to work collaboratively on an interdisciplinary team, provide patient-centered care, employ evidence-based practice, access information technology, and apply quality improvement strategies are basic competencies expected of all graduates of this program.</p> <p>The graduate curriculum includes five core courses essential for all students that address the theoretical basis of nursing care: professional issues and role development of advanced practice registered nurses, research utilization and evidence based practice, health policy and financing, theoretical foundations of nursing, and biostatistics and epidemiology. Students apply core content to their chosen area of specialization. Students may select a course of study in: Clinical Systems Management, Primary Care Nursing with preparation either as an Adult, Family Nurse Practitioner, or Psychiatric-Mental Health Nursing. After successful completion of program requirements students are eligible to take either the American Nurse Credentialing Center or American Academy of Nurse Practitioner certification exams at the advanced level.</p> <p>Clinical practica are an integral aspect of graduate nursing education providing students an opportunity to apply their knowledge and skills in a precepted environment. Students need to be able to travel throughout the state and will incur associated costs for travel and lodging if necessary. All students are required to complete a criminal background check prior to July 1st of the year which they begin the professional program. Prior to enrolling in clinical practica, students must have current certification in Cardio-Pulmonary Resuscitation (CPR), evidence of meeting OSHA requirements, HIPAA training, annual PPD testing, select immunizations, and professional liability insurance.</p>			
Colleges and Schools	General Requirements			
College of Agriculture and Life Sciences	Requirements for the Masters Degree			
College of Arts and Sciences	Specific Requirements			
College of Education and Social Services	Requirements for Admission to Graduate Studies for the Degree of Master of Science			
College of Engineering and Mathematical Sciences	There are three routes of entry into the Graduate Nursing Program.			
College of Medicine	1. Registered nurses (RN) with a Bachelor of Science degree with a major in nursing; or			
College of Nursing and Health Sciences	2. Registered nurses with a bachelor's degree in another field and successful completion of the Bridge Process (means of assessment of nursing knowledge); or			
Continuing Education	Undergraduate grade point average preferably of 3.00 or better;			
Graduate College	Successful completion of an undergraduate course in statistics;			
Honors College	Successful completion of an undergraduate health assessment course for nurse practitioner tracks;			
School of Business Administration	Satisfactory scores on the Graduate Record Exam;			
The Rubenstein School of Environment and Natural Resources				
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- Licensure or eligibility for licensure as a registered nurse in Vermont(non-MEPN applicants);
- Three letters of recommendation from persons who can assess your potential for graduate work.

3. Non-nurse college graduates may apply to the Master's Entry Program in Nursing (MEPN)and progress to the M.S. in an advanced practice area.

**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.

**Minimum Degree Requirements**

Total number of required credits is dependent on the specialty track chosen. Satisfactory completion of a Comprehensive Examination and either a thesis or master's project is also required.

**Affiliations**

- Colleges and Schools: [College of Nursing and Health Sciences](#). [Graduate College](#).
- Departments and Programs: [Nursing Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Nutrition and Food Sciences (M.S.)

Nutrition and Food Sciences (Master of Science)

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 weight and composition, web-based interactive multimedia tools for use in teaching and research, behavior modification programs to improve individual eating behaviors and testing the effectiveness of Internet support on the long term management of obesity, factors affecting 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, and food microbiology.

For more information, contact Pam Clark, Department of Nutrition and Food Sciences, 250 Carrigan Wing, (802) 656-3374 or e-mail: [Pamela.Clark@uvm.edu](mailto:Pamela.Clark@uvm.edu)

General Requirements

- [Requirements for the Masters Degree](#)

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. An undergraduate course in biochemistry. Satisfactory scores on the Graduate Record Examination, general (aptitude) portion.

Minimum Degree Requirements for the Degree of Master of Science

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

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Nutrition and Food Sciences Department](#).

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Pathology (Master of Science)

General Requirements

- Requirements for the Masters Degree

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

ANNB 311 (three credits), PATH 305 (three credits), BIOC 301- BIOC 302 (six credits); additional approved courses; thesis research (six to fifteen credits).

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Pathology Department.

[Location]

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Pharmacology (Master of Science)

General Requirements

- Requirements for the Masters Degree

Specific Requirements

Requirements for Admission to Graduate Studies for the Degrees 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

BIOC 301, BIOC 302; GRMD 354; PHRM 301, PHRM 302, PHRM 303, PHRM 328, PHRM 381, PHRM 391; STAT 308. Total of forty-five credits, to include thirty-five from graded course work and ten from Master's Thesis Research. Pass oral and written qualifying exams and pre-thesis proposal. Successful Thesis Defense.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Pharmacology Department.

[Location]

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Physics (M.S.)

# Physics (Master of Science)

## 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 SGLs 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.

The physics of recently discovered graphene and its derivatives is another major direction of theoretical research. These materials exhibit unconventional electronic, magnetic, mechanical and transport properties and efforts are under way to understand the role of quantum many-body effects both from fundamental standpoint and in relation to nanodevice applications.

Additional theoretical studies include strongly-correlated electron systems, such as complex oxides and cuprates and high-temperature superconductors. Of particular interest are frustrated quantum magnets with novel ground states, as well as conducting cuprates which exhibit complex interplay of charge and spin phenomena. Such systems also tend to undergo quantum phase transitions, and the study of quantum critical phenomena is a major research direction.

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.

Additional research in materials physics includes studies of fundamental magnetic and spin-dependent electronic properties of semiconductor nanostructures that employ high magnetic fields optical spectroscopy imaging techniques. The physics department hosts one of the few laboratories in New England where time-resolved, spin-dependent spectroscopy imaging at magnetic fields as high as five Tesla may be carried out.

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**

- [Requirements for the Masters Degree](#)

**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) are required.

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

Physics [PHYS 211](#), [PHYS 213](#), and [PHYS 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 thirty credits including a minimum of six credits of thesis research and at least nine credits of Physics courses numbered over [PHYS 300](#).

**Affiliations**

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Physics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Plant and Soil Science (M.S.)

Plant and Soil Science (Master of 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

- Requirements for the Masters Degree

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 consulting with the student.

Minimum Degree Requirements for the Degree of Master of Science

Eighteen to twenty-two credits in Plant and Soil Science and closely related fields; satisfactory participation in seminars during residency; thesis research (six to twelve credits). All masters students must take part in the department's undergraduate teaching program.

Affiliations

- Colleges and Schools: Graduate College. College of Agriculture and Life Sciences.
- Departments and Programs: Plant and Soil Science Department.

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## 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Plant Biology (M.S.)

### Plant Biology (Master of Science)

#### Overview

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

The 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

- [Requirements for the Masters Degree](#)

#### 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 thirty credits of course work and thesis research. A minimum of fifteen 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 ([PBIO 311](#)) each semester; oral comprehensive examination the fourth semester; written field research project ([PBIO 392](#)) at the end of the fourth semester.

**Affiliations**

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Plant Biology Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Statistics (M.S.)

# Statistics (Master of Science)

## 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 other quantitative UVM faculty 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 bioinformatics, sequential analysis, three stage sampling, time series analysis, survival data analysis, discriminant analysis, bootstrap methods, categorical data analysis, measurement error models, and experimental design. 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.

## General Requirements

- Requirements for the Masters Degree

## 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 thirty semester credit program requiring twenty-four credits of statistics course work. The program must include STAT 221, STAT 223, STAT 231, STAT 251, STAT 261, STAT 360, one of STAT 233 or STAT 235, and at least one other 200/300-level statistics course (except STAT 211, STAT 241, STAT 281, STAT 308), as well as (if approved) other courses in mathematics, quantitative methods, or specialized fields of application of career interest to the student. Six credits of thesis research is required (STAT 391).

*Plan B (Non-thesis):* A thirty-three semester credit program requiring thirty credits of course work. The program must include [STAT 221](#), [STAT 223](#), [STAT 231](#), [STAT 251](#), [STAT 261](#), [STAT 360](#), one of [STAT 233](#)

or [STAT 235](#), other 200/300-level statistics courses (except [STAT 211](#),[STAT 241](#), [STAT 218](#), [STAT 308](#)), or (if approved) other courses in mathematics, quantitative methods, or specialized fields of application of career interest to the student. The research project requirement is met by taking three semester hours of either statistical research ([STAT 381](#)) or statistical consulting ([STAT 385](#)).

Under both plans, students must have or acquire knowledge of the material in [STAT 211](#): Statistical Methods I. The student is expected to participate in the colloquium series of the Program and in the Statistics Student Association Journal Club. The student must pass the comprehensive examination which covers knowledge acquired in the core courses of the program. Under the non-thesis option, students will be expected to take major responsibility for a comprehensive data analysis or methodological research project, and are encouraged to present the results from the project.

**Affiliations**

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Mathematics and Statistics Department](#).

{Location}

# 2012-2013 Catalogue

## Dietetics (Master of Science in Dietetics)

The Master of Science in Dietetics (M.S.D) program, housed in the Department of Nutrition and Food Sciences under the College of Agriculture and Life Sciences at the University of Vermont, is a 30 hour graduate credit degree which includes didactic coursework, an evidence-based practice project, and supervised practice.

The mission of the M.S.D is to prepare and educate graduate students who will successfully function as entry-level dietitians who have a specialized area of knowledge, competence in research methodology, and an advanced degree. Students will take graduate level courses throughout the University of Vermont as well as advanced nutrition courses offered by the Department of Nutrition and Food Sciences.

The University of Vermont forms a strong alliance with Fletcher Allen Health Care (FAHC) and both institutions share the mission of providing advanced learning, training and development of students and practitioners of medicine and medical related fields. Students will have access to the vast array of state of the art learning opportunities and resources available through this alliance: the medical library network, national medical data banks, and renowned guest lecturer seminars. Students will be welcome to attend advanced level lectures hosted at both facilities. In addition, students will be provided with a variety of experiences in community settings.

The Master of Science in Dietetics is accredited by the Accreditation Council for Education and Dietetics (ACEND) of the Academy of Nutrition and Dietetics (AND), 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, 312/899-0040 ext. 5400 or visit them at the [AND](#) ☐ website. Upon completion of the supervised practice and all requirements for the M.S.D, students will be granted a verification statement of completion of the program and will be eligible to sit for the Registration Exam for Dietitians.

- Requirements for the Masters Degree

## Specific Requirements

## Requirements for Admission to Master of Science in Dietetics

Minimum GPA of 3.00 in college level courses with an overall science GPA of 2.50 in required courses with no required science grade less than 2.00. Satisfactory scores on the Graduate Record Exam, general (aptitude) portion. Specific prerequisite admission requirements for the two-year and three-year programs are provided on the [Dietetics Program](#) website. The application deadline is December 15<sup>th</sup> of each year.

The M.S.D. program provides three tracks for entrance into the program to accommodate the needs of a variety of students including those interested in remaining in Vermont and those who do not have all the requirements to directly enter a dietetic internship or supervised practice.

- *Track One* is for students who have completed a Didactic Program in Dietetics and have obtained a

verification statement from an accredited program (these students would also be eligible to apply for any dietetic internship).

- *Track Two* is for students in the third year of the dietetics major at the University of Vermont who are interested in completing their dietetics major and then remaining at the University of Vermont to obtain a master's degree with supervised practice (these students would be assured of a position during their junior year but would need to apply to the graduate college in their senior year and would successfully complete the dietetics major and receive a verification statement).
- *Track Three* is for students who have a baccalaureate (B.A. or B.S.) degree in areas other than dietetics or nutrition or have a dietetics or nutrition degree that is more than five years old (these students would need to complete a set of prerequisite courses prior to applying to the program).

The M.S.D. committee strongly believes that there is a set of requisite knowledge and skills necessary prior to entering the M.S.D. This requisite knowledge is obtained through the receipt of a verification statement or through prerequisite coursework and individual transcript and work experience evaluation. Further description of each track, the entrance requirements, curriculum requirements, sample coursework schedules, and application procedures can be found on the [Dietetics Program](#) website.

### Minimum Degree Requirements for the Master of Science in Dietetics

Satisfactory completion of thirty credits of graduate level courses including research methods, statistics, evidence-based project, ethics, and dietetics practice in addition to all supervised practice requirements.

### Supervised Practice Experiences

The supervised practice portion of the curriculum is integrated with coursework. [NFS 311](#) Dietetics Practice I and [NFS 312](#) Dietetics Practice II will be taught in coordination with the supervised practice rotations that the students will be involved with. The class time for [NFS 311](#) and [NFS 312](#) is six (6) hours per week. This will provide 32 weeks (2 semesters) of six (6) hours per day (one day per week), totaling 192 hours of class time. Students will spend the other four (4) days each week in supervised practice with rotations individualized to the various students. The supervised practice provides 34 weeks (two semesters) of eight (8) hours per day (four days per week), totaling 1088 hours of supervised practice.

Between [NFS 311](#) and [NFS 312](#) and the supervised practice the M.S.D. program provides a total of 1280 hours. The program will also include one week of orientation which will be five (5) days of eight (8) hours each, totaling 40 hours. All students will complete 13 weeks in Clinical rotations, 7 weeks in Foodservice Management rotations, 12 weeks in Community rotations and 2 weeks in a school nutrition program. After completing all rotations, students will select a rotation of their choice for further skill and knowledge development (staff relief). This choice rotation must be a minimum of 2 weeks but it can be longer if a student requests it. A further description of rotations can be found by clicking below.

### Community Health and Nutrition Concentration

The M.S.D. program will prepare entry-level dietetics practitioners with a concentration in Community Health and Nutrition. Our unique program fills an ever-growing niche in the country's health care delivery system, particularly in rural areas such as Vermont. The current trend of shifting medical treatment and care from acute tertiary-care hospitals to outpatient clinics, often based in smaller community hospitals, has created a need for professionals who can provide seamless medical nutritional therapy for patients as they progress from the acute care setting to community-based programs and services.

M.S.D. students must complete all coursework, comprehensive exam, supervised practice rotations, and the evidenced-based practice project in order to receive the M.S.D. degree and verification statement of eligibility to write the registration exam for dietitians. The description of the evidence based practice project, program mission, goals and outcomes, student learning outcomes, and estimated program costs can be found on the [Dietetics Program](#) website.

### Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Nutrition and Food Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biology (M.S.T.)

Biology (Master of Science for Teachers)

Overview

Faculty research interests fall into two broad groupings: 1) cell and molecular biology, physiology and behavior; 2) ecology and evolution. Current research projects under the first group include: molecular biology of cilia; smell and taste receptor cell function using molecular biology, calcium imaging and electrophysiology; olfactory and taste driven behavior; muscle development using biophysical, molecular and proteomic approaches; proteomics, biochemistry and cell biology applied to molecular mechanisms of signal transduction governing neuronal positioning. Current research projects under the second group include: community ecology and evolutionary ecology of carnivorous plants; genetics of malaria parasites using classical parasitology, field studies and molecular biology; ecology, zoogeography and conservation of small mammals; modeling and analysis of complex biological and environmental systems; multi-species interactions among plants, their mutualist pollinators and antagonists that include herbivores, seed predators, and competitors; developmental plasticity interactions with extreme sexual size dimorphism in spiders; evolution, ecology, and behavior of social insects; ecology and evolution of disease.

General Requirements

- Requirements for the Masters Degree

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 credits of course work to include a selection of courses in the Departments of Plant Biology 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 twelve credits 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 thirty credits. No thesis is required; however, each degree recipient must complete a written examination.

Affiliations

- Colleges and Schools: College of Arts and Sciences. Graduate College.
- Departments and Programs: Biology Department.

[Location]

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Mathematics (Master of Science for Teachers)

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science for Teachers, 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

- Requirements for the Masters Degree

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. Certification as a teacher of mathematics or 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 credits 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.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Mathematics and Statistics Department](#).

[Location]

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http://www.uvm.edu/...hp&p=/Colleges\_and\_Schools/Graduate\_College/Academic\_Offerings/Mathematics\_%28M.S.T.%29&SM=collegemenu.html[9/26/2018 4:09:12 PM]

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Colleges and Schools > Graduate College > Academic Offerings > Social Work (M.S.W.)

Social Work (Master of Social Work)

Overview

The Master of Social Work program at the University of Vermont prepares students for advanced social work practice with individuals, families, groups, organizations, and communities in the post-modern environment. Our curriculum emphasizes strengths-oriented, relational practice guided by principles of social justice and human rights and a conceptual framework of critical social construction. The Master of Social Work Program is fully accredited by the Council on Social Work Education (CSWE).

The professional foundation curriculum is designed to assist students to explore and develop generalist knowledge, values, and skills for professional practice. Students take thirty credits of foundation course work, including one elective. The curriculum is comprised of course work in five areas: Human Behavior in the Social Environment (HBSE), Social Welfare Policy, Social Work Practice, Field Practica, and Research.

The concentration year curriculum is designed to extend and integrate student knowledge, values, and skills for advanced practice in a single concentration, Transformative Social Work. This is accomplished through focused study in a student-generated, individualized area of interest. All core curriculum courses in the concentration year are considered advanced practice courses in Transformative Social Work, in that all emphasize the application of complex social ideas and the production of transformative roles and methods.

Students select four focus courses to direct their studies toward a particular population or field of social work practice. In addition, the concentration curriculum consists of two advanced practice courses, a field practicum, an advanced research course, and a "capstone course" aimed at integrating the student's application of transformative social work in the area of interest. To fulfill the UVM Graduate College comprehensive examination requirement, concentration year students complete a final project which is embedded in the capstone course. The project extends learning across the concentration curriculum and builds upon inquiry begun in the Advanced Research course. The project is the culmination of the student's studies in the concentration year and provides integration and closure to the student's educational experience.

The Department of Social Work offers a full time and part time course of study towards the MSW degree. An Advanced Standing option is also available for eligible students who have completed an undergraduate degree in social work from a bachelor's program accredited by CSWE within 7 years of admission.

To request a program bulletin or additional information, please contact the Department of Social Work at 802-656-8800 or visit the program's [Master's Degree in Social Work](#) website.

Specific Requirements

General Requirements for Admission

- A baccalaureate degree completed in good standing from an accredited college or university.
- No minimum grade point average (GPA) is required; however, the applicant must show evidence of academic ability to undertake graduate study in social work. The applicant's GPA is one indicator of performance and will be considered in the review process.
- Evidence of a strong liberal arts background, with a minimum of eighteen credits in general liberal arts course work that supports graduate education in social work.

Graduate Record Examination (GRE) Scores (no minimum score is required) from tests taken within five years of the date of application.

- Prior work or volunteer experience in human services is preferred.
- International students must submit TOEFL scores of 550 (paper test), 213 (computer-based test), or 80 (internet-based test) or higher, from tests taken within two years of the date of application.

**Requirements for Advanced Standing**

- A BSW degree earned from a social work program accredited by CSWE (Council on Social Work Education) within 7 years of admission to the MSW program
- Prior academic performance that supports graduate study in social work
- Satisfactory undergraduate social work field practicum evaluations

**How to apply**

The following materials are required for application:

- Completed application form (online)
- Written Statement of Purpose that describes the applicant's preparation and goals for pursuing graduate study in social work (submit online)
- Scores from appropriate GRE tests (Verbal, Quantitative, and Analytic Writing) taken within 5 years of the date of application
- Official transcripts from each college or university attended
- Resume of work and professional experience
- Three (3) letters of recommendation and completed recommender forms (recommendations from at least one academic source and one from human service related employment are strongly encouraged)
- Non-refundable application fee of \$40.00 for online application

**Minimum Degree Requirements for the Master of Social Work**

The Master of Social Work degree requires sixty credits of graduate study, unless students are admitted with Advanced Standing status. Advanced Standing status 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, and allows for a shorter course of study at thirty-nine credits. Both regular track and advanced standing students must complete all required and elective credits in social work courses.

*The policies and standards for maintaining program accreditation do not permit the granting of academic credit toward graduation for life experience.*

**Curriculum**

**Curriculum for Regular Track MSW**

Foundation Courses	Credits
<a href="#">SWSS 212</a> - Social Work Practice I	3
<a href="#">SWSS 213</a> - Social Work Practice II	3
<a href="#">SWSS 216</a> - Theoretical Foundations of HBSE I	3
<a href="#">SWSS 217</a> - Theoretical Foundations of HBSE II	3
<a href="#">SWSS 220</a> - Social Welfare Policies and Services I	3
<a href="#">SWSS 221</a> - Social Welfare Policies and Services II	3
<a href="#">SWSS 227</a> - Foundations of Social Work Research	3
<a href="#">SWSS 290</a> - Field Practicum I	6
An approved elective*	3

Concentration Year Courses	Credits
<a href="#">SWSS 314</a> - Transformative Social Work I	3
<a href="#">SWSS 315</a> - Transformative Social Work II	3
<a href="#">SWSS 316</a> - Integrative Applications of Transformative Social Work	3
<a href="#">SWSS 327</a> - Advanced Social Work Research	3
<a href="#">SWSS 390</a> - Field Practicum II	6
Four approved focus courses*	12

\* Elective and focus courses require advanced approval of faculty advisor.

## Curriculum for Advanced Standing MSW

Summer Session Courses	Credits
<a href="#">SWSS 380</a> - Perspectives on Social Work	4
Two approved focus courses*	6

Concentration Year Courses	Credits
<a href="#">SWSS 314</a> - Transformative Social Work I	3
<a href="#">SWSS 315</a> - Transformative Social Work II	3
<a href="#">SWSS 316</a> - Integrative Applications of Transformative Social Work	3
<a href="#">SWSS 327</a> - Advanced Social Work Research	3
<a href="#">SWSS 390</a> - Field Practicum II	8
Three approved focus courses*	9

\* Focus courses require advanced approval of faculty advisor.

## Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Social Work Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Educational Leadership and Policy Studies (Ed.D.)

Educational Leadership and Policy Studies (Doctor of 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 leaders 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 three letters of recommendation, 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 course requirements (twenty-one credits)
- the comprehensive examination
- the qualifying paper

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

http://www.uvm.edu/...Graduate\_College/Academic\_Offerings/Educational\_Leadership\_and\_Policy\_Studies\_%28Ed.D.%29&SM=collegemenu.html[9/26/2018 4:10:31 PM]

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

A minimum of fifty-six credits of doctoral studies completed at UVM following formal admission to the program with the following distribution:

- twenty-one credits in the core courses (minimum)
- fifteen credits general distribution (minimum)
- twenty credits of dissertation research (minimum)

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: February 1.

Detailed information on the course of study is available from Program Director, Kieran Killeen, Professor, the University of Vermont, College of Education and Social Services, 499B Waterman Bldg., Burlington, VT 05405-0160, and on the program [Doctoral Program in Educational Leadership and Policy Studies](#) website.

Affiliations

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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## Physical Therapy (Doctor of Physical Therapy)

## Overview

The doctor of physical therapy (DPT) is a professional entry-level degree. The DPT program requires full time study over a period of 3 years, including summers. The curriculum includes course work related to the basic sciences of anatomy and neuroscience, the clinical sciences of pathophysiology and pharmacology, and the clinical sciences related to management of patients across the lifespan. The curriculum also includes courses related to evidence-based practice, practice management, healthcare ethics, policy and quality improvement, and health promotion. In addition, students engage in 36 weeks of full-time clinical internships in a variety of settings under the supervision of clinical instructors who are licensed physical therapists.

The Clinical Education Program is an integral part of the curriculum, offering students opportunities to apply knowledge and practice skills and behaviors in the clinical setting. Clinical internships are provided across the US and offer a wide variety of experiences. Internships are assigned based on students' educational needs and availability of clinical sites in each timeframe. Students are responsible for their own transportation to and from clinical sites. Most of the clinical internships occur outside of the Burlington, Vermont area. Students must be prepared to travel and secure living arrangements during those clinical internships. Internships are scheduled as indicated in the curriculum plan unless insufficient clinical sites are available; in that case, students may be required to complete internship in an alternate time period.

All students in the program are required to carry professional liability insurance and have all required health clearances prior to engaging in any clinical education experience. Students should plan their finances to include these expenses. Clinical sites may require students to have a criminal background check before starting an internship. Evidence of a Criminal Record may prevent students from being eligible for clinical placement, and/or professional licensure.

The DPT program at UVM is accredited by the Commission on Accreditation for Physical Therapy Education. Individuals who graduate from an accredited program are eligible to take the examination required for licensure as a physical therapist.

## Specific Requirements

## Admission Requirements

Applicants must complete the prerequisite course requirements and a baccalaureate degree in any major at UVM or a regionally accredited institution. Applicants with a baccalaureate degree from institutions outside the U.S. will also be considered.

Students applying to the physical therapy program must have a GPA of 3.00 or greater in their undergraduate studies. All applicants must complete the following prerequisite courses with a cumulative GPA of 3.00 or greater prior to entry into the D.P.T. program.

- Two semesters of anatomy/physiology
- Two semesters of college chemistry with labs
- Two semesters of physics with labs
- One semester of biology
- One semester of exercise physiology
- One semester of psychology

- One semester of statistics

## Application Process

1. Complete the Physical Therapy Common Application through the Physical Therapist Centralized Application Service (PTCAS), a division of the American Physical Therapy Association. Follow all instructions on the site. All application materials should be submitted directly to PTCAS. This includes:
  - Three letters of recommendation
  - Official Transcript(s) from all U.S. and Canadian schools attended. PTCAS and the UVM D.P.T. program accept prerequisite credits from regionally accredited institutions only. For international applicants, transcripts must be translated and evaluated by an official service and sent to the CNHS Office of Student Services.
  - Official Graduate Record Exam (GRE) scores. For UVM DPT applicants only, the GRE Code is 7708.
  - The GRE requirement is waived for UVM graduates.
  - The college will accept both the old and new version of the GRE, but scores must be received by the application deadline. Historically, the program has preferred a minimum GRE score of 500 in both verbal and quantitative portions and 4.0 in the written analytical portion of the exam. Because of recent changes in the GRE scoring system, the department has not set a specific minimum score for admission in the summer of 2013. Criteria for future admissions cycles will be set based on review of data from the new scoring system.
2. Complete pages one and two of the UVM Graduate Online Application form. Include the following information with the UVM application:
  - In the box calling for an essay, please write: "See essay on the PTCAS application."
  - Application Fee
  - No transcripts or letters of recommendation should be sent to the University of Vermont.
3. Complete the D.P.T. Prerequisite Course Completion form which can be found on the [Department of Rehabilitation and Movement Science](#) website.

Application Deadline: December 15

## Affiliations

- Colleges and Schools: [College of Nursing and Health Sciences](#). [Graduate College](#).
- Departments and Programs: [Rehabilitation and Movement Science Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Animal, Nutrition and Food Science (Ph.D.)

## Animal, Nutrition and Food Science (Doctor of Philosophy)

## Overview

An interdisciplinary program leading to the Ph.D. degree in Animal, Nutrition and Food Science is offered under the direction of a committee composed of faculty members drawn from the departments of Animal Science, and Nutrition and Food Sciences. The goal of this interdisciplinary program is to provide advanced education and research training in mammalian physiology and endocrinology, mammary gland biology, basic and applied nutrition and food microbiology and technology. While all Ph.D. students will complete a common core of courses, they will choose from one of three tracks for specialized study: nutrition, food sciences, or animal science. The program provides 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.

## General Requirements

- Requirements for the Doctor of Philosophy Degree

## 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 complete one semester with satisfactory performance in graduate courses or courses prescribed by the Graduate Committee.

## Minimum Degree Requirements

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 [ASCI 301](#), Graduate Journal Club and [ASCI 302](#), Graduate Seminar every semester that the courses are offered. The candidate must also participate in one semester of [ASCI 303](#), 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 at least 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. All doctoral students will be provided the opportunity to participate in their respective 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.

## Affiliations

- Colleges and Schools: College of Agriculture and Life Sciences. Graduate College.

- Departments and Programs: [Animal Science Department](#). [Nutrition and Food Sciences Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biochemistry (Ph.D.)

Biochemistry (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

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 [CHEM 141/CHEM 142](#) or [CHEM 143](#); [CHEM 144](#), [CHEM 162](#) and [PHYS 015/PHYS 016](#)); quantitative chemistry; mathematics preferably through differential and integral calculus, a year course in a biological science. If a physical chemistry course has not been taken previously, a Ph.D. student must take Physical Chemistry ([CHEM 162](#)) in their first year (for which they do not receive credit toward the Ph.D. degree).

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

Successful completion of a Phase I, II and III exams are required for advancement to candidacy.

Minimum Degree Requirements

A total of seventy-five credits, including twenty-three credits from graduate courses offered by the Department of Biochemistry including [BIOC 301](#), [BIOC 302](#), [BIOC 309](#), [BIOC 310](#) and [BIOC 370](#), as well as participation every semester in the biochemistry seminar [BIOC 381](#); two upper level courses selected from [BIOC 351](#), [BIOC 352](#) or [BIOC 353](#); nine additional credits in the physical or biological sciences; thirty-five credits of doctoral dissertation research [BIOC 491](#).

See the [Department of Biochemistry](#) website for more details.

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Agriculture and Life Sciences](#). [College of Medicine](#).
- Departments and Programs: [Biochemistry Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Bioengineering (Ph.D.)

## Bioengineering (Doctor of Philosophy)

## Overview

The program in Bioengineering is interdisciplinary and offers the Doctor of Philosophy degree. Graduate students obtain the Ph.D. degree through a program administered by School of Engineering. The program is directed by Jason Bates (Medicine, School of Engineering) and administered by a curriculum committee comprising members from the School of Engineering and the College of Medicine.

Participating faculty with strong commitments to bioengineering research and education are from the School of Engineering, the College of Medicine, and other departments and colleges across campus. 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 Modeling, 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 Pattie McNatt, School of Engineering, Burlington, VT 05405; Phone: (802) 656-8157.

## General Requirements

- Requirements for the Doctor of Philosophy Degree

## Specific Requirements

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

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 Doctor of Philosophy

Completion of any deficient admission requirements.

Minimum Degree Requirements

Candidates for the degree of Doctor of Philosophy must complete thirteen graduate credits of required courses (Advanced Bioengineering Systems, Complex Systems, Human Physiology & Pharmacology, and an advanced mathematics or statistics course) plus at least seventeen credits of approved technical electives. In addition, the candidate must complete a teaching requirement, pass a comprehensive examination, complete at least forty-five credits of thesis research, and pass a final oral examination.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [College of Medicine](#). [Graduate College](#).
- Departments and Programs: [School of Engineering](#).

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Colleges and Schools > Graduate College > Academic Offerings > Biology (Ph.D.)

## Biology (Doctor of Philosophy)

### Overview

Faculty research interests fall into two broad groupings: 1) cell and molecular biology, physiology and behavior; 2) ecology and evolution. Current research projects under the first group include: molecular biology of cilia; smell and taste receptor cell function using molecular biology, calcium imaging and electrophysiology; olfactory and taste driven behavior; muscle development using biophysical, molecular and proteomic approaches; proteomics, biochemistry and cell biology applied to molecular mechanisms of signal transduction governing neuronal positioning. Current research projects under the second group include: community ecology and evolutionary ecology of carnivorous plants; genetics of malaria parasites using classical parasitology, field studies and molecular biology; ecology, zoogeography and conservation of small mammals; modeling and analysis of complex biological and environmental systems; multi-species interactions among plants, their mutualist pollinators and antagonists that include herbivores, seed predators, and competitors; developmental plasticity interactions with extreme sexual size dimorphism in spiders; evolution, ecology, and behavior of social insects; ecology and evolution of disease.

### General Requirements

- [Requirements for the Doctor of Philosophy Degree](#)

### 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; scores from the Graduate Record Examination, general (aptitude) section; and acceptability to the faculty member with whom the candidate wishes to do dissertation research or rotations. 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; proposal writing examination; the comprehensive exam; minimum requirement course work of thirty credits 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

Seventy-five credits are required for the degree, of which at least thirty credits must be earned in graduate courses including six credits of Graduate Colloquia. The selection of courses will be designated for each student by his/her advisor and Studies Committee. At least twenty, but not more than forty-five, credits must be earned in dissertation research. Each candidate must participate in the teaching of at least one undergraduate course.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Biology Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Cell and Molecular Biology (Ph.D.)

Cell and Molecular Biology (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

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.

Requirements 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 CHEM 160.

Minimum Degree Requirements

Six credits of cell biology (CLBI 301 and CLBI 302), three credits of genetics, six credits of biochemistry (BIOC 301 and CLBI 302), two credits of CLBI 381 seminar, three credits of quantitative/analytical biology and four credits of literature-based seminar. All Ph.D. candidates are to complete at least thirty course credits, and twenty research credits. The remaining twenty-five credits are to be completed in combination of research and course credits. Studies committee and advisor will guide student in course selection.

All students must demonstrate satisfactory progress; finish minimum course work within three years; and finish cumulative exam within prescribed times limits; participate in seminar program.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Cell and Molecular Biology Program.

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Chemistry (Ph.D.)

## Chemistry (Doctor of Philosophy)

## Overview

A Ph.D. degree in chemistry prepares students for careers in chemical sciences and related disciplines including biomedical sciences, biotechnology, catalysis, energy, environment, materials science, or nanotechnology. Individuals having earned a Ph.D. in chemistry at UVM have gone on to careers in academics, the chemical industry, and national research laboratories. Graduate study at UVM is research intensive, and a description of research by classic chemical subdivision follows.

*Analytical chemistry* involves developing and applying instrumentation and chemical methods to solve problems across a range of chemistries and scientific disciplines. One focus is in electroanalytical chemistry studying redox processes of organometallic compounds, including electrocatalysis relevant to the environmental and biological applications. Another area focuses on the development of innovative methods and instruments to study the formation and chemistry of organic aerosols in the atmosphere. This work bridges the gap between analytical chemistry and atmospheric science, contributing to our understanding of the impact of aerosols on global climate through direct scattering of solar radiation and the formation of ice and water clouds. The third area develops mass spectrometry instrumentation and chemistries for addressing current problems in the biomedical sciences. Key foci are development of methods for advancing the rapidly growing field of proteomics and application of stable isotopically labeled tracers to answer questions of metabolism and metabolic diseases in humans.

*Inorganic chemistry* at UVM involves the study of main-group elements and transition metals in a variety of contexts, with applications in catalysis, energy, environment, and medicine. One example is the synthesis and characterization of inorganic particles, which can be functionalized for broad applications in heterogeneous catalysis, targeted drug delivery, and biological imaging. Another area of interest is spectroscopic and biochemical studies of metalloproteins, with the goal of using a detailed understanding of their structures to explain reaction patterns. Finally, a third example is the design of metal-based catalysts for chemical bond formation, which can be applied to the preparation of useful small molecules and novel polymeric materials.

Current research in *organic chemistry* includes the development of novel synthetic methodologies to prepare oxygen- and nitrogen-containing heterocyclic compounds, new ring fragmentation reactions and their applications in synthesis, development of efficient and stereoselective tandem/cascade reaction sequences, target-directed total synthesis of medicinally valuable natural products including macrolides, alkaloids, and terpenoids, biomimetic natural product synthesis, mechanistic studies of organic chemical reactions, development of 1,3-diaza-Claisen rearrangements and applications toward the synthesis of guanidine-containing natural products, and studies in bioorganic chemistry.

*Physical chemistry* research areas include three major areas of focus. The first is thermodynamics/kinetics of hydrogen absorption by metals, alloys, and intermetallic compounds with a view toward storage of hydrogen as a fuel. The second is utilization of TGA, IR, solid-state NMR, and powder X-ray diffraction in determining the structural features of layered zirconium phosphonates containing a mix of chromophores as pendant groups in the interlayer region. Subsequently, photophysics of the interlayer chromophores is explored via UV-vis and fluorescence spectroscopy. Third is the development of Co-59 NMR as a probe of metal tetrapyrrole electronic structure, and using NMR/MCD spectroscopies to elucidate tetrapyrrole-containing enzyme binding sites.

## General Requirements

- [Requirements for the Doctor of Philosophy Degree](#)

### Specific Requirements

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

An undergraduate major in an appropriate field, minimally with course work in the four classic subdisciplines of chemistry (analytical, inorganic, organic, and physical). This is most commonly satisfied with a B.A., B.S., or equivalent degree in chemistry. Applicants with prior research experience are preferred. Satisfactory scores on the Graduate Record Examination general (aptitude) section is required.

#### 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 fifteen credits of research ([CHEM 491](#)); (2) three credits of [CHEM 318](#); (3) present and defend proposed dissertation topic ([CHEM 484](#)); (4) 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; (5) three credits of teaching; (6) one year of residence; (7) the following courses are required: [CHEM 381](#) (one credit), three semester hours of credit of advanced course 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 - typically, a student devotes much of the first year to formal course work); (8) 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, [CHEM 488](#), typically in the first semester of the third year.

#### Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Chemistry Department](#).

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# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Civil and Environmental Engineering (Ph.D.)

## Civil and Environmental Engineering (Doctor of Philosophy)

## 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 processes, sustainable transportation systems, geotechnical, geoenvironmental and structural analysis. Graduate students of CEE can concurrently pursue certificates of graduate education in: 1) sustainable transportation systems; 2) complex systems; and 3) ecological economics.

Research includes: groundwater contamination, modeling and remediation including optimal remediation design; environmental restoration and ecological engineering; hydrological processes; air pollution and related health effects; modeling of contaminant fate and transport in the environment; pathogenesis in human and environmental systems; geotechnical earthquake engineering; dynamic behavior of structures and structural health monitoring; and sustainable transportation systems.

## General Requirements

- Requirements for the Doctor of Philosophy Degree

## 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 twelve credits of research; (4) at least fifteen credits 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 seventy-five credits in approved course work and research (including those required for advancement to candidacy), of which at least thirty-five credits are in research and six credits are in course work in disciplines ancillary to Civil and Environmental Engineering; and (2) write and successfully defend an acceptable dissertation.

## Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Civil Engineering Program](#). [School of Engineering](#).

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Colleges and Schools > Graduate College > Academic Offerings > Clinical and Translational Science (Ph.D.)

Clinical and Translational Science (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

Curriculum

Requires seventy-five credits including nineteen credits of core courses, continuous seminar participation, submission of a model grant proposal (part of a comprehensive exam), at least twelve credits of elective courses, and at least twenty credits of supervised research. Remaining credits may be of elective or research credit with approval by the faculty advisor and program director. A thesis is required.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Center for Clinical and Translational Science.

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Colleges and Schools > Graduate College > Academic Offerings > Computer Science (Ph.D.)

Computer Science (Doctor of Philosophy)

Overview

The Department of Computer Science offers graduate programs towards the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.). The interdisciplinary Ph.D. program in Computer Science offers study in both traditional and cross-disciplinary areas such as bioinformatics and ecological modeling.

Our faculty in Computer Science is involved in the forefront of research in knowledge and data engineering (such as data mining, database systems, pattern recognition, and knowledge-based systems), software engineering and verification (including programming languages), and computational sciences (comprising computational biology, discrete modeling, and numerical methods).

General Requirements

- [Requirements for the Doctor of Philosophy Degree](#)

Specific Requirements

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

A bachelor's degree and satisfactory scores on the Graduate Record Examination general section are required of all applicants. Applicants will be evaluated based on their potential for excellence in research, as judged from their academic background, test scores, relevant experience and letters of recommendation. Applicants who have strong academic records in a different discipline and lack an acceptable computer science background (normally including at least courses in Data Structures, Computer Organization and Programming Languages) may be accepted provisionally. Provisionally accepted students will be required to complete an approved program of remedial work within their first year of study. 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 (if financial aid is requested) and April 1 (otherwise).

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

Before advancing to candidacy, the student must:

- Demonstrate satisfactory performance in a schedule of courses of at least fifteen credits of graduate course work as approved by the student's studies committee
- Pass a written comprehensive exam in areas approved by the student's studies committee
- Successfully propose a thesis topic in a public presentation
- Pass an oral exam before the student's studies committee

Minimum Requirements for the Degree of Doctor of Philosophy

A minimum of seventy-five credits of graduate study must be approved by the studies committee and successfully completed, including a minimum of thirty credits of research.

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The student must describe the completed research in a written dissertation and defend the research in a public presentation of the results.

Beyond research and course work, the student must gain appropriate experience in three distinct activities, approved by the student's studies committee: teaching, programming, and communicating technical ideas, both orally and in writing.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Computer Science Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Educational Leadership and Policy Studies (Ph.D.)

Educational Leadership and Policy Studies (Doctor of Philosophy)

Overview

The Ph.D. program in Educational Leadership and Policy Studies is a multidisciplinary program that seeks to examine complex educational and social problems through the integration of multiple theoretical, methodological, and disciplinary lenses. The Ph.D. in Education Leadership and Policy Studies is intended as a full-time program to prepare candidates to attain a high level of scholarly competence and to develop the capacity to contribute knowledge to their field. The program will develop scholars who can analyze and inform the development of educational systems and public policies that will positively impact the lives of our children and youth and address broad societal issues such as child poverty. The degree will serve students who wish to pursue research/teaching careers in universities and/or research and policy positions in government agencies, think tanks, non-governmental organizations, and other public and private sector organizations.

The goals of the program include, but are not limited to:

- Preparing professional researchers, scholars, and faculty competent in conducting and sharing research.
- Focusing on research training that uses advanced quantitative, qualitative, and mixed method approaches to add to theoretical knowledge.
- Emphasizing publication of research findings to enhance knowledge in education and social services.
- Developing areas of interdisciplinary specialization.

Expected Applicant Qualifications:

- Master's degree or undergraduate work in a related field such as educational leadership, educational studies, higher education, public administration, counseling, social work, or curriculum and instruction characterized by a distinguished academic record.
- Demonstrated commitment in letters of application and references to social change and justice with experience in inquiry at a level that will predict successful research and college teaching.
- GRE general test scores taken within the last 5 years.
- Research interests compatible with those of CESS faculty.
- Strong inquiry and writing skills.

Type of Candidate Preparation

- In-depth understandings of systems change, leadership, and policy in order to conduct high quality research.
- Candidates will be mentored in conducting independent research, presenting papers at professional conferences, and submitting their work for publication.

Dissertation Expectations

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Journal Article format with a focus on original research illustrating mastery of competing theories with the goal of informing knowledge (per Graduate College guidelines). This format requires that the candidate will complete one or more journal article(s) with the goal of manuscript submission for publication in refereed journals.

**Knowledge Assessment**

- Written and oral assessments provide evidence of understanding of the theoretical and conceptual knowledge in the field and of competence in conducting research to acquire new knowledge.

**Research Methods**

- Courses develop competencies in research design, analysis, synthesis, and dissemination.
- Research questions are theory-driven.

**General Requirements**

- [Requirements for the Doctor of Philosophy Degree](#)

**Specific Requirements**

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

Satisfactory completion of:

- all core course requirements
- the research course requirements
- the comprehensive examination
- the qualifying paper

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

**Transfer of Credit**

A maximum of twenty-four (24) semester hours may be accepted in transfer from an accredited graduate program. Transfer credit may be completed prior to admission to the EDLP Ph.D. 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**

A minimum of eighty credits of doctoral studies following formal admission to the program.

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.

**Affiliations**

- Colleges and Schools: [College of Education and Social Services](#). [Graduate College](#).
- Departments and Programs: [Education Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Electrical Engineering (Ph.D.)

Electrical Engineering (Doctor of Philosophy)

Overview

Master of Science and Doctor of Philosophy programs are offered. Typically candidates have obtained the Bachelor of Science degree in Electrical Engineering prior to application 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 biomedical engineering, computer engineering, solid state physical electronics, electro-optics, information processing, communication-theory, semiconductor materials, devices and integrated-circuits (VLSI).

General Requirements

- Requirements for the Doctor of Philosophy Degree

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 forty-five credits in courses and seminars and twenty credits 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 seventy-five credits is required.

Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Electrical Engineering Program. School of Engineering.

{Location}

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Colleges and Schools > Graduate College > Academic Offerings > Materials Science (Ph.D.)

Materials Science (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree 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. 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 seventy-five graduate credits including a minimum of twenty in dissertation research. An overall grade-point average in graduate courses of 3.25 or better. Completion of at least one three-credit course in each of the following five categories: (i) solid state theory, (ii) quantum mechanics, (iii) applied mathematics, (iv) thermodynamics and kinetics, and (v) materials properties of solids. Satisfactory completion of a Ph.D. dissertation including its defense at an oral examination.

Affiliations

- Colleges and Schools: College of Arts and Sciences. College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: Materials Science Program.

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Mathematical Sciences (Ph.D.)

Mathematical Sciences (Doctor of Philosophy)

Overview

The Department of Mathematics offers programs towards the Master of Science, Master of Science 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

- Requirements for the Doctor of Philosophy Degree

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 seventy-five credits 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.

Affiliations

- Colleges and Schools: [College of Engineering and Mathematical Sciences](#). [Graduate College](#).
- Departments and Programs: [Mathematics and Statistics Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Mechanical Engineering (Ph.D.)

Mechanical Engineering (Doctor of Philosophy)

Overview

Master of Science and Doctor of Philosophy programs are offered. Candidates holding degrees other than those in Mechanical Engineering are encouraged 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

- Requirements for the Doctor of Philosophy Degree

Specific Requirements

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

Successful completion of the Ph.D. comprehensive examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

The degree of Doctor of Philosophy requires of candidates a minimum of seventy-five credits to be earned in course work and in dissertation research. The seventy-five credits must be distributed in such a way that at least forty credits must be earned in courses and seminars and a minimum of twenty-five credits 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.

Affiliations

- Colleges and Schools: College of Engineering and Mathematical Sciences. Graduate College.
- Departments and Programs: School of Engineering. Mechanical Engineering Program.

{Location}

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Academic Offerings	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 adhesin and pathogenesis; molecular and cellular mechanisms of host-pathogen interactions; and bacterial transformations of organic pollutants.			
Colleges and Schools	General Requirements			
College of Agriculture and Life Sciences	Requirements for the Doctor of Philosophy Degree			
College of Arts and Sciences	Specific Requirements			
College of Education and Social Services	Requirements for Admission to Graduate Studies			
College of Engineering and Mathematical Sciences	(for either the Master of Science or the Doctor of Philosophy Degree)			
College of Medicine	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 PHYS 011 and PHYS 012); one year of inorganic chemistry and one year of organic chemistry (equivalent of CHEM 001, CHEM 002, CHEM 141 and CHEM 142); mathematics through calculus (equivalent of MATH 019 and MATH 020); 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.			
College of Nursing and Health Sciences	Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy			
Continuing Education	Completion of one full year of graduate study at the University of Vermont, satisfactory performance on teaching assignments, successful completion of the department's 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.			
Graduate College	Minimum Degree Requirements for the Degree of Doctor of Philosophy			
Honors College	Seventy-five total credits to include at least thirty credits of Dissertation Research (MMG 491) and at least thirty 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 twenty course credits are taken from courses offered by the Department of Microbiology and Molecular Genetics; teaching assignments as			
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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 College of Medicine, 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.

**Affiliations**

- Colleges and Schools: Graduate College. College of Agriculture and Life Sciences. College of Medicine.
- Departments and Programs: Microbiology and Molecular Genetics Department.

[Location]

# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Molecular Physiology and Biophysics (Ph.D.)

# Molecular Physiology and Biophysics (Doctor of Philosophy)

## Overview

The department offers a highly flexible program of doctoral study (biophysics track and molecular physiology track) for individuals embarking on a career in biomedical research and teaching. Students can study crucial biological processes using state of the art biophysical techniques in a unique setting. Biological research interest: Cytokinesis and cell division; heart failure, insect flight, and various muscle-dependent processes; structure and function of metabolic enzymes, structural biology and biophysics of contractile and cytoskeletal proteins, structure and function of bacterial adhesins. Biophysical Techniques: cell imaging (time lapse, confocal microscopy), fluorescence spectroscopy, high resolution electron microscopy (3D, single particles, tomography), single molecule detection techniques (optical trap, TIRF, AFM), X-ray crystallography.

## General Requirements

- Requirements for the Doctor of Philosophy Degree

## Specific Requirements

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

MPBP usually only accepts students applying for the Ph.D. program. Applicants must demonstrate excellent undergraduate academic performance in physical and biological sciences and satisfactory scores on the general aptitude portion of the Graduate Record Examination (GRE). Foreign students must also show good proficiency in the English language (TOEFL). Students with outstanding performance on either physical or biological sciences but lacking the necessary background to successfully fulfill the common core requirements might be accepted. These students will be required to successfully complete the necessary remedial courses (MATH 021 / MATH 022; CHEM 141/CHEM 142; BCOR 011 /BIOC 012 or MPBP 019 / MPBP 020) during their first year of graduate studies

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

Students will be advanced to candidacy if they have successfully completed core course requirements, have performed satisfactorily on their teaching assignments and have favorably completed the departmental comprehensive examination. Students will select a Thesis advisor and a Thesis Committee will be assembled, both approved by the faculty of the department.

Students who are not admitted to candidacy for the doctoral degree will be permitted to complete studies for the master's degree if requirements for that program are met.

## Minimum Degree Requirements for the Degree of Doctor of Philosophy

Seventy-five credits are required to confer the Doctor of Philosophy Degree with at least twenty credits of dissertation research ([MPBP 491](#)). Molecular Physiology and Biophysics graduate students are required to take a minimum of thirty-one course credits: sixteen fulfilled with the common core courses ([MPBP 301](#), [MPBP 303](#), [ANNB 327](#), [MPBP 323](#); [BIOC 301](#)) and the additional fifteen depending on the chosen track, either molecular physiology or biophysics. Elective courses will be determined for each individual after consultation with the Studies Committee. Students should also fulfill their teaching assignments, oral

presentation requirements, and successfully complete the comprehensive examination and Thesis dissertation.

Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Molecular Physiology and Biophysics Department](#).

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	Natural Resources (Doctor of Philosophy)			
	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 master's program. In addition, formal course work and practical experience in college-level teaching are an important component of the doctoral curriculum.			
	General Requirements			
	Requirements for the Doctor of Philosophy Degree			
	Specific Requirements			
	Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy			
	Satisfactory scores on the General Test of the Graduate Record Examination. Acceptability to a potential faculty advisor holding an appointment in the Rubenstein School of Environment and Natural Resources and the Graduate College. Applicants with a Master of Science degree are preferred.			
	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) at least twelve credits of research; (3) at least fifteen credits of course work at the graduate level acceptable to the student's Studies Committee; (4) satisfactory performance on a comprehensive examination; (5) delivery of a public proposal seminar; and (6) a dissertation proposal accepted by the student's Studies Committee.			
	Minimum Degree Requirements			
	After advancing to candidacy, a student must (1) present at least seventy-five credits in approved course work and research, including not less than twenty and not more than thirty-six credits 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 RSENR Graduate Standards Committee); (3) complete their teaching requirement satisfactorily; and (4) satisfactorily complete and defend their dissertation.			
	Affiliations			
	Colleges and Schools: Graduate College. The Rubenstein School of Environment and Natural Resources.			
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Colleges and Schools > Graduate College > Academic Offerings > Neuroscience (Ph.D.)

Neuroscience (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

Specific Requirements

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

Bachelor's degree in a biological science, neuroscience, chemistry, physics, engineering, psychology, mathematics, communication sciences or computer science. Additional courses with better than average grades in calculus, chemistry, organic chemistry, physics, and biopsychology, neuroscience, or biology are recommended. Research experience not necessary, but favorably considered.

GRE General Test scores required, and scores on the Subject Test in Biology, Biochemistry, Cell and Molecular Biology, or Psychology are highly recommended. Applicants whose native language is not English must submit scores from Test of English as a Foreign Language (TOEFL).

Three letters of reference are required. Letters from research advisors or supervisors are highly desirable attesting to applicant's abilities to work independently in an academic setting. A complete application for fall admission must be received by **December 15**.

Requirements 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

BIOL 261 - Neurobiology, three credits (if no neurobiology); CLBI 301 - Cell Biology, three credits, OR GRMD 353 - Cell and Molecular Biology, three credits; GRMD 354 - Human Structure/Function, six credits; PSYC 303 - Biobehavior Proseminar, three credits; GRMD 357 - Neural Science, six credits; PSYC 340 - Advanced Statistical Methods I, three credits OR STAT 308 - Applied Biostatistics, three credits; six credits in Advanced Neuroscience Selectives; ANNB 327 - Responsible Conduct in Research, one credit.

Affiliations

- Colleges and Schools: College of Arts and Sciences. College of Nursing and Health Sciences. Graduate College. College of Medicine.
- Departments and Programs: Anatomy and Neurobiology Department. Neuroscience Program.

[Location]

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Pharmacology (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

Specific Requirements

Requirements for Admission to Graduate Studies for the Degree 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

BIOC 301, BIOC 302; GRMD 354; PHRM 301, PHRM 302, PHRM 303, PHRM 328, PHRM 381, PHRM 491; STAT 308. Total of seventy-five credits, to include thirty-five from graded course work and twenty from Doctoral Dissertation Research. Pass oral and written qualifying exams and pre-thesis proposal. Successful Dissertation Defense.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Pharmacology Department.

[Location]

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Colleges and Schools > Graduate College > Academic Offerings > Plant and Soil Science (Ph.D.)

# Plant and Soil Science (Doctor of Philosophy)

## 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

- Requirements for the Doctor of Philosophy Degree

## Specific 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 forty credits of which a minimum of thirty must be taken in Plant and Soil Science and closely related disciplines (e.g. botany, chemistry, forestry, microbiology, biochemistry or geology). Satisfactory participation in seminars during residency is required. All master and doctoral students must take part in the department's undergraduate teaching program.

## Affiliations

- Colleges and Schools: College of Agriculture and Life Sciences. Graduate College.
- Departments and Programs: Plant and Soil Science Department.

# 2012-2013 Catalogue

Colleges and Schools > Graduate College > Academic Offerings > Plant Biology (Ph.D.)

# Plant Biology (Doctor of Philosophy)

## Overview

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

The 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

- Requirements for the Doctor of Philosophy Degree

## 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.

## Minimum Degree Requirements

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

## Affiliations

- Colleges and Schools: [College of Agriculture and Life Sciences](#). [Graduate College](#).
- Departments and Programs: [Plant Biology Department](#).

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Colleges and Schools > Graduate College > Academic Offerings > Psychology (Ph.D.)

## Psychology (Doctor of Philosophy)

### 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 Psychology program is fully accredited by the American Psychological Association.

Further information about both programs can be obtained electronically from the [Department of Psychology](#) website, 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 December 1<sup>st</sup>.

### General Requirements

- [Requirements for the Doctor of Philosophy Degree](#)

### 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 seventy-five credits. 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 credits. A minimum of twenty 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.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [Graduate College](#).
- Departments and Programs: [Psychology Department](#).

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Academic Offerings > Master's Entry Program In Nursing (Pre-License/M.S.) (M.S.)

### Master's Entry Program In Nursing (Pre-License/M.S.) (Master of Science)

#### Overview

The Master's Entry Program in Nursing is an accelerated educational program that prepares well-qualified graduates of Baccalaureate or higher degree programs in other disciplines to become advanced practice nurses such as nurse practitioners, advanced practice psychiatric-mental health nurse clinicians, managers of clinical systems in an intensive program designed for highly motivated students. The program consists of a 12-15 month intensive pre-licensure educational program leading to registered nurse licensure that must be completed successfully on a full-time schedule, followed by a 2-2.5 year period in which students will earn a master's degree in nursing and be prepared for certification and practice in one of the graduate specialties offered by the Department of Nursing.

Completion of the pre-licensure requirements does not lead to a second Baccalaureate degree, but to a certificate of completion that will entitle those who successfully complete this portion of the program to take the national licensing examination and to be provisionally licensed in the State of Vermont. The provisional license is effective until completion of the master's program. Students eligible for advanced practice licensure upon graduation from the master's program will apply for a change in license status at that time. Students graduating from clinical specialties in which advanced practice licenses are not required in this state will be able to renew their RN licenses according to the cycle set by the Vermont Board of Nursing.

#### Programs of Study

Students successfully completing the pre-licensure course work and the registered nurse licensing examination (NCLEX) will enter one of the following graduate specialty tracks in nursing for completion of the M.S. degree. No additional application procedure is required for progression.

- [Advanced Practice \(AP\) Psychiatric Mental Health Nursing](#)  
*(To be discontinued in Jan. 2013. No new students accepted.)*
- [Adult Nurse Practitioner](#)
- [Family Nurse Practitioner](#)
- [Master of Science for Certificate-Prepared Advanced Practice Registered Nurses \(APRNs\)](#)
- [Clinical Systems Management](#)

### MEPN Admission Requirements

- Graduation from an accredited Baccalaureate degree program or higher
- Cumulative GPA of 3.00 or higher in previous post-secondary education
- Completion of the Graduate Record Examination General Test (requirement waived for those with master's degrees or higher)
- Completion of a college level course in basic statistics (may be completed during pre-licensure year)
- Course work in nutrition and anatomy/physiology strongly recommended, but not required (may be completed at UVM prior to fall clinical course work)

## MEPN Pre-licensure Courses

- [GRNU 302 - Professional Nursing Issues](#) - 2 cr
- [GRNU 305 - Pathophysiology](#) - 3 cr
- [GRNU 322 - Structure and Function of the Human Body: Self-Study Module](#) - 1.5 cr \*\*
- [GRNU 311 - Clinical Nutrition and Implications for Nursing: Self-Study Module](#) - 1.5 cr \*\*
- [GRNU 312 - Biomedical Science I](#) - 4 cr \*\*\*
- [GRNU 305 - Pathophysiology](#) - 3 cr
- [GRNU 303 - Drug Therapy: Implications for Nursing Practice](#) - 3 cr
- [GRNU 304 - Drug Therapy: Special Considerations for Select Populations](#) - 1 cr
- [GRNU 314 - The Science of Nursing: Adults and Elders](#) - 4 cr
- [GRNU 316 - Practicum: Adults and Elders](#) - 6 cr (2 cr lab/4 cr practicum)
- [GRNU 317 - The Science of Nursing: Mental Health](#) - 3 cr
- [GRNU 318 - Practicum: Mental Health](#) - 2 cr
- [GRNU 319 - The Science of Nursing: Women and Newborns](#) - 2 cr
- [GRNU 329 - Practicum: Women and Newborns](#) - 1.25 cr
- [GRNU 321 - Practicum: Complex Nursing Care of Adults and Elders](#) - 2.5 cr
- [GRNU 325 - The Science of Nursing: Children](#) - 3 cr
- [GRNU 327 - Practicum: Children](#) - 2 cr
- [GRNU 337 - The Science of Nursing: Community/Public Health Nursing](#) - 2 cr
- [GRNU 338 - Practicum: Community/Public Health Nursing](#) - 2 cr
- [STAT 141 - Basic Statistical Methods](#) - 3 cr \* **Total Pre-licensure Credits: 42.75 - 48.75**

\* *Basic Statistical Methods may be waived if a student has completed one equivalent undergraduate or graduate level course in statistical methods.*

\*\* *The self-study modules in Anatomy/Physiology or Nutrition may be waived if a student has successfully completed equivalent an undergraduate level course.*

\*\*\* *Portions or all of Biomedical Sciences I may be waived if a student has successfully completed courses with equivalent content in advanced undergraduate or graduate level study.*

## General Requirements

- [Requirements for the Masters Degree](#)

## Affiliations

- Colleges and Schools: [College of Nursing and Health Sciences](#).
- Departments and Programs: [Nursing Department](#).

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Academic Offerings > Counseling (Post-Master's Certificate)

Counseling (Post-Master's Certificate)

Overview

The Certificate of Advanced Study in Counseling is designed for an individual with a Master's Degree in Counseling to develop further professional skills in a specialized area. Program planning is done with the help of a faculty advisor, but the C.A.S. candidate retains primary responsibility for determining objectives and designing appropriate learning experiences. Requirements for the Certificate of Advanced Study include:

1. A Master's Degree in Counseling,
2. Acquisition of thirty-six credit hours beyond the Master's Degree,
3. Completion of the certificate within five years,
4. Maintenance of a 3.00 GPA.

Applications or inquiries about the C.A.S. should be directed to: The Counseling Program, Mann Hall, 208 Colchester Avenue, University of Vermont, Burlington, VT 05405-1757, (802) 656-3888 or [counseling.program@uvm.edu](mailto:counseling.program@uvm.edu), or by visiting the [Graduate Counseling Program](#) website.

Affiliations





- Colleges and Schools: [College of Education and Social Services](#).
- Departments and Programs: [Leadership and Developmental Sciences Department](#).

[Location]

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http://www.uvm.edu/...ad.php&SM=offeringmenu.html&type=graduate&p=/Academic\_Offerings/Counseling\_%28Post-Master%27s\_Certificate%29[9/27/2018 1:19:08 PM]

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 UVM Home	<div>2012-2013 Catalogue</div> <div>Academic Offerings &gt; Educational Leadership (Post-Master's Certificate)</div> <div>Educational Leadership (Post-Master's Certificate)</div> <div>Overview</div> <p>A Certificate of Advanced Study (C.A.S.) is a certificate program designed for those who already have completed a master's degree, but who are interested in leadership development. The C.A.S. is a parallel program to the Master's Degree in Educational Leadership and is designed to cultivate leaders who can apply knowledge toward leading and building learning communities designed to make a positive difference in the lives of children, youth, families, adults, and communities. The program prepares public and private school leaders, curriculum leaders, teacher leaders, leaders of educational and social service agencies, and leaders for other educational organizations. The program is designed to prepare leaders to think and act creatively, responsibly, and effectively in leadership roles. Participants learn to:</p> <ul style="list-style-type: none"><li>• understand alternative perspectives on leadership that support the development of more just, humane, and diverse organizations</li><li>• construct effective ways to demonstrate caring and collaborative leadership</li><li>• create networks which support leadership and change</li></ul> <p>While the program is designed within the broad concept of leadership, three major strands of concentration are available. The areas of concentration are:</p> <ul style="list-style-type: none"><li>• STRAND I: School Leader with Administrative Endorsement<ul style="list-style-type: none"><li>◦ Educational Administration</li><li>◦ Curriculum Leadership</li></ul></li><li>• STRAND II: Organizational/Community Leadership<ul style="list-style-type: none"><li>◦ Leadership in Private or Nonprofit Educational Organizations</li><li>◦ Teacher Leadership</li></ul></li><li>• STRAND III: Human Services Leadership<ul style="list-style-type: none"><li>◦ Collaboration across communities, human service agencies, and schools</li><li>◦ Using evaluation for enhancing program outcomes</li></ul></li></ul> <div>Specific Requirements</div> <p>The program requirements include:</p> <ul style="list-style-type: none"><li>◦ A minimum of thirty credits distributed among courses, summer seminars, independent study, action research, and internships.</li><li>◦ Fifteen of the thirty to thirty-six credits comprise the core curriculum with the remainder making up the students individual concentration. Students desiring the administrative licensure endorsement by the state of Vermont will take a majority of their electives in areas required through licensure standards.</li><li>◦ An action research project.</li><li>◦ A leadership portfolio which marks the final requirement of the program. Portfolios are presented at each student's culminating oral examination.</li></ul> <p>The Certificate of Advanced Study (C.A.S.) Program requires 30 credit hours of study.</p>			
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Courses with an administration/planning focus include: [EDLP 264](#), [EDLP 266](#), [EDLP 268](#), [EDLP 280](#), [EDLP 332](#), [EDCI 333](#), [EDLP 334](#), [EDLP 335](#), [EDLP 336](#), [EDLP 337](#), [EDLP 353](#), [EDLP 354](#), [EDLP 355](#), [EDLP 356](#), and [EDLP 358](#).

There are two application deadlines. Applications are due November 15th for admission the following spring and April 1st for admission the following fall.

**Affiliations**

- Colleges and Schools: [College of Education and Social Services](#).
- Departments and Programs: [Education Department](#).

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Academic Offerings > Integrated Studies (Post-Master's Certificate)

Integrated Studies (Post-Master's Certificate)

Overview

A Certificate of Advanced Study (sixth-year certificate), a 30- to 36-graduate credit 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 the departments of Leadership and Developmental Sciences and Education of the College of Education and Social Services. The program does not lead to any type of state licensure.

Affiliations

- Colleges and Schools: College of Education and Social Services.
- Departments and Programs: Education Department. Leadership and Developmental Sciences Department.

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Academic Offerings > Special Education (Post-Master's Certificate)

Special Education (Post-Master's Certificate)

Overview

The Program in Special Education offers the Certificate of Advanced Study to students with the appropriate master's degree in one of the following areas: consulting teacher/learning specialist, early childhood special education, and intensive special education. A minimum of thirty credits of course work is required.

Affiliations

- Colleges and Schools: College of Education and Social Services.
- Departments and Programs: Education Department. Leadership and Developmental Sciences Department.

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Colleges and Schools > Graduate College > Departments and Programs

Graduate College: Departments and Programs

- Cell and Molecular Biology Program
- Center for Clinical and Translational Science
- Neuroscience Program

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Cell and Molecular Biology Program

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Contact Information

University of Vermont

Cell and Molecular Biology Program

E 100 Given Courtyard E

Burlington, VT 05405

Phone: (802) 656-9673

Email: [cmb@uvm.edu](mailto:cmb@uvm.edu)

[Web Site](#)

Overview

The Cellular and Molecular Biology (CMB) graduate program was founded in 1971 to meet the growing need to train scientists in the latest research techniques in a multidisciplinary setting. Today, Markus Thali, CMB Director and Assistant Professor in the Department of Microbiology and Molecular Genetics, coordinates over 60 faculty in departments from the College of Agriculture and Life Sciences, the College of Arts and Sciences, the College of Nursing and Health and the College of Medicine. Graduate education at UVM is characterized by a close and collegial environment that stresses active mentorship and scientific excellence.

The central theme of the CMB program is to provide a rich experience at the forefront of modern biology focusing on collaborative research between students and investigators across the UVM campus. Currently the CMB program has over 40 students, most of whom are enrolled in the Ph.D. program.

CMB is unique in its multi- and interdisciplinary nature that is not constricted by the boundaries of a typical size department-based program. The curriculum is designed to provide flexibility and specialization in course work. The numbers of courses are kept to a minimum yet still provide access to an array of courses that a multidisciplinary program provides to tailor the curriculum to the student according to his or her interests. Please visit the [CMB Courses](#) website. This is one of the ways we provide the best possible training to prepare the student to succeed in their future endeavors.

Affiliations

- Colleges and Schools: [College of Medicine](#). [Graduate College](#).

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Colleges and Schools > Graduate College > Departments and Programs > Cell and Molecular Biology Program > Academic Offerings

Cell and Molecular Biology Program: Academic Offerings

- Cell and Molecular Biology (M.S.)
- Cell and Molecular Biology (Ph.D.)

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Academic Offerings	Requirements for the Masters Degree			
Colleges and Schools	Specific Requirements			
College of Agriculture and Life Sciences	Requirements for Admission to Graduate Studies for the Degree of Master of Science			
College of Arts and Sciences	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.			
College of Education and Social Services	Requirements for Advancement to Candidacy for the Degree of Master of Science			
College of Engineering and Mathematical Sciences	Completion of any deficient admission requirements.			
College of Medicine	Master's candidates are required to take six credits of cell biology (CLBI 301 & CLBI 302), six credits of biochemistry (BIOC 301 & BIOC 302), two credits of seminar (CLBI 381), and six research credits. The remaining nine credits are to be completed in combination of at least one course credit and eight research credits. Studies committee and advisor will guide student in course selection.			
College of Nursing and Health Sciences	All students must demonstrate satisfactory progress; finish minimum course work within three years; and finish cumulative exam within prescribed times limits; participate in seminar program.			
Continuing Education	Affiliations			
Graduate College	Colleges and Schools: Graduate College. College of Medicine.			
Honors College	Departments and Programs: Cell and Molecular Biology Program.			
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### Cell and Molecular Biology (Master of Science)

#### General Requirements

- [Requirements for the Masters Degree](#)

#### 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.

Master's candidates are required to take six credits of cell biology ([CLBI 301](#) & [CLBI 302](#)), six credits of biochemistry ([BIOC 301](#) & [BIOC 302](#)), two credits of seminar ([CLBI 381](#)), and six research credits. The remaining nine credits are to be completed in combination of at least one course credit and eight research credits. Studies committee and advisor will guide student in course selection.

All students must demonstrate satisfactory progress; finish minimum course work within three years; and finish cumulative exam within prescribed times limits; participate in seminar program.

#### Affiliations

- Colleges and Schools: [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Cell and Molecular Biology Program](#).

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Cell and Molecular Biology (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

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.

Requirements 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 CHEM 160.

Minimum Degree Requirements

Six credits of cell biology (CLBI 301 and CLBI 302), three credits of genetics, six credits of biochemistry (BIOC 301 and CLBI 302), two credits of CLBI 381 seminar, three credits of quantitative/analytical biology and four credits of literature-based seminar. All Ph.D. candidates are to complete at least thirty course credits, and twenty research credits. The remaining twenty-five credits are to be completed in combination of research and course credits. Studies committee and advisor will guide student in course selection.

All students must demonstrate satisfactory progress; finish minimum course work within three years; and finish cumulative exam within prescribed times limits; participate in seminar program.

Affiliations

- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Cell and Molecular Biology Program.

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Courses in Cell Biology

CLBI 295 - Special Topics

See Schedule of Courses for specific titles. Credit as arranged.

Credits: 1-8.

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, PBIO 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

See Schedule of Courses for specific titles. Credit as arranged.

Credits: 1-18.

CLBI 491 - Doctoral Dissertation Research

Credit as arranged.

Credits: 1-12.

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Colleges and Schools > Graduate College > Departments and Programs > Center for Clinical and Translational Science

Center for Clinical and Translational Science

Contact Information

University of Vermont

Center for Clinical and Translational Science

Burlington, VT 05405

Email: [alan.rubin@uvm.edu](mailto:alan.rubin@uvm.edu)

Web Site

Overview

Clinical and Translational Science (CTS) is the body of knowledge that spans basic biology, clinical medicine and health policy. Clinical and Translational scientists use this knowledge to develop new approaches and systems to improve human health. Studies in CTS help us translate knowledge from the cellular and molecular level into interventions for individuals and populations.

For more information, please contact [Alan.Rubin@uvm.edu](mailto:Alan.Rubin@uvm.edu), M.D.

Affiliations

- Colleges and Schools: [College of Medicine](#). [Graduate College](#).

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Center for Clinical and Translational Science : Academic Offerings

- Clinical and Translational Science (M.S.)
- Clinical and Translational Science (Ph.D.)
- Clinical and Translational Science (Certificate of Graduate Study)

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Clinical and Translational Science (Master of Science)

General Requirements

- Requirements for the Masters Degree

Specific Requirements

**Concentration in Investigation:** Requires thirty-one credits including nineteen credits of core courses, continuous seminar participation, six credits of elective courses, and six research credits. Admission requirements are the same as for the doctoral program.

**Concentration in Research Management:** Requires thirty-one credits including twenty-two credits of core courses, continuous seminar participation, three credits of elective courses, and six research internship credits in a focused area of study to be approved by the faculty advisor and program director. Admission requirements are the same as for the doctoral program.

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Center for Clinical and Translational Science](#).

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Clinical and Translational Science (Doctor of Philosophy)

General Requirements

- Requirements for the Doctor of Philosophy Degree

Curriculum

Requires seventy-five credits including nineteen credits of core courses, continuous seminar participation, submission of a model grant proposal (part of a comprehensive exam), at least twelve credits of elective courses, and at least twenty credits of supervised research. Remaining credits may be of elective or research credit with approval by the faculty advisor and program director. A thesis is required.

Affiliations


- Colleges and Schools: Graduate College. College of Medicine.
- Departments and Programs: Center for Clinical and Translational Science.

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Clinical and Translational Science (Certificate of Graduate Study)

Overview

Clinical and Translational Science (CTS) comprises a body of knowledge spanning basic biology, clinical medicine, and community health policy that applies this knowledge to develop new systems to improve human health.

The Certificate of Graduate Study in CTS requires nineteen credits of core, foundational courses in the discipline, along with attendance at seminars in clinical and translational research.

More information on the Certificate is available from the [Center for Clinical and Translational Science](#) .

Affiliations

- Colleges and Schools: [Graduate College](#). [College of Medicine](#).
- Departments and Programs: [Center for Clinical and Translational Science](#).

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Credits: 2.

**CTS 306 - Cell To Society II**

A two-semester seminar that addresses a medical issue from molecule to market. CTS students must take both semesters. Non-CTS students may take either semester independently. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 2.

**CTS 308 - Intro to Research Management I**

protocols. A course for beginning research coordinators, research managers, or research assistants who need to learn how to prepare and manage clinical and translational research

Credits: 3.

**CTS 309 - Intro to Research Mgmt II**

A course for beginning research coordinators, research managers, or research assistants who need to learn how to prepare and manage clinical and translational research protocols.

Credits: 3.

**CTS 310 - Conduct Clin&Translational Res**

Seminar emphasizing the ethics and mechanics of clinical and translational research. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.

**CTS 315 - Report Clin&Translational Res**

Seminar emphasizing communication skills for writing, editing and presenting science. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.

**CTS 320 - Analyze Clin&Translational Res**

Seminar emphasizing basic and analytical skills for clinical and translational research. Pre/co-requisites: Graduate student, or Instructor permission.

Credits: 3.

**CTS 325 - Multi Analysis Clin&Trans Res**

Introduction to multivariate regression; models that account for effects of multiple predictors on a single outcome, including linear and logistic regression and survival analysis. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.

**CTS 326 - Underpinnings Surgical Therapy**

degree. Didactic lectures about the current scientific basis for surgical practice, including an understanding of conceptual foundations and empirical methods. Pre/co-requisite: MD

Credits: 3.

**CTS 327 - Mortality&Morbidity in Surgery**

Examination of the processes of care and the therapeutic outcomes of clinical practices through problem-based learning. Pre/co-requisite: MD degree.

Credits: 3.

**CTS 330 - Intro Secondary Data Analysis**

Course that orients students to broad issues of clinical research while providing specific skills in statistical analysis of large data set using specialized programs. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 1.

**CTS 340 - Medical & Exper Human Genetics**

Overview of medical genetics, including history, techniques and ethical, legal and social implications of genetic diseases and thier treatments. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.

**CTS 345 - Genetic Approaches CV Disease**

Application of statistics, molecular biology, and genetics to the analysis of complex diseases such as asthma, hypertension and atherosclerotic heart disease. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 2.

**CTS 350 - Mouse Genetics in Cancer Res**

The mouse as an experimental tool in cancer research. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 3.

**CTS 355 - Complex Trait Analysis**

Mathematical approaches to studying complex diseases of humans using the mouse as a paradigm. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 2.

**CTS 391 - Master's Thesis Research**

Master's Thesis Research.

Credits: 1-18.

**CTS 392 - Master's Research Internship**

of a Research Mentor. Requirement for the Master's in Clinical and Translational Science Research Management; includes experiential education in a research laboratory under the direction

Credits: 1-6.

**CTS 395 - ST in Clin & Translational Res**

Special topics in Clinical and Translational Research. Pre/co-requisite: Graduate student, or Instructor permission.

Credits: 1-18.

**CTS 491 - Doctoral Dissertation Research**

Doctoral Dissertation Research. Credit as arranged.

Credits: 1-18.

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<div>Colleges and Schools &gt; Graduate College &gt; Departments and Programs &gt; Center for Clinical and Translational Science &gt; Faculty</div>	
Faculty for Center for Clinical and Translational Science	
<div>Peter W. Callas Research Associate Professor of Mathematics and Statistics Appointed in 1994 <a href="#">Center for Clinical and Translational Science</a> <a href="#">Mathematics and Statistics Department</a> BA 1980 <a href="#">California State University Fullerton</a> MS 1984 <a href="#">University of California Berkeley</a> PHD 1994 <a href="#">University of Massachusetts Amherst</a> <a href="#">Search Courses for Peter Callas</a><input type="text"/></div>	
<div>Elizabeth S. Chen Assistant Professor of Clinical and Translational Science Assistant Professor of Computer Science Assistant Professor of Medicine - General Internal Associate Director of the Biomedical Informatics Unit of the Center for Clinical &amp; Translational Science Appointed in 2009 <a href="#">Center for Clinical and Translational Science</a> <a href="#">Computer Science Department</a> <a href="#">General Internal Medicine, College of Medicine</a> BS 1998 <a href="#">Tufts University</a> PHD 2004 <a href="#">Columbia University</a> <a href="#">Search Courses for Elizabeth Chen</a><input type="text"/></div>	
<div>Brian Stephen Flynn Research Professor of Family Medicine Emeritus Appointed in 1980 <a href="#">Center for Clinical and Translational Science</a> <a href="#">Family Medicine</a> BA 1966 <a href="#">Tufts University</a> SCD 1982 <a href="#">Johns Hopkins University</a> <a href="#">Search Courses for Brian Flynn</a><input type="text"/></div>	
<div>Richard A. Galbraith Associate Dean of the College of Medicine - Patient-Oriented Research Director of the Center for Clinical and Translational Science Professor of Medicine - Clinical Pharmacology Appointed in 1995 <a href="#">Center for Clinical and Translational Science</a> <a href="#">Clinical Pharmacology, College of Medicine</a> MD 1974 <a href="#">Kings College University</a> PHD 1981 <a href="#">Medical University of South Carolina</a> <a href="#">Search Courses for Richard Galbraith</a><input type="text"/></div>	

Christopher A Jones  
Assistant Professor of Clinical and Translational Science  
Assistant Professor of Surgery  
Director of Global Health Economics for Clinical and Translational Science  
Appointed in 2011  
Center for Clinical and Translational Science  
Surgery - General, College of Medicine  
BS 1999 University of Michigan  
MS 2000 University of Oxford  
PHD 2006 University of Oxford  
Search Courses for Christopher Jones ☐

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Alan Saul Rubin  
Associate Professor of Medicine  
Research Associate Professor of Psychiatry  
Appointed in 1974  
Center for Clinical and Translational Science  
General Internal Medicine, College of Medicine  
Psychiatry Department  
AB 1964 Columbia College  
MD 1968 New York University  
Search Courses for Alan Rubin ☐

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Indra N. Sarkar  
Assistant Professor of Computer Science  
Assistant Professor of Microbiology and Molecular Genetics  
Assistant Professor of the Center of Clinical and Translational Science  
Appointed in 2009  
Center for Clinical and Translational Science  
Computer Science Department  
Microbiology and Molecular Genetics Department  
BS 1999 Michigan State University  
PHD 2004 Columbia University  
MLIS 2008 Syracuse University  
Search Courses for Indra Sarkar ☐

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Thomas A. Simpatico  
Professor of Psychiatry  
Research Professor of Center Clinical and Translational Science  
Research Professor of Psychiatry  
Appointed in 2004  
Center for Clinical and Translational Science  
Psychiatry Department  
BS 1978 Saint Peters College  
MD 1984 Rush Medical College  
Search Courses for Thomas Simpatico ☐

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Russell P. Tracy  
Associate Director of the Center for Clinical and Translational Science  
Professor of Biochemistry  
Professor of Pathology  
Appointed in 1984  
Biochemistry Program  
Center for Clinical and Translational Science  
Pathology - General, College of Medicine  
BS 1971 Le Moyne College  
PHD 1978 Syracuse University  
Search Courses for Russell Tracy ☐

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Neuroscience Program

Contact Information

Neuroscience Graduate Program Office  
University of Vermont  
Given Building D401B,  
89 Beaumont Avenue  
Burlington, VT 05405

Director: Rae Nishi, PhD, Professor, Anatomy and Neurobiology  
Program Assistant: Hallie Davis-Penders

Phone: (802) 656-1178  
Fax: (802) 656-8704  
Email: [Hallie.Davis-Penders@uvm.edu](mailto:Hallie.Davis-Penders@uvm.edu)

Web Site ☐

Overview

The Neuroscience Graduate Program (NGP) is a Ph.D. granting program that has nearly fifty faculty mentors across nine departments and three colleges. NGP provides a broad-based, health-oriented curriculum together with rigorous training in multidisciplinary research and opportunities for public outreach. Graduates of the program are prepared to enter a variety of science-related careers in addition to traditional, tenure track academic positions.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [College of Medicine](#). [Graduate College](#).

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Neuroscience Program: Academic Offerings

- Neuroscience (B.S.)
- Neuroscience (M.S.)
- Neuroscience (Ph.D.)

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Neuroscience (Bachelor of Science)

General Requirements

- CAS Requirements for the Bachelor of Science

Specific Requirements

Twenty-five credits of fundamental courses including [BCOR 011](#), [BCOR 012](#), [CHEM 031](#), [CHEM 032](#), [MATH 019](#), [MATH 020](#), [PSYC 001](#). Fourteen credits of foundation courses including [NSCI 110](#), [BCOR 101](#), [PSYC 104](#) or [PSYC 121](#), [CHEM 141](#).

Experimental design and statistics courses out of one of the following categories: (i) [PSYC 109](#) and [PSYC 110](#), (ii) [STAT 141](#) (or [STAT 211](#)) and [STAT 221](#) and [STAT 231](#), (iii) [PSYC 109](#) and [BIOL 202](#).

[NSCI 270](#) and nine credits of advanced core neuroscience courses out of the following courses: (i) [BIOL 261](#), (ii) [CSD 281](#), (iii) [PSYC 221](#), (iv) [ANNB 225](#).

Twelve credits of optional neuroscience courses, with at least one from each of the following categories: (i) [CMSI 101](#) or [CSD 208](#) or [PSYC 205](#) or [PSYC 220](#) or [PSYC 222](#) or [PSYC 265](#), (ii) [BCOR 103](#) or [BIOL 296](#) or [PHRM 290](#) or [PSYC 223](#) or [STAT 256](#), (iii) [BIOL 262](#) or [CSD 262](#) or [NSCI 197](#) or [NSCI 198](#) or [NSCI 297](#) or [NSCI 298](#). No more than six credits of category (iii) may be counted toward the major.

Affiliations

- Colleges and Schools: [College of Arts and Sciences](#). [College of Medicine](#). [Graduate College](#).
- Departments and Programs: [Biology Department](#). [Psychology Department](#). [Neuroscience Program](#).

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Neuroscience (Master of Science)

General Requirements

- Requirements for the Masters Degree

Specific Requirements

The Neuroscience Program only awards an M.S. to students who have matriculated into the Ph.D. granting program, but cannot continue to the Ph.D. These individuals must be recommended by their advisory committee for the M.S., and are required to complete the minimum requirements for the M.S. as defined by the university, and must write a research-based master's thesis.

Affiliations

- Colleges and Schools: College of Arts and Sciences. College of Nursing and Health Sciences. Graduate College. College of Medicine.
- Departments and Programs: Anatomy and Neurobiology Department. Neuroscience Program.

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Colleges and Schools	Specific Requirements			
College of Agriculture and Life Sciences	Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy			
College of Arts and Sciences	Bachelor's degree in a biological science, neuroscience, chemistry, physics, engineering, psychology, mathematics, communication sciences or computer science. Additional courses with better than average grades in calculus, chemistry, organic chemistry, physics, and biopsychology, neuroscience, or biology are recommended. Research experience not necessary, but favorably considered.			
College of Education and Social Services	GRE General Test scores required, and scores on the Subject Test in Biology, Biochemistry, Cell and Molecular Biology, or Psychology are highly recommended. Applicants whose native language is not English must submit scores from Test of English as a Foreign Language (TOEFL).			
College of Engineering and Mathematical Sciences	Three letters of reference are required. Letters from research advisors or supervisors are highly desirable attesting to applicant's abilities to work independently in an academic setting. A complete application for fall admission must be received by December 15.			
College of Medicine	Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy			
College of Nursing and Health Sciences	Satisfactory completion of required courses and research rotations. Approval of the written and oral portions of the qualifying comprehensive examination.			
Continuing Education	Minimum Degree Requirements			
Graduate College	BIOL 261 - Neurobiology, three credits (if no neurobiology); CLBI 301 - Cell Biology, three credits, OR GRMD 353 - Cell and Molecular Biology, three credits; GRMD 354 - Human Structure/Function, six credits; PSYC 303 - Biobehavior Proseminar, three credits; GRMD 357 - Neural Science, six credits; PSYC 340 - Advanced Statistical Methods I, three credits OR STAT 308 - Applied Biostatistics, three credits; six credits in Advanced Neuroscience Selectives; ANNB 327 - Responsible Conduct in Research, one credit.			
Honors College	Affiliations			
School of Business Administration	Colleges and Schools: College of Arts and Sciences. College of Nursing and Health Sciences. Graduate College. College of Medicine.			
The Rubenstein School of Environment and Natural Resources	Departments and Programs: Anatomy and Neurobiology Department. Neuroscience Program.			
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## Approved Courses for Graduate Credit (Neuroscience Program)

<a href="#">ANNB 320</a>	Developmental Neurobiology	(3 credits)
<a href="#">ANNB 323</a>	Neurochemistry	(3 credits)
<a href="#">ANNB 326</a>	Basic Science of Neurological Disease	(2 credits)
<a href="#">ANNB 327</a>	Responsible Conduct in Research	(1 credit)
<a href="#">ANNB 328</a>	Techniques in Optical Microscopy	(3 credits)
<a href="#">ANNB 329</a>	Topics in Excitable Membranes	(2 credits)
<a href="#">ANNB 330</a>	Comparative Neurobiology	(2 credits)
<a href="#">ANNB 381</a>	Seminar in Anatomy and Neurobiology	(1 credits)
<a href="#">ANNB 382</a>	Seminar in Anatomy and Neurobiology	(1 credits)
<a href="#">BIOC 301</a>	General Biochemistry	(3 credits)
<a href="#">BIOL 261</a>	Neurobiology	(3 credits)
<a href="#">BIOL 262</a>	Neurobiology Techniques	(4 credits)
<a href="#">CLBI 301</a>	Cell and Molecular Biology	(3 credits)
<a href="#">CMSI 281</a>	Cognitive Neuroscience	(3 credits)
<a href="#">CMSI 386</a>	Adult Neuropathology	(3 credits)
<a href="#">GRMD 353</a>	Medical Cell and Molecular Biology	(3 credits)
<a href="#">GRMD 354</a>	Human Structure/Function	(4-8 credits)
<a href="#">GRMD 357</a>	Neural Science	(6 credits)
<a href="#">NSCI 391</a>	Master's Thesis Research	(1-18 credits)
<a href="#">NSCI 491</a>	Doctoral Dissertation Research	(1-18 credits)
<a href="#">PHRM 272</a>	Toxicology	(3 credits)
<a href="#">PHRM 290</a>	Topics Molecular and Cellular Pharmacology	(3 credits)
<a href="#">PHRM 328</a>	Introduction to Medicinal Chemistry	(3 credits)
<a href="#">PSYC 303</a>	Biobehavioral Proseminar	(3 credits)
<a href="#">PSYC 305</a>	Seminar in Learning Theory	(3 credits)
<a href="#">PSYC 320</a>	Animal Minds	(3 credits)
<a href="#">PSYC 322</a>	Neurobiology of Learning and Memory	(3 credits)
<a href="#">PSYC 323</a>	Neuropsychopharmacology	(3 credits)
<a href="#">PSYC 340</a>	Advanced Statistical Methods I	(3 credits)
<a href="#">PSYC 380</a>	Contemporary Topics	(3 credits)
<a href="#">STAT 308</a>	Applied Biostatistics	(5 credits)

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**NSCI 296 - Advanced Special Topics**

See Schedule of Courses for specific titles.  
Credits: 1-18.

**NSCI 297 - Advanced Readings & Research**

Credits: 1-6.

**NSCI 298 - Advanced Readings & Research**

Credits: 1-6.

**NSCI 391 - Master's Thesis Research**

Credits: 1-18.

**NSCI 491 - Doctoral Dissertation Research**

Credits: 1-18.

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	<p>Colleges and Schools &gt; Graduate College &gt; Requirements &gt; Requirements for the Doctor of Philosophy Degree</p> <h2>Requirements for the Doctor of Philosophy Degree</h2> <p>In addition to the requirements described below, individual programs may have their own specific requirements. Students must consult and familiarize themselves with their program requirements.</p> <h3>Credits</h3> <p>The degree of Doctor of Philosophy requires a minimum of seventy-five credits earned in courses and in dissertation research. A minimum of fifteen credits 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 100/200-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.</p> <h3>Minimum Residence Requirements</h3> <p>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.</p> <h3>Teaching Requirement</h3> <p>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.</p> <h3>Language Requirement</h3> <p>Demonstration of competency in foreign languages is required in some programs. The requirement may be fulfilled by an examination administered by the program or in conjunction with the appropriate language department. Outcome of the language examination is reported to the Graduate College and will appear as a notation on the transcript. 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.</p> <p>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.</p> <h3>Studies Committee</h3> <p>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 four 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</p>			

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 notify the Graduate College of the date of the Doctoral Comprehensive Examination prior to taking the comprehensive examination. There is no fee. The student's program director or advisor must notify the Graduate College of the outcome of the examination. A grade of "S" or "U" is recorded on the academic transcript.

### **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 twenty credits of dissertation research. Only a member of the Graduate Faculty may supervise dissertation research for the Ph.D.

### **Dissertation Defense Forms**

Defense Committee Membership and Defense Notice forms must be submitted 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.

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 notify the Graduate College 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 definition of outside faculty means the faculty member has no appointment of any kind in the department or program. For University-wide interdisciplinary programs, the chairperson must be outside the

department of the candidate's advisor. 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. The chairperson of the Dissertation Defense Examination Committee notifies the Graduate College of the outcome. 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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⌵ UVM Home	<div>2012-2013 Catalogue</div> <div>Colleges and Schools &gt; Graduate College &gt; Requirements &gt; Requirements for the Master of Education Degree</div> <div>Requirements for the Master of Education Degree</div> <div>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.</div> <div>Each program must include a minimum of thirty approved credits (Higher Education and Student Affairs, forty; Interdisciplinary Studies, thirty-six). Contingent on a candidate's background and interests and on program specification, additional credits may be required. If a student's preparation is inadequate to begin study at the graduate level, additional undergraduate courses will be required. Normally, 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: <a href="#">EDFS 204</a>, <a href="#">EDFS 205</a>, <a href="#">EDFS 206</a>, <a href="#">EDFS 209</a>, <a href="#">EDFS 255</a>, <a href="#">EDFS 302</a>, <a href="#">EDFS 303</a>, <a href="#">EDFS 309</a>, <a href="#">EDFS 314</a>, <a href="#">EDFS 322</a>, <a href="#">EDFS 347</a>, <a href="#">EDFS 348</a>, <a href="#">EDFS 352</a>, <a href="#">EDFS 354</a>, and <a href="#">EDFS 369</a>, <a href="#">EDFS 377</a>, <a href="#">EDFS 380</a>.</div> <div>To insure effective planning of a graduate program for the degree of Master of Education, no more than nine credits will be accepted in partial fulfillment of degree requirements for courses taken prior to acceptance to the Graduate College.</div> <div>Comprehensive Examination</div> <div>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.</div> <div><div>1. The written comprehensive examination will cover the field of education with emphasis on the area of specialization.</div><div>2. The oral comprehensive examination will emphasize the area of specialization.</div></div> <div>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.</div> <div>Thesis Option</div> <div>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.</div> <div>Requirements for Admission to Graduate Studies for the Degree of Master of Education</div> <div>Eighteen credits of Education and related areas or appropriate professional certification. The Education</div>			
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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 credits in courses in Education numbered above 200, including a minimum of six graduate credits in the foundations of education,\* twelve additional credits in approved courses or six additional credits 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.*

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Colleges and Schools > Graduate College > Requirements > Requirements for the Masters Degree

## Requirements for the Masters Degree

In addition to the requirements described below, individual programs may have their own specific requirements. Students must 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.

## Credits

Master's degrees require a minimum of thirty hours of credit; some programs require more. A minimum of fifteen 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 credits earned in thesis research may vary between six (minimum) and fifteen (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 twenty-one 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 taken on the University of Vermont campus in Burlington. One re-examination only is permitted for any failed comprehensive examination. The comprehensive examination is not the same as the oral thesis defense, and must be passed satisfactorily before defending the thesis. Consult individual program descriptions for specific information.

Students must notify the Graduate College of the date of the Master's Comprehensive Examination prior to taking the comprehensive examination. There is no fee. The student's program director or advisor must notify the Graduate College of the outcome of the examination. A grade of "S" or "U" is recorded on the academic transcript.

## 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 faculty member 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.

### Thesis Defense Forms

Defense Committee Membership and Defense Notice forms must be submitted 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.

The 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 defensible 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 notify the Graduate College of the Thesis Defense prior to defending their thesis.

The oral defense of a thesis may 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 examination 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 (including any secondary or adjunct appointments) than the candidate, and must be approved by the graduate dean upon nomination by the thesis advisor. For University-wide interdisciplinary programs, the chairperson must be outside the department of the candidate's 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 twenty-one 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 twenty-one credits must be earned in courses which have been approved for graduate credit. Students may wish to include in their programs up to nine credits 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 thirty credits of course work; at least twenty-one credits in the field of specialization and at least six in education. For those seeking teacher licensure, the program requires at least thirty credits

of education course work and at least twenty-one credits 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-credit, 100-level course toward their degree. Consult specific department listings for additional requirements and policies related to this degree program.

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Admissions for Graduate Students

Admissions criteria, procedures and deadlines for graduate programs varies by individual program. Current information about graduate admissions can be found on the [Graduate College Admissions](#) ☐ page on the Graduate College website.

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Change of Graduate Program

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 and any new supporting materials, the student's file may be forwarded to the desired program for review. It is at the discretion of the department reviewing the transfer if they require a new complete application for consideration. 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, new program, student, and registrar. The time limit for completion of the degree runs from the date of matriculation in the new program; however, all credits applied to the degree must be earned within 7 years of degree completion for master's students and 9 for doctoral students

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Conferral of Graduate Degrees

Degrees are conferred only in October, January, and May of each year. Diplomas are issued in January and 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 Graduate College dean's office for graduation by completing an Intent to Graduate form.

Departments with graduate programs must submit a "List of Potential Graduating Students" along with an "Intent to Graduate" form for each student by August 1<sup>st</sup>, November 1<sup>st</sup>, and February 1<sup>st</sup> for the October, January, and May graduation deadlines.

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Continuous Graduate Registration

Students who are actively working toward their degree completion and have completed enrollment in all credits required for the degree, but have not completed all graduation requirements, must enroll each semester for Continuous Registration and pay a flat \$100 - \$300 tuition fee for Continuous Registration each semester until all degree requirements are completed, including removing incomplete grades, passing the comprehensive examination, or completing a thesis or dissertation.

Students who are working at the full-time level of nine or more credit equivalency register for GRAD 903 in their discipline, pay a Continuous Registration fee of \$300, and must pay the Health Center fee required of full-time students (\$295). Students working at less than full time, but at least half time (five to eight credit equivalency) register for GRAD 902 in their discipline, pay a Continuous Registration fee of \$200, and must pay the Health Center fee (\$295) if they elect to purchase the UVM health insurance. Students working at less than half time (one quarter to four credit equivalency) register for GRAD 901 in their discipline and pay a Continuous Registration fee of \$100.

The following chart describes the characteristics of each level of registration:

	Effort Expectation	Credit Equivalency	Attributes of Enrollment Designation
GRAD_901	Less than Half Time - 1-16 hours effort per week	1/4 to 4 <sup>1</sup>	Catcard, library, fitness center and bus privileges
GRAD_902 <sup>2</sup>	At least Half Time, but less than Full Time - 20-32 hours effort per week	5-8	Catcard, library, fitness center and bus privileges; loan deferral, eligible to enroll in UVM Student Health insurance, federal financial aid eligibility, eligible for GTA/GRA funding
GRAD_903	Full Time - at least 36 hours effort per week	9 or more	Catcard, library, fitness center and bus privileges; loan deferral, health insurance required <sup>3</sup> , federal financial aid eligibility, eligible for GTA/GRA funding, ski pass eligibility

<sup>1</sup> Typically, students would register for 1-4 credits for an effort of 4 -16 hours/week. However, for minimal required effort, such as sitting for a comprehensive exam a couple of days into the semester with no other requirements, students may register for ¼ credits.

<sup>2</sup> Students funded as a GTA, GRA or GA must be enrolled at least half time, so must register for GRAD 902 or GRAD 903.

<sup>3</sup>Students enrolled in GRAD 903 must provide proof of health insurance coverage or purchase UVM Student Health Insurance and must pay the UVM Student Health fee.

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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. 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.

Students who have completed all credits required for their degree, but have not completed all graduation requirements and do not enroll in continuous registration ([GRAD 901](#), [GRAD 902](#) or [GRAD 903](#)) for a period of one calendar year and are not on an approved leave of absence will be deactivated from the college.

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 \$40 Reactivation fee and, if reactivation is approved, all other outstanding fees.

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#### Health Record

The university requires that F-1 Visa students file an immunization record with the Center for Health and Wellbeing at the time of first enrollment. Appropriate forms are emailed directly to newly enrolled students through the Office of International Education and/or the Center for Health and Wellbeing.

#### Registration

Consult the [Academic Calendar](#) ☐ and the [Registration Schedule](#) ☐ for registration dates. Students register for courses at the time and in the manner designated by the university registrar. Early registration is encouraged for both new and presently enrolled graduate students.

Students should consult with their program advisor before using web registration. All charges for the ensuing semester must be paid, or otherwise provided for, before registration is complete.

#### Graduate Course Levels

Courses which may apply towards a graduate program are numbered 200 and above. Not all 200 level courses are for graduate credit; check [Courses Approved for Graduate Credit](#) ☐ website. Courses numbered 400 or above are limited to candidates for doctoral degrees; courses numbered 300 to 399 are limited to graduate students unless special permission is given by the appropriate department or program.

#### Course Loads

Normally, full-time graduate students enroll for nine to twelve credit hours per semester. Maximum enrollment is fifteen credits 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 for courses for credit**. 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 tuition or any fees for physical education activities.

#### Add/Drop

Policies and General Information

Enrollment Policies and Procedures for Graduate Students

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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 tuition or any fees for physical education activities.

Add/Drop

Courses may be added or dropped only during the first five days of instruction of the semester. If you are interested in enrolling in a class during the second week of Add/Drop, you will need to contact the instructor and request permission to register. If the instructor agrees, s/he will submit an electronic override for you. You then will be able to register yourself in the course. After the first week of classes an instructor may refuse admission to a course if 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 never attended the course. The add/drop window for summer courses is determined by course length and start date.

### Withdrawal from Courses

From the end of the tenth day of instruction until the second business day after the 60% point in the semester, 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 the second business day after the 60% point in the semester. 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 submitted to the registrar.

Between the second business day after the 60% point in the semester 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 the process described above. The withdrawal window for summer courses is determined by course length and start date.

### Accelerated Master's Degree Programs (AMPs)

Highly qualified UVM undergraduates may be accepted into some UVM graduate programs prior to their senior year of undergraduate study. This Accelerated Master's Program (AMP) option is available for admission to UVM graduate programs in accountancy, animal sciences, biology, biostatistics, civil and environmental engineering, computer science, curriculum and instruction, electrical engineering, historic preservation, materials science, mathematics, mechanical engineering, microbiology and molecular genetics, nursing, physics, public administration, and statistics. Students must apply formally and be accepted to the AMP prior to taking courses that will count to the master's degree. Please consult the program listings for details.

### Undergraduate Enrollment for Graduate Credit (non-accelerated master's students)

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 twelve credit 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 credits. 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.

### 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.

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#### Fellowships, Assistantships, Traineeships, Stipends, and Grants for Graduate Students

Students who wish to be considered for fellowships as well as admission must submit completed applications, with supporting materials, by March 1<sup>st</sup> 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 and assistantships is normally 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 audits or physical education activity courses, nor do they cover courses numbered below 200 or 200-level courses not approved for graduate credit, 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 \$7,500) and a full tuition scholarship (48-credit hour maximum) for the degree program (two years maximum). The remaining five fellowships provide the tuition scholarship only.

The fellowships are open to prospective students in the social sciences and humanities at the time they apply to graduate study. Holders of Graduate College Fellowships are required to carry nine-credit minimum enrollment per semester towards an advanced degree. The fellowships are not renewable.

#### Graduate Teaching Assistantships and Graduate Research/Teaching Assistantships

Graduate Teaching Assistantships are awarded by the Graduate College through many of the departments offering graduate work. Graduate Teaching Assistants are generally appointed for nine months with stipends averaging \$15,350 for master's and \$17,000 for doctoral students for 2012-2013. Normally, Teaching Assistants enroll for a minimum of nine to a maximum of twelve credit 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, not to exceed twelve 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 \$15,350 to \$24,000 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.

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## Student and Campus Life Graduate 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 Student and Campus Life Graduate Assistantships, UVM, Nicholson House, 41 South Prospect Street, Burlington, VT 05405-0094, or preferably by email to [sclgrads@uvm.edu](mailto:sclgrads@uvm.edu). Questions can also be directed via email: [DeanofStudents@uvm.edu](mailto:DeanofStudents@uvm.edu). Completed applications must be received by January 1<sup>st</sup> for full consideration. Applications received after January 1<sup>st</sup> will be considered only for unanticipated openings. Appointments will be announced on or about April 1<sup>st</sup>.

## 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 2012-2013 is \$21,500 to \$30,000; assistants on 9-month appointments receive proportionately reduced payments. The salary above the 12-month base of \$20,467 for masters or \$22,667 for doctoral students is intended to support the cost of tuition at the instate rate with a maximum enrollment of ten credit hours each semester and six credits 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 or graduate program coordinator of the department.

## Graduate Fellowships/Traineeships

Graduate Fellowships/Traineeships are available in some departments through grants from various state and federal agencies. Fellowships/Traineeships may 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.

## 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](#) ☐ website.

## 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 Senate. 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 [GSS](#) ☐ website.

**Other Fellowships**

Fellowships established by private donors are available periodically in some departments.

**UVM Student Research Conference**

All UVM students performing research or creative projects under the mentorship of a UVM faculty member are encouraged to participate. A full day is devoted to presentations by graduate and undergraduate students from all disciplines. This event is sponsored by the Vice President for Research, the Graduate College and the Honors College.

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Financial Aid for Graduate Students

Federal education loans are the primary sources of financial assistance for graduate students. Visit the [Student Financial Services Information for Grad Students](#) website for detailed information about financial aid programs. 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.

Eligibility for federal financial aid is based on the Free Application for Federal Student Aid (FAFSA), UVM's cost of attendance, and any other sources of aid being received, such as funding from assistantships, fellowships, traineeships, or tuition grants. Students must meet core eligibility requirements for federal student aid, including U.S. citizenship (or permanent resident status), and at least half-time enrollment (five credits per semester).

Application for Financial Aid

Students should apply for financial aid as soon after application for admission to the university as possible. The only financial aid application required is the Free Application for Federal Student Aid (FAFSA). Submit your FAFSA online at the [FAFSA](#) website by March 1<sup>st</sup> (the university's priority financial aid deadline) for the following school year to ensure consideration for all available sources of financial aid. Applications submitted after that date will be considered late, which may limit aid availability. The UVM Title IV School Code is 003696. This number is required on the FAFSA to have the record sent to UVM. Student Financial Services will contact students via e-mail if any additional information is required in order to determine financial aid eligibility. For students who are starting their graduate programs in the summer, the FAFSA will need to be submitted for the prior and upcoming academic years. For example, if the program starts in Summer 2012, students will need to file the 2011-2012 FAFSA to be considered for aid for the Summer term, and the 2012-2013 FAFSA to be considered for aid for the Fall 2012 and Spring 2013 terms. Graduate students must also submit a Graduate Student Data Form to Student Financial Services each year. Download this form from the Worksheets and Forms section of the [Student Financial Services](#) website. Applicants will be notified of financial aid eligibility after admission to the university and the submission and review of any additional required documentation, but no earlier than late March.

**Students must reapply for financial aid each year. The FAFSA should be submitted online at the [FAFSA](#) website each year by March 1 for the following school year.**

For Additional Information

More detailed information about the financial aid availability and procedures may be obtained from the UVM Office of Student Financial Services located in 223 Waterman Building:

Phone: 802-656-5700  
Fax: 802-656-4076  
[sfs@uvm.edu](mailto:sfs@uvm.edu)

Please visit the [Student Financial Services](#) website for additional information on financial aid.

http://www.uvm.edu/...olicies.php&SM=policymenu.html&category=graduate\_policies&policy=Financial%20Aid%20for%20Graduate%20Students[9/27/2018 8:17:18 AM]

### 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. Students who drop or withdraw from courses during the semester will receive a tuition credit based upon the university's published [Refund and Bill Adjustment Policy](#). Financial aid will be reviewed and adjusted for any changes to the course load. It is recommended that financial aid recipients speak with Student Financial Services before withdrawing from or dropping courses.

### Satisfactory Academic Progress for Financial Aid Recipients

Federal financial aid regulations require that financial aid recipients maintain satisfactory academic progress in order to remain eligible for financial aid. The UVM Satisfactory Academic Progress (SAP) policy for financial aid recipients is found in the Student Financial Services handbook and can also be obtained by contacting UVM Student Financial Services and all students should review the complete SAP policy to understand the requirements to remain eligible for aid.

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New England Regional Student Program

The Federal Direct Unsubsidized Stafford and Federal Direct Graduate PLUS Loan programs are the primary source of financial assistance for graduate students. Admitted students who submit the Free Application for Federal Student Aid (FAFSA) will be reviewed for loan eligibility. The financial aid award provided by Student Financial Services will indicate loan eligibility and provide information on loan application procedures. Learn more about federal financial aid for graduate students at UVM's [Student Financial Services](#) website.

The university provides support and information to any veteran or dependent eligible for benefits under Federal Law, Chapters 30, 31, 32, 33, 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. For general information regarding application for and use of GI Bill benefits, including the Yellow Ribbon Program, please visit the [Information for Veterans](#) website.

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.

The New England Regional Student Program is an opportunity for qualified legal residents of New England states to enroll at reduced rates for some programs that are not offered by the home state university but are offered in another New England state. A list of the available graduate programs is listed in the "Apple Book" and may be examined in the Graduate College Admissions office or obtained from the New England Board of Higher Education, 45 Temple Place, Boston, MA 02111 or online at the [NEBHE](#) website.

Applicants must indicate clearly, both in their initial inquiries and on their application forms, that they are seeking admission under the terms of the New England Regional Student Program. In cases where the program of study is clearly unique or distinctive to the out-of-state institution, the UVM Graduate College dean's office will certify directly the applicant's eligibility to apply under the New England Regional Student Program. In cases where an apparently similar program of study is available at both institutions involved, the graduate deans of the two institutions will determine whether regional student status is appropriate.

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http://www.uvm.edu/...M=policymenu.html&category=graduate\_policies&policy=Financial%20Aid%20Programs%20for%20Graduate%20Students[9/27/2018 8:18:04 AM]

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#### Grading Policies for Graduate Students

Grades are reported and recorded as letter grades. Graduate Students do not receive a grade of D. Student grade-point averages (GPA) are calculated from quality point equivalents noted here:

Grade	Points / Credits
A+ Excellent	4.00
A Excellent	4.00
A- Excellent	3.67
B+ Good	3.33
B Good	3.00
B- Good	2.67
C+ Fair	2.33
C Fair	2.00
C- Fair	1.67
F Failure	0.00

XF Failure resulting from academic dishonesty.\*

\*This grade is equivalent to the grade of F in the determination of grade-point averages and academic standing. (Effective Fall, 2005)

In certain instances, grades are assigned that will appear on the transcript, but will not be used in grade-point calculation. These grades are:

- AU    Audit (see below)
- INC    Incomplete (see below)
- S/U    Satisfactory/Unsatisfactory (see below)
- SP/UP Satisfactory Progress/Unsatisfactory Progress (see below)
- W    Withdrawn

**AU:** Students wishing to regularly attend a course, but not receive credit, may register as an auditor, with the approval of the dean and the instructor. Auditors have no claim on the time or service of the instructor. Students must meet minimum levels of performance set by the instructor at the time of registration in order to receive an audit grade. Tuition is charged at the applicable rate. Under no circumstances will changes be made after the add/drop period to allow credit for courses audited.

**INC:** This grade may be assigned when course work is not completed for reasons beyond the student's control. Incompletes require the approval of the Graduate College dean. The incomplete course requirement will be satisfied at the earliest possible date, but not longer than the beginning of the corresponding semester of the next academic year. In cases of laboratory assignments, the student must complete all work the first time that the laboratory experience is offered again. Instructors will fill out an electronic incomplete grade exception request to the Graduate College dean and include the reason for the incomplete as well as the

completion date agreed to by the student and instructor. It is the student's responsibility to learn from the Graduate College dean whether the request has been approved, the expected date of completion, and, from the instructor, the nature of all outstanding requirements.

Incompletes may be approved for the following reasons: medical, personal tragedy or academic.

**S/U:** These grades are used in courses where the A-F grade is inappropriate, such as in seminars, internships, practica, etc. For graduate students, S and U are used to indicate levels of performance for credits received in 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. For undergraduates, the S/U is available only on a whole course basis and is available for courses that count toward degree requirements.

**SP/UP:** These grades are used in courses with a linkage in credits to multiple semesters such as thesis and dissertation research. Neither SP nor UP will be included in the student's GPA. The grade of SP will be assigned when a student has made satisfactory progress during a semester prior to the final semester of the linked courses; credit will be awarded with the grade of SP. The grade of UP will be assigned when the student's progress has been unsatisfactory and no credit will be awarded. The faculty member may change the grade of SP to a letter grade once the final grade for the multiple semester work is completed. A grade of SP cannot be changed to a UP or F based on a student not completing the final semester's work satisfactorily. UP is a final grade. It can stand as it is, or it can be changed to an F.

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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 and at the Graduate College. For more information, visit the [Graduate College](#) website.

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Graduate Admission Tests

Information about admission tests is available from the [GRE](#) website or from the Educational Testing Service, P.O. Box 6103, Princeton, NJ 08541-6103 for the Graduate Record Examinations Test, or from the official [GMAT](#) website for the Graduate Management Admission Test. 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.

Applicants must consult the listing of the program to which they are applying to determine exactly which test scores are required. Students who are seeking financial aid in the form of assistantships or fellowships must submit GRE or GMAT scores. Scores must be from tests taken within five years of the date of application.

If your native or first language is not English, you must submit scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS), academic version.

Minimum acceptable TOEFL scores for admission to the Graduate College at the University of Vermont - Internet based = 80, Computer based = 213, and Paper based = 550. Minimum acceptable scores for a student to qualify for receiving funding at the University of Vermont - Internet based = 100, Computer based = 250, and Paper based = 600. Institution Code for test scores for UVM is 3920. Questions about the TOEFL examination may be directed to TOEFL/TSE Services, ETS, Box 6154, Princeton, NJ 08541-6154; telephone, 609-771-7100.

Minimum acceptable scores on the IELTS (academic version) are 6.5 for admission and 7.0 to qualify for funding

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Graduate Teaching Assistant Award

Each year, a number of graduate students who serve as Graduate Teaching Assistant are recognized for their teaching excellence; one of those is named Graduate Teaching Assistant of the Year. The 2011 recipient of the Graduate Teaching Assistant of the Year Award is Courtney Giles, School of Engineering.

UVM Student Research Conference

All UVM students performing research or creative projects under the mentorship of a UVM faculty member are encouraged to participate. A full day is devoted to presentations by graduate and undergraduate students from all disciplines. This event is sponsored by the vice president for research, The Graduate College and the Honors College.

University Scholar Awards

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 academic year 2011-2012, the recipients are:

Richard M. Foote, Professor, Department of Matematics & Statistics, College of Engineering & Mathematics

Berta M. Geller, Research Professor, Departments of Family Medicine and Radiology, College of Medicine

Jean R. Harvey-Berino , Associate Professor & Chair, Department of Nutrition & Food Sciences, College of Agriculture & Life Sciences

Gary E. Ward, Professor, Microbiology & Molecular Genetics, College of Medicine, College of Agriculture & Life Sciences

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Leave of Absence for Graduate Students

A leave of absence may be awarded for a period of up to one year. The leave suspends the time limit for master's students for the duration of the leave. It does not suspend the time limit for the completion of individual courses.

The time limits for degree completion are master's: 5 years; doctoral: 9 years. All credit used for the degree, including transfer credit and credit by exam, must be earned within 7 (master's) and 9 (doctoral) years of graduation.

Procedure

Students request a leave of absence from their graduate program coordinator or chairperson. If the program approves the request, the chairperson or program faculty completes the Leave of Absence form available on the [Graduate College](#) website 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 graduate program coordinator or chairperson 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.

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## Policies and General Information

## Rights and Responsibilities of Graduate Students

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 questions or concerns 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 on the [UVM Policies](#) ☐ website.

### 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 develop.

Another common model, especially in doctoral programs, is a Studies Committee composed of 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. Information may be found on the [Center for Student Ethics and Standards](#) ☐ website.

### 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:

- submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or education;
- submission to or rejection of such conduct by an individual is used as the basis for academic or employment decisions affecting that individual; or
- 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 Dean of the Student's office. If a student has personal concerns regarding sexual harassment, confidential counseling can be arranged through the Counseling and Psychiatry Services. 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. Information and resources may be found at **The Affirmative Action and Equal Opportunity Office** website.

**Appeals**

The Graduate College is ultimately responsible for grievances regarding policies and procedures related to graduate education. A grievance properly begins within the student's 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 a student'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. Specifically excluded are grievances that contest grades on grounds other than due process, or grading that is arbitrary and capricious.

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Sponsored and Institutional Research for Graduate Students

The university received over \$128 million in sponsored funding, about \$100 million of this total for research, during fiscal year 2011. UVM ranks nationally as one of the 100 leading universities in terms of federal grant 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.

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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, and all international students, will be required to purchase the university sponsored plan.

Counseling and Psychiatry Services (CAPS) 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.

Counseling and Psychiatry Services ☐ 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. They have locations at The Jacobs House and at The Redstone Campus.

### Services for Students with Disabilities

Services and accommodations for students with disabilities are coordinated by three offices: ACCESS ☐ (Accommodation, Consultation, Collaboration and Educational Support Services), certifies and coordinates services for students with physical disabilities, learning disabilities, and attention deficit disorders; the Counseling and Psychiatry Services 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 ACCESS ☐ Office, A170 Living/Learning Center, 656-7753, TTY 656-3865. Counseling and Psychiatry Services, Center for Health and Wellbeing, 425 Pearl St., 656-3350. ADA/504 Compliance, 428 Waterman, 656-8280.

### Center for Teaching and Learning


Each year the Graduate College and the Graduate Student Senate sponsor workshops designed to support the professional development of graduate students, often in conjunction with the Center for Teaching and Learning. 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. For more information visit the Center for Teaching and Learning ☐ website.

### 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, an extensive Fitness Center, 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.

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Time Limits for Graduate Degree Completion

Master's Degree - 5 years

Doctoral Degree - 9 years

Individual departments may set deadlines within these time limits.

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## Policies and General Information

### Transfer Credit and Credit by Examination for Graduate Students

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 recommended by the graduate program and approved by the Graduate College 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 nine hours of transfer credit, and/or credit by examination, and an additional six credits acquired from appropriate courses taken at UVM prior to admission to a degree program may also be transferred; Doctor of Philosophy students are allowed twenty-four credits, and an additional six credits acquired from appropriate courses taken at UVM. This means that all master's students take at least twenty-one credits at the University of Vermont (at least fifteen after admission); Doctor of Philosophy at least fifty-one credits (at least forty-five after admission); and Doctor of Education at least forty-seven credits (at least forty-one after admission). For master's programs that require more than thirty credits, program faculty may, in individual cases, recommend more 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.

*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, 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.

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Transfer Credit and Credit by Examination for Graduate Students

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**Concurrent Master's and Doctor of Philosophy Credit**

Up to twenty-four credits 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. Students must still complete a minimum of fifteen graded credits as part of the Ph.D. curriculum.

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### Tuition and Fees for Graduate Students

The student expenses outlined in the following paragraphs are **anticipated charges** for the 2012-2013 academic year. **Changing costs may require adjustment of these charges before the beginning of the fall semester.** To view charges approved by the Board of Trustees after the May 2011 board meeting please visit the [Student Financial Services](#) website.

### Application Fee

The application fee is \$40 for the on-line applications.

### Tuition

Estimated tuition rates for the 2012-13 academic year are as follows:

For Vermont residents, \$556 per credit hour; \$6,672 per semester flat rate for twelve credits and \$556 per credit in excess of twelve credits. For out-of-state students, \$1,403 per credit hour; \$16,836 per semester flat rate for twelve credits and \$1,403 per credit in excess of twelve credits.

The lower rates for Vermont residents are made possible by a subvention to the university from the state of Vermont.

### Continuous Registration Tuition Fee: GRAD 901/902/903

Students who are actively working toward their degree completion and have completed all credits required for the degree, but have not completed all graduation requirements, must enroll each semester for Continuous Registration and pay a fee ranging from \$100-\$300 for the 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.

### Comprehensive Fee

Based on the number of credits enrolled per semester, students pay a Comprehensive Fee each semester. The estimated 2012-13 per semester comprehensive fee schedule is as follows: one credit - \$10, two credits - \$20, three credits - \$30, four credits - \$40, five credits - \$353, six credits - \$394, seven credits - \$444, eight credits - \$492, nine credits and above - \$844.

### Student Health Fee

A health fee is included in the Comprehensive fee for students enrolled in nine or more credits. The health fee is a required fee for any student enrolled in fewer than nine credits who purchases UVM health insurance. The estimated 2012-13 health fee is \$295.00 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

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and Wellbeing. There is an additional charge for this extended coverage beyond the student health fee. The 2012-13 cost for one year's coverage for single students is estimated at \$2,396. Married students may obtain coverage for their spouse and children. Further details are available from the Center for Health and Wellbeing. To participate in this insurance, the student health fee must be paid each semester as well as the additional insurance premium.

### 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.

### Reactivation Fee

Reactivation following withdrawal without an approved leave of absence requires payment of a \$40 reactivation fee.

### Bill Adjustment

Tuition refunds for students who drop or withdraw from courses will be handled according to the university's published tuition refund schedule which is available online at the [Student Financial Services](#) website.

### Withdrawals

A student may voluntarily withdraw from the university by notifying the dean of the Graduate College 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

In the case of suspension or dismissal from the university for disciplinary reasons, there will be no refund of tuition, room, meal plan, or comprehensive fees paid for semester, nor will there be any reduction in amounts due to the university for the semester if the bill has not been fully paid at the time of suspension or dismissal.

### Death

In case of death of the student, tuition, room and fees which has been paid for the semester during which the death occurs will be refunded fully.

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Withdrawal from a Graduate Degree Program

Students must notify the Graduate dean's office in writing of their intent to withdraw from a degree program. 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.

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- [Abaied, Jamie L.](#) - Assistant Professor of Psychology
- [Abrams, Sarah Elise](#) - Associate Dean of the College of Nursing and Health Sciences, Associate Professor of Nursing
- [Achenbach, Thomas Max](#) - Professor of Psychiatry
- [Acquisto, Joseph T.](#) - Associate Professor of Romance Languages and Linguistics, Director of the Global Village Residential Learning Community
- [Adair, Elizabeth Carol](#) - Asst. Professor in the Rubenstein School of Environment and Natural Resources
- [Ades, Philip A.](#) - Professor of Medicine - Cardiology
- [Agnarsson, Ingi](#) - Assistant Professor of Biology
- [Aiken, Judith A.](#) - Associate Professor of Leadership and Developmental Sciences
- [Aleong, John](#) - Professor of Plant and Soil Science
- [Alexander, Sarah C.](#) - Assistant Professor of English
- [Ali, Saleem Hassan](#) - Professor in the Rubenstein School of Environment and Natural Resources
- [Allen III, Gilman B.](#) - Associate Professor of Medicine - Pulmonary
- [Althoff, Robert](#) - Assistant Professor of Psychology, Associate Professor of Pediatrics, Associate Professor of Psychiatry
- [Amiel, Eyal](#) - Assistant Professor of Medical Lab and Radiation Sciences
- [Anathy, Vikas](#) - Assistant Professor of Pathology
- [Archdeacon, Dan Steven](#) - Professor of Mathematics and Statistics
- [Arel, Barbara M.](#) - Associate Professor of Business Administration
- [Aronsson, David Douglas](#) - Professor of Orthopaedics and Rehabilitation, Professor of Pediatrics
- [Ashikaga, Takamaru](#) - Director of Medical Biostatistics, Professor of Mathematics and Statistics
- [Aultman-Hall, Lisa M.](#) - Professor of Engineering, Professor of Transportation Research

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- [Bonney, Elizabeth Ann](#) - Professor of Obstetrics and Gynecology - General
- [Bose, Pablo Shiladitya](#) - Assistant Professor of Geography
- [Bosek, Marcia Sue](#) - Associate Professor of Nursing
- [Bosworth, Sidney Carl](#) - Extension Associate Professor of Plant and Soil Science
- [Botten, Jason W.](#) - Assistant Professor of Medicine - Immunobiology, Assistant Professor of Microbiology and Molecular Genetics
- [Bottoms, Gregory Todd](#) - Professor of English
- [Bouchard, Beth Ann](#) - Assistant Professor of Biochemistry
- [Boumans, Roelof M.](#) - Lecturer I in the Rubenstein School of Environment and Natural Resources
- [Bouton, Mark Earhart](#) - Professor of Psychology
- [Bovill, Edwin Gladstone](#) - Professor of Pathology Emeritus
- [Bowden, William Breck](#) - Director of Water Resources and Lake Studies Center, Professor in the Rubenstein School of Environment and Natural Resources
- [Boyson, Jonathan E.](#) - Associate Professor of Surgery - Transplant
- [Brayden, Joseph Elliott](#) - Professor of Pharmacology
- [Brennan, Vicki L.](#) - Assistant Professor of Religion
- [Brewer, Matthias](#) - Associate Professor of Chemistry
- [Brock, David W.](#) - Associate Professor of Rehabilitation and Movement Science
- [Brody, Alison Kay](#) - Professor of Biology
- [Brown, Dona L.](#) - Professor of History
- [Brummel-Ziedins, Kathleen E.](#) - Associate Professor of Biochemistry
- [Buchanan, Andrew N.](#) - Lecturer of History
- [Buck-Rolland, Carol L.](#) - Clinical Associate Professor of Nursing
- [Budd, Ralph Charles](#) - Professor of Medicine - Immunobiology
- [Bunn, Janice Yanushka](#) - Research Associate Professor of Mathematics and Statistics
- [Burford, Gale E.](#) - Professor of Social Work
- [Burke, John MacKenzie](#) - Professor of Microbiology and Molecular Genetics
- [Burke, John Patrick](#) - Professor of Political Science
- [Burt, Keith B.](#) - Assistant Professor of Psychology
- [Buskiewicz, Iwona](#) - Research Associate of Pathology
- [Butenas, Saulius](#) - Associate Professor of Biochemistry
- [Buzas, Jeff Sandor](#) - Associate Professor of Mathematics and Statistics, Director of the Statistics Program

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- [Cahan, Sara Irene](#) - Associate Professor of Biology, Co-Director of Integrated Biological Science
- [Callas, Peter W.](#) - Research Associate Professor of Mathematics and Statistics
- [Cannizzaro, Michael S.](#) - Associate Professor of Communication Sciences, Director of Communication Sciences
- [Carmody, Pdraig R.](#) - Adjunct Assistant Professor of Geography
- [Carney, Jan Kirk](#) - Clinical Professor of Medicine, Professor of Medicine - Pulmonary
- [Carr, Frances Eileen](#) - Professor of Pharmacology
- [Carr, Jacqueline B.](#) - Associate Professor of History
- [Carr, Jeanine M.](#) - Associate Professor of Nursing
- [Casson, Peter R.](#) - Professor of Obstetrics and Gynecology - Reproductive Endocrinology and Infertility
- [Cats-Baril, William Lawrence](#) - Associate Professor of Business Administration, Director of the Computerized Expert Systems Applications and Research (CESAR) group
- [Ceroni, Marta](#) - Lecturer I of Plant Biology
- [Chan, Sin-Yee](#) - Associate Professor of Philosophy
- [Chase, Lisa Cheryl](#) - Assistant Professor in the Rubenstein School of Environment and Natural Resources, Extension Associate Professor
- [Chen, Elizabeth S.](#) - Assistant Professor of Clinical and Translational Science, Assistant Professor of Computer Science, Assistant Professor of Medicine - General Internal, Associate Director of the Biomedical Informatics Unit of the Center for Clinical & Translational Science
- [Chiang, Kevin C.](#) - Professor of Business Administration
- [Chiu, Angeline C.](#) - Associate Professor of Classics
- [Chu, Kelvin](#) - Associate Professor of Physics
- [Cipolla, Marilyn Jo](#) - Professor of Neurological Sciences, Professor of Obstetrics & Gynecology, Professor of Pharmacology
- [Clark, Anne L.](#) - Professor of Religion
- [Clougherty, Dennis Paul](#) - Chairperson of Physics, Professor of Physics
- [Coffey, Jean S.](#) - Adjunct Assistant Professor of Pediatrics, Assistant Professor of Nursing
- [Cohen, Judith Ann](#) - Professor of Nursing
- [Cole, Bernard F.](#) - Professor of Mathematics and Statistics
- [Colletti, Richard B.](#) - Professor of Pediatrics - Gastroenterology
- [Colley, Binta M.](#) - Assistant Professor of Education
- [Comerford, Susan Ann](#) - Associate Professor of Social Work
- [Conner, David S.](#) - Assistant Professor of Community Development and Applied Economics
- [Connolly, Declan A.](#) - Professor of Education
- [Cooper, Sheldon Mark](#) - Professor of Medicine - Rheumatology
- [Cope, Meghan S.](#) - Chairperson of Geography, Professor of Geography
- [Cornbrooks, Carson Justis](#) - Associate Professor of Neurological Sciences
- [Crock, John Gordon](#) - Associate Professor of Anthropology, Director Consulting Archaeology

Program of the Anthropology Dept.

- [Cushman, Mary](#) - Professor of Medicine - Hematology Oncology, Professor of Pathology

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- D'Amico, Michael A. - Associate Professor of Pediatrics - Gastroenterology
- Dale, Rosemary Louise - Chairperson of Nursing, Clinical Professor of Nursing
- Danforth, Christopher M. - Associate Professor of Mathematics and Statistics
- Danigelis, Nicholas Louis - Professor of Sociology
- Danks, Cecilia Marie - Associate Professor in the Rubenstein School of Environment and Natural Resources
- Dann, Heather M. - Adjunct Assistant Professor of Animal Science
- Darby, Heather Marie - Adjunct Assistant Professor of Plant and Soil Science, Extension Associate Professor
- Datchuk, Shawn - Assistant Professor of Education
- Del Maestro, Adrian G - Assistant Professor of Physics
- Delaney, Terrence Patrick - Associate Professor of Plant Biology
- Delay, Eugene Raymond - Associate Professor of Biology, Associate Professor of Psychology, Director of Undergraduate Neuroscience Program
- Delay, Rona J. - Associate Professor of Biology, Associate Professor of Neurological Sciences
- Deming, Paula B. - Assistant Professor of Pathology, Associate Professor of Medical Laboratory and Radiation Sciences, Director of Medical Laboratory Science Program
- Dempsey, Stephen Jeffrey - Associate Professor of Business Administration
- Dennis, Donald Forrest - Adjunct Associate Professor in the Rubenstein School of Environment and Natural Resources
- Deslandes, Paul Raymond - Associate Professor of History, Chairperson of the History Department
- DeWitt, Rocki-Lee - Professor of Business Administration
- Dewoolkar, Mandar M - Associate Professor of Engineering, Director of Civil and Environmental Engineering
- Diehl, Sean A. - Assistant Professor of Medicine - Infectious Disease
- Dinitz, Jeffrey Howard - Professor of Computer Science, Professor of Mathematics and Statistics
- Diouf, Moustapha - Associate Professor of Sociology
- Dittus, Kim L. - Assistant Professor of Medicine - Hematology Oncology
- Do, Hung Tuan - Assistant Professor of Business Administration
- Dodds, Peter S. - Associate Professor of Mathematics and Statistics
- Donnelly, Catherine Wright - Professor of Nutrition and Food Sciences
- Donovan, Therese M. - Research Associate Professor of Environment and Natural Resources
- Dostmann, Wolfgang R. G. - Professor of Molecular Physiology and Biophysics, Professor of Pharmacology
- Doublie, Sylvie - Director of Undergraduate Biochemistry, Professor of Microbiology and Molecular Genetics
- Druschel, Gregory K. - Adjunct Associate Professor of Geology
- Dubief, Yves C. - Associate Professor of Engineering
- Dumas, Julie Anna - Associate Professor of Psychiatry

- [Dummit, David Steven](#) - Professor of Mathematics and Statistics
- [Dunlop, Mary J.](#) - Assistant Professor of Computer Science, Assistant Professor of Engineering
- [Dupigny-Giroux, Lesley-Ann](#) - Associate Professor of Geography, Associate Professor of Geology

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- [Eckenstein, Felix](#) - Professor of Neurological Sciences, Professor of Neurological Sciences
- [Emery, Marla](#) - Adjunct Assistant Professor of Geography
- [Emery, Meaghan Elizabeth](#) - Associate Professor of Romance Languages and Linguistics
- [Eppstein, Margaret Jean](#) - Associate Professor of Biology, Associate Professor of Computer Science, Chairperson of Computer Science
- [Ergene, Bogac A.](#) - Associate Professor of History
- [Erickson, Jon D.](#) - Interim Dean of the Rubenstein School of Environment and Natural Resources, Professor in the Rubenstein School of Environment and Natural Resources
- [Escaja, Tina Fernandez](#) - Professor of Romance Languages and Linguistics
- [Esselstrom, Erik W.](#) - Associate Professor of History
- [Evans, John Newton](#) - Professor of Molecular Physiology and Biophysics
- [Evans, Mark Francis](#) - Assistant Professor of Pathology
- [Everse, Stephen Jay](#) - Associate Professor of Biochemistry
- [Ewald, Alec C.](#) - Associate Professor of Political Science

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- Falls, William A. - Chairperson of Psychology, Professor of Psychology
- Fanslow, Yolanda H.Chen - Assistant Professor of Plant and Soil Science
- Farley, Joshua C. - Professor of Community Development and Applied Economics
- Fenton, Elizabeth A. - Associate Professor of English
- Fiekers, Jerome Francis - Associate Professor of Neurological Sciences Emeritus
- Field, Sean Linscott - Associate Professor of History
- Finette, Barry Alan - Associate Professor of Microbiology and Molecular Genetics, Professor of Pediatrics
- Fletcher, Douglas G. - Professor of Engineering
- Flynn, Brian Stephen - Research Professor of Family Medicine Emeritus
- Fobare Erickson, Patricia Ann - Senior Lecturer of Animal Science
- Fondacaro, Karen Marie - Clinical Professor of Psychology
- Foote, Richard Martin - Professor of Mathematics and Statistics
- Forehand, Cynthia Jean - Interim Dean of Graduate College, Professor of Biology, Professor of Neurological Sciences
- Forehand, Rex L. - Director of the Clinical Psychology Program, Professor of Psychology
- Fothergill, Alice - Associate Professor of Sociology
- Fox, Kathryn Joan - Associate Professor of Sociology
- Francklyn, Christopher Steward - Professor of Biochemistry, Professor of Microbiology and Molecular Genetics
- Franklin, John C - Associate Professor of Classics
- Frankowski, Barbara Louise - Professor of Pediatrics
- Freeman, Kalev - Assistant Professor of Pharmacology, Assistant Professor of Surgery
- Frolik, Jeff L. - Associate Professor of Engineering
- Fukagawa, Naomi Kay - Professor of Medicine - Gerontology Geriatrics
- Furis, Madalina Ioana - Associate Professor of Physics

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<ul style="list-style-type: none"><li>Gaalema, Diann - Assistant Professor of Psychiatry</li><li>Galbraith, Richard A. - Associate Dean of the College of Medicine - Patient-Oriented Research, Director of the Center for Clinical and Translational Science, Professor of Medicine - Clinical Pharmacology</li><li>Galford, Gillian Laura - Research Assistant Professor in the Rubenstein School of Environment and Natural Resources</li><li>Garavan, Hugh P. - Associate Professor of Psychiatry, Associate Professor of Psychology</li><li>Garcia, Luis - Dean of the College of Engineering and Mathematical Sciences</li><li>Garnett, Bernice - Assistant Professor of Education</li><li>Gause III, Francis Gregory - Professor of Political Science</li><li>Gedeon, Shirley Jean - Associate Professor of Economics</li><li>Geroski, Anne M. - Associate Professor of Leadership and Developmental Sciences</li><li>Gerstl-Pepin, Cynthia I. - Associate Dean of the College of Education and Social Services, Professor of Leadership and Development Science</li><li>Ghazanfari, Ehsan - Assistant Professor in the School of Engineering</li><li>Giangreco, Michael Francis - Professor of Education</li><li>Gibson, William Arch - Professor of Economics</li><li>Gierzynski, Anthony Gerard - Professor of Political Science</li><li>Gilmartin, Gregory Michael - Associate Professor of Microbiology and Molecular Genetics</li><li>Ginger, Clare A. - Associate Professor in the Rubenstein School of Environment and Natural Resources, Director of the Natural Resources Program</li><li>Glass, Karen C. - Adjunct Assistant Professor of Biochemistry</li><li>Goldberg, Joel Michael - Associate Dean of the College of Arts and Sciences, Associate Professor of Chemistry</li><li>Golden, Kenneth Ivan - Professor of Engineering, Professor of Mathematics and Statistics, Professor of Physics</li><li>Goldhaber, Jeanne D. - Associate Professor of Education</li><li>Goodnight, Charles James - Professor of Biology</li><li>Gordon, Robert James - Professor of Anthropology</li><li>Gorman, Mark J. - Professor of Neurological Sciences</li><li>Gorres, Josef H. - Associate Professor of Plant and Soil Science</li><li>Gotelli, Nicholas James - Professor of Biology</li><li>Gouli, Vladimir V. - Research Assistant Professor of Plant and Soil Science</li><li>Grant, Barbara Winslow - Associate Professor of Medicine Emerita</li><li>Grant, Richard J. - Adjunct Professor of Animal Science</li><li>Grasso, Domenico - Professor in the Honors College, Professor of Engineering</li><li>Green, John Thomas - Associate Professor of Psychology</li><li>Greene, Elizabeth Ann - Extension Professor of Animal Science</li><li>Greenwood, Sabrina Louise - Assistant Professor of Animal Science</li></ul>				

- [Griffin, Robert Stanley](#) - Professor of Leadership and Developmental Sciences
- [Gross, Kenneth Irwin](#) - Professor of Mathematics and Statistics
- [Grove, J. Morgan](#) - Adjunct Associate Professor of Environment and Natural Resources
- [Guber, Deborah Lynn](#) - Associate Professor of Political Science
- [Guitar, Barry Estill](#) - Director of Communication Sciences, Professor of Communication Sciences, Professor of Psychology
- [Guo, Ming Ruo](#) - Professor of Nutrition and Food Sciences
- [Gustafson, Melanie Susan](#) - Associate Professor of History
- [Gutman, Stanley T.](#) - Professor of English

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- Haines, Shawna - Assistant Professor of Education
- Hamel-Bissell, Brenda Pauline - Professor of Nursing
- Hammack, Sayamwong E - Associate Professor of Psychology
- Harder, Valerie Susan - Assistant Professor of Psychiatry
- Harp, Randall - Assistant Professor of Philosophy
- Harrington, Susan M. - Director of Writing in the Disciplines, Professor of English
- Harris, Jeanne M. - Associate Professor of Plant Biology
- Harvey-Berino, Jean Ruth - Associate Professor of Medicine, Associate Professor of Medicine - General, Chairperson of Nutrition and Food Sciences, Professor of Nutrition and Food Sciences
- Hasazi, Susan Elaine - Professor of Education Emerita
- Haynes, Laura M - Adjunct Associate Professor of Medicine
- Heading-Grant, Wanda Renarda - Clinical Associate Professor of Social Work
- Headrick, Randall L. - Professor of Physics
- Heckman, Joyce E. - Research Assistant Professor of Microbiology and Molecular Genetics Emerita
- Heil, Sarah H. - Associate Professor of Psychiatry, Research Assistant Professor of Psychology
- Heintz, Nicholas H. - Director of the Cellular, Molecular and Biomedical Sciences Graduate Program, Professor of Microbiology and Molecular Genetics, Professor of Pathology
- Heiss, Sarah Noel - Assistant Professor of Community Development and Applied Economics
- Henry, Sharon Margaret - Professor of Orthopaedics and Rehabilitation, Professor of Rehabilitation and Movement Science
- Heppner, Thomas Jon - Assistant Professor of Pharmacology
- Hernandez, Eric - Assistant Professor of Engineering
- Hession, William Culliton - Adjunct Associate Professor of Engineering
- Higgins, Stephen Thomas - Associate Chairperson of Psychiatry, Director of the Center for Substance Abuse Research and Treatment, Professor of Psychiatry
- Hill, Jane E. - Assistant Professor of Engineering
- Hill-Eubanks, David Cameron - Assistant Professor of Pharmacology
- Hines, Paul D. - Assistant Professor of Engineering
- Hitt, Darren Lee - Professor of Engineering
- Holmen, Britt A. - Associate Professor of Engineering
- Holmes, Chris Elaine - Associate Professor of Medicine - Hematology Oncology
- Holmes, Gregory - Chairperson of Neurological Sciences, Professor of Neurology
- Hondal, Robert J. - Associate Professor of Biochemistry, Associate Professor of Chemistry
- Hood, Virginia Louise - Professor of Medicine - Nephrology
- Howe, Alan K - Associate Professor of Pharmacology
- Howe, James Gregory - Professor of Orthopedics and Rehabilitation Emeritus
- Hoza, Betsy - Professor of Psychology
- Huber, Sally Ann - Professor of Pathology
- Hudspeth, Thomas Richard - Professor in the Rubenstein School of Environment and Natural

Resources

- [Hudziak, James Joseph](#) - Director of Psychiatry, Professor of Medicine, Professor of Pediatrics, Professor of Psychiatry
- [Huener, Jonathan D.](#) - Associate Professor of History
- [Hughes, Jeffrey Winston](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources, Associate Professor of Plant Biology
- [Hughes, John M.](#) - Professor of Geology
- [Hughes, John Russell](#) - Professor of Family Medicine, Professor of Psychiatry
- [Hughes, Susan Boedeker](#) - Associate Professor of Business Administration, Director of the School of Business Administration
- [Huh, Jinny](#) - Assistant Professor of English
- [Hunter, Deborah Ellen](#) - Associate Professor of Leadership and Developmental Sciences, Chairperson of Leadership and Developmental Sciences
- [Hurley, Jennifer Jo](#) - Associate Professor of Education
- [Hurley, Sean M.](#) - Assistant Professor of Leadership and Developmental Sciences
- [Hurley, Stephanie E.](#) - Assistant Professor of Plant & Soil Science
- [Huston, Christopher D.](#) - Associate Professor of Medicine - Infectious Disease, Associate Professor of Microbiology and Molecular Genetics
- [Huston, Dryver R.](#) - Professor of Engineering, Professor of Orthopaedics and Rehabilitation

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- Inwood, Shoshanah Miriam - Assistant Professor of Community Development and Applied Economics
- Irvin, Charles G. - Assistant Dean of Medicine, Professor of Medicine - Pulmonary, Professor of Molecular Physiology and Biophysics
- Ivakhiv, Adrian J - Associate Professor in the Rubenstein School of Environment and Natural Resources, Interim Director of the Rubenstein School of Environment and Natural Resources

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- [Jacobs, Jesse V.](#) - Assistant Professor of Rehabilitation and Movement Science
- [Jaffe, Dale J.](#) - Professor of Sociology
- [Janssen-Heininger, Yvonne M.W.](#) - Professor of Pathology
- [Jaworski, Diane Marie](#) - Professor of Neurological Sciences
- [Jefferys, William H.](#) - Adjunct Professor of Mathematics and Statistics, Lecturer I of Mathematics and Statistics
- [Jenemann, David](#) - Associate Professor of English, Director of Film and Television Studies
- [Jenkins, Jennifer Caroline](#) - Adjunct Assistant Professor in the Rubenstein School of Environment and Natural Resources
- [Jenkins, Robert G.](#) - Professor of Engineering Emeritus
- [Jetton, Thomas Lawrence](#) - Associate Professor of Medicine - Endocrinology
- [Jewiss, Jennifer Lynn](#) - Research Assistant Professor of Leadership and Developmental Sciences
- [Jiron, Haley Woodside](#) - Associate Professor of Education
- [Johnson, Douglas Ian](#) - Director of the CALS Honors Program, Professor of Microbiology and Molecular Genetics
- [Johnson, Rachel K](#) - Professor of Nutrition and Food Sciences, Professor of Pediatrics
- [Johnson, Robert Jonathan](#) - Professor of Orthopaedic Surgery Emeritus
- [Jones, Christopher A](#) - Assistant Professor of Clinical and Translational Science, Assistant Professor of Surgery, Director of Global Health Economics for Clinical and Translational Science
- [Jones, David A](#) - Associate Professor of Business Administration
- [Jung, Youngok](#) - Assistant Professor of Education

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	<div>Graduate Faculty A to Z</div> <div>ABCDEFGHIJKLMNOPQRSTUVWXYZ</div> <div><ul style="list-style-type: none"><li>Kaelber, Lutz F. - Associate Professor of Sociology</li><li>Kahn-Fogel, Daniel Mark - Professor of English</li><li>Kaminsky, David Alan - Professor of Medicine - Pulmonary</li><li>Kasser, Susan L. - Associate Professor of Rehabilitation and Movement Science</li><li>Kaza, Stephanie - Director of the Environmental Studies Program, Professor in the Rubenstein School of Environment and Natural Resources</li><li>Keeton, William Scott - Director of the Forestry Program, Professor in the Rubenstein School of Environment and Natural Resources</li><li>Kelm, Robert John - Associate Professor of Biochemistry, Associate Professor of Medicine - Vascular Biology</li><li>Kennedy, Amanda G. - Associate Professor of Medicine - General Internal, Research Assistant Professor of Nursing</li><li>Kerr, David E - Associate Professor of Animal Science</li><li>Kete, Mary Louise - Associate Professor of English</li><li>Kien, Craig L. - Professor of Medicine, Professor of Pediatrics - Gastroenterology</li><li>Killeen, Kieran M. - Associate Professor of Leadership and Developmental Sciences</li><li>Kilpatrick, Charles William - Professor of Biology</li><li>Kindstedt, Paul Stephen - Associate Director of the Vermont Institute for Artisan Cheese, Professor of Nutrition and Food Sciences</li><li>Kingsley, Allison F. - Assistant Professor of Business Administration</li><li>Kirkpatrick, Beth Diane - Professor of Medicine - Infectious Disease, Professor of Microbiology and Molecular Genetics</li><li>Klepeis, Keith Andrew - Professor of Geology</li><li>Kolan, Matthew Peter - Senior Lecturer in the Rubenstein School of Environment and Natural Resources</li><li>Kolbe, Tammy - Assistant Professor of Leadership and Developmental Sciences</li><li>Koliba, Christopher J. - Professor of Community Development and Applied Economics</li><li>Kolodinsky, Jane Marie - Chairperson of Community Development and Applied Economics, Director of the Center for Rural Studies, Professor of Community Development and Applied Economics</li><li>Kornbluh, Felicia A. - Associate Professor of History</li><li>Kotov, Valeri N. - Assistant Professor of Physics</li><li>Kraft, Jana - Assistant Professor of Animal Science</li><li>Krag, David Nielsen - Professor of Surgery - General</li><li>Krag, Martin Hans - Professor of Orthopedics and Rehabilitation</li><li>Krymkowski, Daniel Harry - Professor of Sociology</li><li>Kuentzel, Walter Frederick - Associate Professor in the Rubenstein School of Environment and Natural Resources, Director of Recreation Management Program</li></ul></div>			

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- [Laher, Ismail](#) - Adjunct Professor of Pharmacology
- [Laible, Jeffrey Paul](#) - Professor of Engineering Emeritus
- [Lakoba, Taras Igorevich](#) - Associate Professor of Mathematics and Statistics
- [Lam, Ying Wai](#) - Research Assistant Professor of Biology
- [Landry, Christopher C.](#) - Professor of Chemistry
- [Langevin, Helene M.](#) - Professor of Neurological Sciences, Research Associate Professor of Orthopedics and Rehabilitation
- [Laurent, Jennifer S.](#) - Assistant Professor of Nursing
- [Laven, Daniel](#) - Adjunct Assistant Professor of Environment and Natural Resources
- [Lawson, Steven R.](#) - Adjunct Associate Professor of Environment and Natural Resources
- [Leahy, John L.](#) - Professor of Medicine - Endocrinology
- [Leavitt, Bruce J.](#) - Professor of Surgery - Thoracic Cardiovascular
- [Leclair, Laurie W.](#) - Associate Professor of Medicine - Pulmonary
- [Lee, Brian H. Y.](#) - Assistant Professor of Community Development and Applied Economics, Assistant Professor of Engineering, Assistant Professor of Transportation Research
- [Lee, Byung S.](#) - Professor of Computer Science
- [Leenstra, Willem R.](#) - Associate Professor of Chemistry
- [Leib, Edward Samuel](#) - Professor of Medicine - Rheumatology
- [Leibowitz, George S.](#) - Assistant Professor of Social Work
- [Lekka, Shamila K.](#) - Lecturer of Psychology
- [Lenck-Santini, Pierre-Pascal](#) - Assistant Professor of Neurological Sciences
- [Levine, Mark Alan](#) - Professor of Medicine - General Internal
- [Levine, Suzanne Nanette](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources
- [Lewinter, Martin M.](#) - Professor of Medicine - Cardiology, Professor of Molecular Physiology and Biophysics
- [Lian, Jane B](#) - Professor of Biochemistry
- [Liang, Chyi-Lyi Kathleen](#) - Professor of Community Development and Applied Economics
- [Lidofsky, Steven D.](#) - Director in the College of Medicine, Professor of Medicine - Gastroenterology, Professor of Pharmacology
- [Lindstrom, Eric Reid](#) - Associate Professor of English
- [Ling, Alan Chi](#) - Assistant Professor of Mathematics and Statistics, Associate Professor of Computer Science
- [Lini, Andrea](#) - Associate Professor of Geology, Chairperson of Geology
- [Lintilhac, Philip Malcolm](#) - Research Associate Professor of Plant Biology
- [Liptak, Matthew Denis](#) - Assistant Professor of Chemistry
- [Littenberg, Benjamin](#) - Professor of Medicine - General Internal, Professor of Nursing
- [Lord, Matthew J.](#) - Associate Professor of Molecular Physiology and Biophysics
- [Losambe, Lokangaka](#) - Professor of English

- [Lounsbury, Karen M.](#) - Professor of Pharmacology
- [Lucas, Marilyn T.](#) - Associate Professor of Business Administration
- [Lundblad, Lennart K.A.](#) - Assistant Professor of Medicine - Pulmonary
- [Lyman, Theodore](#) - Professor of Art and Art History

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- Macias, Thomas E. - Associate Professor of Sociology
- MacLean, Charles Duncan - Associate Dean of the College of Medicine - Primary Care, Professor of Medicine - General Internal
- Madalengoitia, Jose Santos - Associate Professor of Chemistry
- Magistrale, Anthony Samuel - Professor of English
- Mahoney, Dennis Francis - Professor of German and Russian
- Maltby, Hendrika J. - Professor of Nursing
- Mann, Kenneth G. - Professor of Biochemistry Emeritus
- Manning, Kathleen - Professor of Leadership and Developmental Sciences
- Manning, Robert Emmet - Professor in the Rubenstein School of Environment and Natural Resources
- Marble, Hugh - Assistant Professor of Business Administration
- Mardeusz, Patricia Ellen - Library Associate Professor of Bailey Howe - Information and Instruction
- Mares, Teresa Marie - Assistant Professor of Anthropology
- Marsden, J. Ellen - Director of the Wildlife and Fisheries Biology Program, Professor in the Rubenstein School of Environment and Natural Resources
- Marshall, Jeffrey D. - Director of Research Collections of Bailey Howe Library, Library Professor of Bailey Howe - Access and Technical Services
- Marshall, Jeffrey Scott - Professor of Engineering
- Mason, Anne Brown - Professor of Biochemistry Emeritus
- Massell, David Perera - Professor of History
- Matrajt, Mariana Laura - Research Assistant Professor of Microbiology and Molecular Genetics
- Matthews, Dwight E. - Chairperson of Chemistry, Professor of Chemistry, Professor of Medicine
- Mawe, Gary Michael - Professor of Medicine, Professor of Neurological Sciences, Professor of Pharmacology
- May, Victor - Professor of Neurological Sciences, Professor of Pharmacology
- Mazzoni, Maria-Cristina - Chairperson of Romance Languages and Linguistics, Professor of Romance Languages and Linguistics
- McCormack, John Joseph - Professor of Pharmacology Emeritus
- McCullough, Robert L. - Associate Professor of History
- McGowan, Abigail S. - Associate Professor of History
- McGowan, Todd Robert - Associate Professor of English
- McIntosh, Alan W. - Co-Director of the Environmental Science Program, Professor in the Rubenstein School of Environment and Natural Resources
- McIntosh, Barbara Ruth - Professor of Business Administration
- McKay, Stephanie Dawn - Assistant Professor of Animal Science
- McKenna, Kevin James - Professor of German and Russian
- McLean, Kelley C. - Assistant Professor of Obstetrics and Gynecology
- McRae, Glenn - Adjunct Lecturer of Community Development and Applied Economics
- Mehrtens, Charlotte Jean - Co-Director of the Environmental Science Program, Professor of Geology

- [Mendez, Victor E.](#) - Associate Professor of Plant and Soil Science
- [Meyer, Marjorie C.](#) - Associate Professor of Obstetrics and Gynecology
- [Meyer, Markus F.](#) - Assistant Professor of Medicine - Cardiology
- [Meyers, Herman Wilson](#) - Associate Professor of Integrated Professional Studies Emeritus
- [Mickey, Ruth Mary](#) - Professor of Mathematics and Statistics
- [Mieder, Wolfgang](#) - Professor of German and Russian
- [Mierse, William Edwin](#) - Professor of Art and Art History, Professor of Classics
- [Miller, Carol Therese](#) - Professor of Psychology
- [Miller, Eleanor M.](#) - Professor of Sociology
- [Miller, Fayneese S.](#) - Dean of the College of Education and Social Services, Professor of Leadership and Developmental Sciences
- [Miller, Mark Stuart](#) - Research Associate of Molecular Physiology and Biophysics
- [Mintz, Beth](#) - Professor of Sociology
- [Mintz, Keith Peter](#) - Associate Professor of Microbiology and Molecular Genetics
- [Mirchandani, Gagan S.](#) - Professor of Computer Science, Professor of Engineering
- [Mitchell, Brian R.](#) - Adjunct Assistant Professor of Environment and Natural Resources
- [Mitchell, John Joseph](#) - Senior Lecturer of Biology
- [Molofsky, Jane](#) - Professor of Plant Biology
- [Morielli, Anthony D.](#) - Associate Professor of Pharmacology
- [Morin, Frederick C.](#) - Dean in the College of Medicine, Professor of Molecular Physiology and Biophysics, Professor of Pediatrics
- [Morriscal, Scott Walker](#) - Professor of Biochemistry, Professor of Microbiology and Molecular Genetics
- [Morrissey, Leslie A.](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources
- [Morse, Cheryl](#) - Assistant Professor of Geography
- [Mossman, Brooke Taylor](#) - Professor of Pathology Emerita
- [Mount, Sharon Lee](#) - Professor of Pathology - Anatomic
- [Murdoch, James D.](#) - Assistant Professor in the Rubenstein School of Environment and Natural Resources
- [Murray-Close, Dianna Katharine](#) - Associate Professor of Psychology

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- Nash, Robert James - Professor of Leadership and Developmental Sciences
- Naylor, Magdalena Raczkowska - Professor of Psychiatry
- Neal, Patrick Allen - Associate Professor of Political Science
- Neher Weicht, Deborah - Chairperson of Plant and Soil Science, Professor of Plant and Soil Science
- Neiweem, David - Professor of Music and Dance
- Nelson, Mark Tuxford - Chairperson of Pharmacology, Professor of Molecular Physiology and Biophysics, Professor of Pharmacology, Professor of Surgery
- Neroni, Hilary L. - Associate Professor of English
- Neumann, Maureen Doyle - Associate Professor of Education
- Newhouse, Paul Alfred - Professor of Psychiatry Emeritus
- Nicholas, Catherine F. - Assistant Professor of Family Medicine, Clinical Assistant Professor of Obstetrics and Gynecology
- Nichols, Eric Charles - Senior Lecturer of Integrated Professional Studies Emeritus
- Nicklas, Janice Ann - Associate Professor of Pediatrics
- Nicosia, Francis R. - Interim Director for the Miller Center for Holocaust Study, Professor of History
- Nilsen, Sarah Dawn - Associate Professor of English
- Nishi, Rae - Director of the Neuroscience Graduate Program, Professor of Neurological Sciences
- Noordewier, Thomas Gerald - Associate Dean of the School of Business Administration, Professor of Business Administration
- Novak, David C. - Associate Professor of Business Administration
- Nwadike, Londa - Extension Assistant Professor

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- [O'Rourke, Deborah Anne](#) - Clinical Associate Professor of Rehabilitation and Movement Science
- [Okech, Jane E.](#) - Associate Professor of Leadership and Developmental Sciences
- [Oldinski, Rachael](#) - Assistant Professor of Engineering, Assistant Professor of Orthopaedics and Rehabilitation
- [Osol, George Jury](#) - Professor of Molecular Physiology and Biophysics, Professor of Obstetrics, Gynecology and Reproduction, Professor of Pharmacology
- [Osten, Sarah](#) - Assistant Professor of History
- [Oughstun, Kurt Edmund](#) - Professor of Computer Science, Professor of Engineering, Professor of Mathematics and Statistics
- [Ozbek, Metin Mehmet](#) - Adjunct Assistant Professor of School of Engineering

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- Palmer, Bradley M. - Assistant Professor of Molecular Physiology and Biophysics
- Palumbo, Mary Val - Associate Professor of Nursing
- Pan, Zhongzong - Assistant Professor of Animal Science
- Parent, Richard E. - Assistant Professor of English
- Paris, Catherine Ann - Senior Lecturer of Plant Biology
- Parke, Edward Lauck - Associate Professor of Business Administration
- Parker, Bruce Lawrence - Professor of Plant and Soil Science
- Parrish, Donna L. - Research Professor in the Rubenstein School of Environment and Natural Resources
- Parsons, Robert L. - Extension Professor of Community Development and Applied Economics, Professor of Community Development and Applied Economics
- Parsons, Rodney Lawrence - Professor of Molecular Physiology and Biophysics, Professor of Neurological Sciences
- Patterson, Fiona M. - Associate Professor of Social Work
- Pederson, David Scott - Professor of Microbiology and Molecular Genetics
- Perdrial, Julia - Assistant Professor of Geology
- Perdrial, Nicolas - Research Assistant Professor of Geology
- Perkins, Timothy David - Director of the Proctor Maple Research Center, Research Professor of Plant Biology
- Perry, Leonard Payne - Extension Professor of Plant and Soil Science
- Petrucci, Giuseppe A. - Associate Professor of Chemistry
- Peyser, Janis Mussett - Clinical Associate Professor of Neurological Sciences, Clinical Associate Professor of Psychiatry
- Phelps, Nicole M. - Assistant Professor of History
- Phillippe, Mark - Chairperson of Obstetrics Gynecology and Reproduction - Maternal Fetal, Professor of Obstetrics and Gynecology - Maternal Fetal
- Pinckney, Richard G. - Associate Professor of Medicine - General Internal
- Pinder, George Francis - Professor of Computer Science, Professor of Engineering, Professor of Mathematics and Statistics
- Pinel, Elizabeth C. - Associate Professor of Psychology
- Pintauro, Stephen Joseph - Associate Professor of Nutrition and Food Sciences
- Poleman, Walter Mallery - Director of the GreenHouse Residential Learning Community, Senior Lecturer in the Rubenstein School of Environment and Natural Resources
- Pontius, Jennifer A. - Lecturer in the Rubenstein School of Environment and Natural Resources, Research Assistant Professor in the Rubenstein School of Environment and Natural Resources
- Potter, Alexandra S. - Assistant Professor of Psychiatry, Clinical Assistant Professor of Psychology
- Poynter, Matthew E. - Associate Director of the Vermont Lung Center, Associate Professor of Medicine - Pulmonary
- Prelock, Patricia A. - Dean of the College of Nursing and Health Sciences, Professor of

Communication Sciences, Professor of Pediatrics

- [Preston, Jill C](#) - Assistant Professor of Plant Biology
- [Price, Matthew](#) - Assistant Professor of Psychology

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<ul style="list-style-type: none"><li>Rabinowitz, Terry - Professor of Family Medicine, Professor of Psychiatry</li><li>Radermacher, Michael - Associate Professor of Computer Science, Professor of Molecular Physiology and Biophysics</li><li>Rambur, Betty A. - Professor of Nursing</li><li>Ramos-Nino, Maria E. - Lecturer of Medical Laboratory and Radiation Science, Research Assistant Professor of Pathology</li><li>Rand, Matthew Dearborn - Assistant Professor of Neurological Sciences</li><li>Rankin, Joanna Marie - Professor of Physics</li><li>Rathbone, Charles - Associate Professor of Education Emeritus</li><li>Rayback, Shelly A. - Associate Professor of Geography</li><li>Reardon, Mildred Ann - Professor of Medicine Emerita</li><li>Reed, Brian Vaughn - Associate Professor of Rehabilitation and Movement Science, Associate Provost</li><li>Reed, J. Patrick - Associate Professor of Medical Laboratory and Radiation Sciences Emeritus</li><li>Rellini, Alessandra - Associate Professor of Psychology</li><li>Rettew, David C. - Assistant Professor of Pediatrics - General, Associate Professor of Psychiatry</li><li>Reyes, Cynthia C. - Associate Professor of Education</li><li>Ricci, Michael Anthony - Professor of Surgery Emeritus</li><li>Richardson-Nassif, Karen - Professor of Family Medicine</li><li>Ricketts, Taylor H - Director of the Gund Institute, Professor in the Rubenstein School of Environment and Natural Resources</li><li>Rincon, Mercedes - Professor of Medicine - Immunobiology</li><li>Rizzo, Donna Marie - Associate Professor of Engineering</li><li>Roberts, Julie L. - Professor of Communication Sciences, Professor of Romance Languages and Linguistics</li><li>Roche, Susan E. - Associate Professor of Social Work</li><li>Rodgers, Robert Howard - Professor of Classics</li><li>Rohan, Kelly Joanna - Associate Professor of Psychology</li><li>Rohy, Valerie - Chairperson of English, Professor of English</li><li>Roman, Joseph - Research Assistant Professor and Lecturer in the Rubenstein School of Environment and Natural Resources</li><li>Rose, Gail Lynne - Assistant Professor of Psychiatry</li><li>Rosen, Michael J. - Research Associate Professor of Engineering</li><li>Rosowsky, David - Professor of Engineering, Provost/Senior Vice President</li><li>Ross, Donald Savage - Co-Director of the Environmental Science Program, Director of the Agriculture Testing Laboratory, Research Professor of Plant and Soil Science</li><li>Ross, Jane Kaye - Professor of Nutrition and Food Sciences</li><li>Rould, Mark Allen - Research Assistant Professor of Molecular Physiology and Biophysics</li><li>Rubin, Alan Saul - Associate Professor of Medicine, Research Associate Professor of Psychiatry</li></ul>				

- [Ruiz, Teresa](#) - Associate Professor of Molecular Physiology and Biophysics
- [Ryan, Susan Marie](#) - Director of Center on Disability and Community, Professor of Leadership and Developmental Sciences

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- [Sibold, Jeremy S.](#) - Assistant Professor of Rehabilitation and Movement Science
- [Sicotte, Richard A.](#) - Associate Professor of Economics
- [Sigmon, Stacey C.](#) - Associate Professor of Psychiatry, Research Assistant Professor of Psychology
- [Sillett, Terence Scott](#) - Adjunct Assistant Professor in the Rubenstein School of Environment and Natural Resources
- [Silveira, Jay R.](#) - Assistant Professor of Biochemistry
- [Simone, R. Thomas](#) - Professor of English
- [Simpatico, Thomas A.](#) - Professor of Psychiatry, Research Professor of Center Clinical and Translational Science, Research Professor of Psychiatry
- [Single, Richard M.](#) - Associate Professor of Mathematics and Statistics
- [Sinkula, James Michael](#) - Professor of Business Administration
- [Sisk, Jennifer L.](#) - Assistant Professor of English
- [Sisock, Mary](#) - Extension Assistant Professor
- [Skalka, Christian Edward](#) - Associate Professor of Computer Science
- [Skinner, Margaret](#) - Research Professor of Plant and Soil Science
- [Slauterbeck, James R.](#) - Associate Professor of Orthopaedics and Rehabilitation, Associate Professor of Pediatrics - General
- [Smith, Carmen Julia Petrick](#) - Assistant Professor of Education
- [Smith, Julia M.](#) - Extension Associate Professor of Animal Science
- [Smith, Lance C.](#) - Assistant Professor of Leadership and Developmental Sciences
- [Smith, Sherwood E.](#) - Director of Cultural Pluralism, Lecturer of Leadership and Developmental Sciences
- [Snapp, Robert Raymond](#) - Associate Professor of Computer Science, Associate Professor of Mathematics and Statistics
- [Sobel, Burton E.](#) - Professor of Biochemistry, Professor of Medicine - Cardiology
- [Soll, Roger Franklin](#) - Professor of Pediatrics - Neonatology
- [Solomon, Brenda M.](#) - Associate Professor of Social Work
- [Solomon, Richard Jay](#) - Professor of Medicine - Nephrology
- [Solomon, Sondra Elice](#) - Associate Professor of Psychology, Clinical Associate Professor of Psychiatry
- [Son, Mun Shig](#) - Professor of Mathematics and Statistics
- [Spector, Peter Salem](#) - Professor of Medicine - Cardiology
- [Spees, Jeffrey L.](#) - Associate Professor of Medicine - Vascular Biology
- [Sprague, Brian](#) - Assistant Professor of Surgery
- [Stapleton, Renee D.](#) - Assistant Professor of Medicine - Pulmonary
- [Starrett, Mark C.](#) - Associate Professor of Plant and Soil Science
- [Stein, Gary S](#) - Chairperson of the Biochemistry Department, Co-Director of Vermont Cancer Center, Professor of Biochemistry
- [Stein, Janet L](#) - Professor of Biochemistry
- [Steingard, Sandra](#) - Clinical Associate Professor of Psychiatry
- [Steinweis, Alan E.](#) - Professor of History
- [Stevens, Lori](#) - Professor of Biology
- [Stickle, Timothy R](#) - Associate Professor of Psychology
- [Stilwell, Sean Arnold](#) - Associate Professor of History
- [Stockwell, Jason Dana](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources, Director of Rubenstein Ecosystem Science Lab
- [Stokes, Ian Alexander](#) - Research Professor of Orthopaedics and Rehabilitation Emeritus
- [Stokowski, Patricia A.](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources
- [Stratton, Donald Arthur](#) - Co-Director of Integrated Biological Science, Senior Lecturer of Plant Biology
- [Streeter, Thomas George](#) - Chairperson of Sociology, Professor of Sociology
- [Strolin, Jessica S.](#) - Associate Professor of Social Work

Strong, Allan Matthew - Associate Dean of the Rubenstein School of Environment and Natural Resources, Associate Professor in the Rubenstein School of Environment and Natural Resources

- [Stumpff, Jason](#) - Assistant Professor of Molecular Physiology and Biophysics
- [Sullivan, E. Thomas](#) - President of the University of Vermont, Professor of Political Science
- [Sun, Tao](#) - Assistant Professor of Community Development and Applied Economics
- [Suratt, Benjamin Tate](#) - Associate Professor of Medicine - Pulmonary
- [Suter, Jesse Courtney](#) - Research Assistant Professor of Education

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- [Taatjes, Douglas Joseph](#) - Professor of Pathology, Research Associate Professor of Pathology
- [Tan, Ting](#) - Assistant Professor of Engineering
- [Tandan, Rup](#) - Professor of Neurological Sciences
- [Tarule, Jill Mattuck](#) - Professor of Leadership and Developmental Sciences
- [Taylor, Robert Pepperman](#) - Professor of Political Science
- [Teuscher, Cory](#) - Professor of Medicine - Immunobiology, Professor of Pathology - General
- [Thaler, Martin Andrew](#) - Professor of Theatre
- [Thali, Markus Josef](#) - Professor of Microbiology and Molecular Genetics
- [Tierney, Mary Lauretta](#) - Associate Professor of Microbiology and Molecular Genetics, Associate Professor of Plant Biology
- [Tinkler, Alan S.](#) - Assistant Professor of Education
- [Tinkler, Barri E.](#) - Assistant Professor of Education
- [Titcomb, Stephen](#) - Associate Professor of Engineering, Director of Electrical Engineering
- [Todd, John H.](#) - Research Professor of Natural Resources Emeritus
- [Tomas, Amy M](#) - Senior Lecturer of Business Administration
- [Tomas III, Michael John](#) - Associate Professor of Business Administration
- [Tompkins, Connie](#) - Assistant Professor of Rehabilitation and Movement Science
- [Toolin, Regina](#) - Associate Professor of Education
- [Toth, Michael J.](#) - Associate Professor of Medicine - Cardiology, Associate Professor of Obstetrics and Gynecology - Reproductive Endocrinology and Infertility
- [Toufexis, Donna J.](#) - Assistant Professor of Psychology
- [Tracy, Paula Babiarz](#) - Professor of Biochemistry, Professor of Medicine
- [Tracy, Russell P.](#) - Associate Director of the Center for Clinical and Translational Science, Professor of Biochemistry, Professor of Pathology
- [Trainor, Kevin M.](#) - Chairperson of Religion, Professor of Religion
- [Troy, Austin R.](#) - Associate Professor of Computer Science
- [Trubek, Amy B.](#) - Associate Professor of Nutrition and Food Sciences, Director of the Food Systems Graduate Program
- [Trybus, Kathleen M.](#) - Professor of Molecular Physiology and Biophysics
- [Twery, Mark J.](#) - Adjunct Associate Professor of Environment and Natural Resources
- [Tyzbir, Robert Stanley](#) - Professor of Nutrition and Food Sciences

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ABCDEFGHIJKLMNOPQRSTUVWXYZ

- [Usher, Mark David](#) - Associate Professor of Classics, Chairperson of Classics

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- [Van Buren, Peter C.](#) - Assistant Professor of Molecular Physiology and Biophysics, Associate Professor of Medicine - Cardiology
- [van den Berg, Abby Katrien](#) - Lecturer of Plant Biology, Research Assistant Professor of Plant Biology
- [van der Vliet, Albert](#) - Professor of Pathology
- [Van Houten, Judith Lee](#) - Director of EPScOR, Professor of Biology, Professor of Neurological Sciences
- [Vanden Bergh, Richard G.](#) - Associate Professor of Business Administration
- [VanSlyke, Gretchen Jane](#) - Professor of Romance Languages and Linguistics
- [Varhue, Walter John](#) - Professor of Engineering
- [Vatovec, Christine](#) - Research Assistant Professor in the Rubenstein School of Environment and Natural Resources
- [Ventriss, Curtis L.](#) - Professor in the Rubenstein School of Environment and Natural Resources
- [Vigoreaux, Jim Osvaldo](#) - Chairperson of Biology, Professor of Biology, Professor of Molecular Physiology and Biophysics
- [Visser, Thomas Durant](#) - Associate Professor of History, Director of Historic Preservation
- [Vivanco, Luis A.](#) - Associate Professor of Anthropology, Director of Global and Regional Studies
- [Vizzard, Margaret A.](#) - Professor of Neurological Sciences
- [Vogelmann, Thomas C.](#) - Dean of the College of Agriculture and Life Sciences, Professor of Plant Biology
- [Voight, John M.](#) - Assistant Professor of Mathematics and Statistics
- [Voigt, Brian](#) - Research Assistant Professor in the Rubenstein School of Environment and Natural Resources

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- [Walberg, Glenn C](#) - Assistant Professor of Business Administration
- [Waldron, John Vincent](#) - Associate Professor of Romance Languages and Linguistics
- [Wallace, Susan Scholes](#) - Chairperson of Microbiology and Molecular Genetics, Professor of Microbiology and Molecular Genetics
- [Wallin, Kimberly F.](#) - Graduate Program Director in the Rubenstein School of Environment and Natural Resources, Research Assistant Professor in the Rubenstein School of Environment and Natural Resources
- [Wang, Deane](#) - Associate Professor in the Rubenstein School of Environment and Natural Resources
- [Wang, Qingbin](#) - Professor of Community Development and Applied Economics
- [Wang, Xiaoyang S](#) - Adjunct Professor of Computer Science
- [Ward, Gary E.](#) - Professor of Microbiology and Molecular Genetics
- [Wargo, Matthew](#) - Assistant Professor of Microbiology and Molecular Genetics
- [Warrington, Gregory S.](#) - Assistant Professor of Mathematics and Statistics
- [Warshaw, David Michael](#) - Chairperson of Molecular Physiology and Biophysics, Professor of Molecular Physiology and Biophysics
- [Wasserman, Richard Charles](#) - Professor of Pediatrics
- [Waterman, G. Scott](#) - Professor of Psychiatry Emeritus
- [Waterman, Rory](#) - Associate Professor of Chemistry
- [Waters, Stephen P.](#) - Assistant Professor of Chemistry
- [Watts, Richard A.](#) - Director of the Center for Research on Vermont, Lecturer of Rubenstein School of Environment and Natural Resources, Research Assistant Professor of Community Development and Applied Economics, Research Assistant Professor of Transportation Research Center
- [Watts, Richard](#) - Associate Professor of Radiology
- [Weaver, Donald Lee](#) - Professor of Pathology - Anatomic
- [Webb, Laura E.](#) - Assistant Professor of Geology
- [Weinstock, Jacqueline S.](#) - Associate Professor of Leadership and Developmental Sciences
- [Weiss, Daniel Jay](#) - Professor of Medicine - Pulmonary
- [Welch, Nancy Ellen](#) - Professor of English
- [Wellman, George C.](#) - Professor of Pharmacology, Professor of Surgery
- [Wemple, Beverley Coghill](#) - Associate Professor of Geography, Associate Professor of Geology
- [Whalley, Adam C](#) - Assistant Professor of Chemistry
- [Whatley, Janet Elinor](#) - Professor of French Emerita
- [White, Sheryl Lynne](#) - Assistant Professor of Neurological Sciences
- [Whitfield, Harvey Amani](#) - Associate Professor of History
- [Whitney, Stuart Luhn](#) - Clinical Associate Professor of Nursing, Coordinator of Nursing
- [Widrick, Gary Charles](#) - Chairperson of Social Work, Lecturer of Social Work, Research Associate Professor of Social Work
- [Wilcke Jr., Burton William](#) - Associate Professor of Medical Laboratory and Radiation Sciences, Associate Professor of Pathology

- [Williams, Wayne Weston](#) - Professor of Education Emeritus
- [Willmuth, Mary E.](#) - Clinical Associate Professor of Psychiatry
- [Wilson, James Michael](#) - Professor of Mathematics and Statistics
- [Witkin, Stanley L.](#) - Professor of Social Work
- [Wollenberg, Eva K.](#) - Research Associate Professor in the Rubenstein School of Environment and Natural Resources
- [Wong, Cheung](#) - Associate Professor of Obstetrics and Gynecology
- [Wood, Marie E.](#) - Professor of Medicine - Hematology Oncology
- [Woolf, Arthur George](#) - Associate Professor of Economics
- [Wright, Andre-Denis G.](#) - Associate Professor of Medicine, Associate Professor of Microbiology & Molecular Genetics, Chairperson of Animal Science, Professor of Animal Science
- [Wu, Ge](#) - Professor of Rehabilitation and Movement Science
- [Wu, Jun-Ru](#) - Professor of Engineering, Professor of Physics
- [Wu, Xindong](#) - Professor of Computer Science

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- [Xia, Tian](#) - Associate Professor of Engineering

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- [Yadav, Dharam Pal](#) - Associate Professor of Psychology
- [Yandell, David Wendell](#) - Professor of Medicine, Professor of Pathology
- [Yang, Jianke](#) - Professor of Mathematics and Statistics
- [Yang, Jie](#) - Associate Professor of Physics
- [Youngblood, Denise J.](#) - Professor of History
- [Yu, Jun](#) - Associate Chairperson of Mathematics and Statistics, Associate Director of Mathematics and Statistics, Professor of Computer Science, Professor of Mathematics and Statistics

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- [Zakai, Neil A.](#) - Associate Professor of Medicine - Hematology Oncology, Associate Professor of Pathology
- [Zdatny, Steven M.](#) - Professor of History
- [Zelko, Frank S.](#) - Assistant Professor of History
- [Zhang, Chun](#) - Associate Professor of Business Administration
- [Zhang, Jie](#) - Assistant Professor of Business Administration
- [Zhao, Feng-Qi](#) - Associate Professor of Animal Science
- [Zia, Asim](#) - Assistant Professor of Community Development and Applied Economics

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- [Abajian, John Christian](#) - Professor of Anesthesiology Emeritus
- [Abruscato, Joseph Anthony](#) - Professor of Education Emeritus
- [Absher, P. Marlene](#) - Research Associate Professor of Medicine Emerita
- [Absher, Richard G](#) - Professor of Electrical and Computer Engineering Emeritus
- [Agne, Russell Maynard](#) - Professor of Education Emeritus
- [Aines, Linda D](#) - Associate Professor in Extension Emerita
- [Ainsworth, Pamela J.](#) - Extension Professor Emerita
- [Albee, George](#) - Professor of Psychology Emeritus
- [Albertini, Richard Joseph](#) - Professor of Microbiology and Molecular Genetics Emeritus, Professor of Pediatrics Emeritus
- [Allen, Christopher Whitney](#) - Professor of Chemistry 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
- [Ambrose, Z. Philip](#) - Professor of Classical Languages and Literature Emeritus
- [Anderson, Richard](#) - Professor of Electrical Engineering Emeritus
- [Andrea, Alfred J.](#) - Professor of History Emeritus
- [Andreas, Rosalind E.](#) - Assistant Professor of Education Emerita
- [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
- [Averyt, William Franklin](#) - Associate Professor of Business Administration Emeritus

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	<div>Emeriti Faculty A to Z</div> <div>ABCDEFGHIJKLMNOPQRSTUVWXYZ</div> <ul style="list-style-type: none"><li>Babbott, David - Professor of Medicine Emeritus</li><li>Babbott, Frank L. - Clinical Associate Professor of Medicine Emeritus</li><li>Baker, Susan M. - Senior Lecturer of Education Emerita</li><li>Balch, Donald J. - Professor of Animal Science Emeritus</li><li>Ball, Howard - Professor of Political Science Emeritus</li><li>Bandel, Betty - Professor of English Emerita</li><li>Barbour, James - Associate Professor of Integrated Professional Studies Emeritus</li><li>Barney, Bernard B. - Associate Professor of Surgery Emeritus</li><li>Barnum, H. Gardiner - Associate Professor of Geography Emeritus</li><li>Barrett, Evaline I. - Associate Professor of Professional Nursing Emerita</li><li>Bartlett, Richmond J. - Professor of Plant and Soil Science Emeritus</li><li>Battelle, Peter Erle - Assistant Professor of Business Administration Emeritus</li><li>Beeken, Warren L. - Professor of Medicine Emeritus</li><li>Beliveau, Jean-Guy Lionel - Professor of Civil Environmental Engineering Emeritus</li><li>Bell, Ross T. - Professor of Biology Emeritus</li><li>Bergdahl, Dale Roger - Professor of Environment and Natural Resources Emeritus</li><li>Berkett, Lorraine Pachuta - Professor of Plant and Soil Science Emerita</li><li>Bernstein, Richard Alan - Associate Professor of Psychiatry Emeritus</li><li>Bevan, Rosemary - Professor of Pharmacology Emerita</li><li>Bevins, Malcolm - Professor of The Rubenstein School of Environment and Natural Resources Emeritus</li><li>Biddle, Arthur W. - Professor of English Emeritus</li><li>Bigalow, Charles - Extension Professor of Community Development and Applied Economics Emeritus</li><li>Bishop, Kathleen - Associate Professor of Social Work Emerita</li><li>Blair, Alice J. - Extension Associate Professor Emerita</li><li>Bland, John H. - Professor of Medicine Emeritus</li><li>Bliss, Francis R. - Professor of Classics Emerita</li><li>Bloom, Thomas K. - Associate Professor of Community Development and Applied Economics Emeritus</li><li>Bogorad, Samuel N. - Professor of English Emeritus</li><li>Boller, Betty M. - Professor of Organizational, Counseling, and Foundational Studies Emerita</li><li>Bolognani, Betty M. - Extension Instructor Emerita</li><li>Bolton, Wesson D. - Professor of Animal Science Emeritus</li><li>Boushey, Dallas R. - Assistant Professor of Anatomy and Neurobiology Emeritus</li><li>Bousquet, Daniel W. - Extension Associate Professor Emeritus</li><li>Bouton, Edward - Extension Professor Emeritus</li><li>Bovill, Edwin Gladstone - Professor of Pathology Emeritus</li><li>Boyce, Bertie - Professor of Plant and Soil Science Emeritus</li><li>Bradley, Anthony G. - Professor of English Emeritus</li></ul>			

- [Bramley, Andrew John](#) - Professor of Animal Science and Microbiology and Molecular Genetics Emeritus
- [Branch, Judy H.](#) - Extension Associate Professor Emerita
- [Branda, Richard Frank](#) - Professor of Medicine and Pharmacology Emeritus
- [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
- [Brew, Linda S.](#) - Library Associate Professor Emerita
- [Bright, William](#) - Assistant Professor of Education Emeritus
- [Bronstein, Phyllis](#) - Professor of Psychology Emerita
- [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, Kenneth A.](#) - Professor of Medicine Emeritus
- [Brown, Peter M](#) - Associate Professor of Music Emeritus
- [Bryan, Frank MacLlewellyn](#) - Professor of Political Science Emeritus
- [Bucke, David P.](#) - Associate Professor of Geology Emeritus
- [Buechler, John L.](#) - Library Professor Emeritus
- [Burchard, Sara N.](#) - Associate Professor of Psychology Emerita
- [Burczy, Sara A](#) - Extension Professor Emerita
- [Burdett, Carol A.](#) - Assistant Professor of Education Emerita
- [Burns, Stanley](#) - Professor of Medicine Emeritus
- [Buxton, Beatrice F.](#) - Extension Associate Professor Emerita

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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
- [Carew, Lyndon Belmont](#) - Professor of Animal Science Emeritus, Professor of Nutrition and Food Sciences Emeritus
- [Carlson, Mary C](#) - Extension Assistant Professor 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
- [Cherouny, Peter Herbert](#) - Professor of Medicine 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
- [Cloninger, Chigee Jan](#) - Research Associate Professor of Education Emerita
- [Cochran, Robert W.](#) - Professor of English Emeritus
- [Coffin Jr., Laurence H.](#) - Professor of Surgery Emeritus
- [Cohen, Julius G.](#) - Professor of Psychiatry Emeritus
- [Coleman, Willi](#) - Associate Professor of History and ALANA U.S. Ethnic Studies Emerita
- [Conrad, David](#) - Professor of Education Emeritus
- [Cook, Philip W.](#) - Associate Professor of Botany Emeritus
- [Cooke, Roger L.](#) - Professor of Mathematics and Statistics Emeritus
- [Corey, William M.](#) - Extension Professor Emeritus
- [Costante, Joseph](#) - Professor of Plant and Soil Science Emeritus
- [Craighead, John](#) - Professor of Pathology Emeritus
- [Crichfield, Grant](#) - Associate Professor of Romance Languages Emeritus
- [Crockenberg, Susan Claire](#) - Professor of Psychology Emerita

- [Cronin, Mary Julia](#) - Associate Professor of Nursing Emerita
- [Crouch, Milton H](#) - Library Professor Emeritus
- [Currier, William Wesley](#) - Associate Professor of Agricultural Biochemistry Emeritus
- [Cutler, Stephen Joel](#) - Professor of Sociology Emeritus

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- [Danforth Jr., Elliot](#) - Professor of Medicine Emeritus
- [Daniels, Robert V.](#) - Professor of History Emeritus
- [Davis, Gerald Sundt](#) - Professor of Medicine Emeritus
- [Davis, John H.](#) - Professor of Surgery Emeritus
- [Davison, Jean M.](#) - Lyman-Roberts Professor of Classical Languages and Literature Emerita
- [Davison, William E.](#) - Professor of Honors College Emeritus
- [Deane, Robert S.](#) - Professor of Anesthesiology Emeritus
- [Deck, Edith F.](#) - Associate Professor of Professional Nursing Emerita
- [Dehayes, Donald Henry](#) - Professor of Natural Resources Emeritus
- [Demers, Louise Aline](#) - Associate Professor of Professional Nursing Emerita
- [Detenbeck, Robert W.](#) - Professor of Physics Emeritus
- [Deweese, Martha P.](#) - Associate Professor of Social Work Emerita
- [Dickerson, Mary J.](#) - Associate Professor of English Emerita
- [Dietrich, Peter Anthony](#) - Professor of Radiology Emeritus
- [Dietzel, Cleason S.](#) - Clinical Associate Professor of Psychology Emeritus
- [Donnelly, John R.](#) - Professor of Natural Resources Emeritus
- [Doolan, Barry Lee](#) - Associate Professor of Geology Emeritus
- [Doremus, Henry M.](#) - Associate Professor of Animal Pathology Emeritus
- [Douglas, Jeanne M.](#) - Senior Lecturer of Computer Science Emerita
- [Dowe, Thomas W.](#) - Professor of Animal Science Emeritus
- [Downer, Richard N.](#) - Associate Professor of Civil Engineering Emeritus
- [Drake, John C.](#) - Associate Professor of Geology 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

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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, Carolyn Margaret - Professor of Political Science Emerita
- Elliott, Norris A. - Extension Associate Professor Emeritus
- Emerson, Faith G. - Associate Professor of Professional Nursing Emerita
- Emery III, E. Stanley - Professor of Neurology Emeritus
- Erb, Clinton A. - Associate Professor of Education Emeritus
- Eschholz, Paul A - Professor of English Emeritus
- Etherton, Bud - Professor of Botany Emeritus
- Evering, Frederick C. - Professor of Electrical and Computer Engineering Emeritus
- Ezerman, Elizabeth Booth - Assistant Professor of Neurological Sciences Emerita

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- [Fairbank, Jonathan Thomas](#) - Professor of Radiology Emeritus
- [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, Alfred Paul](#) - Associate Professor of Sociology Emeritus
- [Fengler-Stephany, Christie](#) - Associate Professor of Art Emerita
- [Fenton, Ardith](#) - Instructor in Extension System Emerita
- [Ferguson, John Crawford](#) - Associate Professor of Family Medicine Emeritus
- [Fiekers, Jerome Francis](#) - Associate Professor of Neurological Sciences Emeritus
- [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
- [Fives-Taylor, Paula M.](#) - Professor of Microbiology and Molecular Genetics Emerita
- [Flanagan, Ted B.](#) - Professor of Chemistry and Mechanical Engineering Emeritus
- [Flanagan, Theodore R.](#) - Extension Associate Professor of Plant and Soil Science Emeritus
- [Flynn, Brian Stephen](#) - Research Professor of Family Medicine Emeritus
- [Fogarty, John P.](#) - Professor of Family Medicine Emeritus
- [Foote, Murray W.](#) - Associate Professor of Microbiology and Biochemistry Emeritus
- [Ford, John R.Deep](#) - Associate Professor of Agricultural Economics 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
- [Fox, Timothy Jon](#) - Research Associate of Education Emeritus
- [Francis, Gerald P.](#) - Professor of Mechanical Engineering Emeritus
- [Freedman, Steven](#) - Associate Professor of Anatomy and Neurobiology Emeritus
- [Frey, Lois](#) - Extension Associate Professor 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
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- [Fulwiler, Laura](#) - Senior Lecturer of Elementary Education Emerita
- [Fulwiler, Toby Edward](#) - Professor of English Emeritus

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- [Gade, Daniel W.](#) - Professor of Geography Emeritus
- [Gallagher, Connell Bernard](#) - Library Professor Emeritus
- [Gans, Joseph H.](#) - Professor of Pharmacology Emeritus
- [Gatti, James Francis](#) - Associate Professor of Business Administration Emeritus
- [Gay, Barbara T.](#) - Library Associate Professor Emerita
- [Geiger, William E.](#) - Professor of Chemistry Emeritus
- [Geller, Berta Merle](#) - Professor of Family Medicine Emerita
- [Gennari, F. John](#) - Professor of Medicine Emeritus
- [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
- [Gillmore, James Arthur](#) - Associate Professor of Animal Science Emeritus
- [Glesne, Corrine Elaine](#) - Professor of Education Emerita
- [Gobin, Robert J.](#) - Professor of Human Development Studies Emeritus
- [Goldhaber, Dale Eric](#) - Associate Professor of Education 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
- [Gordon, Lawrence Russell](#) - Professor of Psychology Emeritus
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- [Gould, Nathaniel](#) - Associate Professor of Orthopaedics and Rehabilitation Emeritus
- [Graham, William G.](#) - Professor of Medicine Emeritus
- [Grant, Barbara Winslow](#) - Associate Professor of Medicine Emerita
- [Greeley, Lynne](#) - Associate Professor of Theatre Emerita
- [Greig, Harold A.](#) - Assistant Professor of Human Development Emeritus
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	<div>Emeriti Faculty A to Z</div> <div>ABCDEFGHIJKLMNOPQRSTUVWXYZ</div> <ul style="list-style-type: none"><li><a href="#">Haeberle, Joe Roy</a> - Associate Professor of Molecular Physiology and Biophysics Emeritus</li><li><a href="#">Haines, Carleton R.</a> - Associate Professor of Surgery Emeritus</li><li><a href="#">Hall, Mary</a> - Associate Professor of English Emerita</li><li><a href="#">Hall, Robert</a> - James Marsh Professor of Philosophy Emeritus</li><li><a href="#">Halpern, William</a> - Professor of Physiology and Biophysics Emeritus</li><li><a href="#">Hamill, Robert Wallace</a> - Professor of Neurological Sciences Emeritus</li><li><a href="#">Hamilton, Ruth Irene</a> - Research Assistant Professor of Education Emerita</li><li><a href="#">Hamrell, Burt Benjamin</a> - Professor of Medicine Emeritus, Professor of Molecular Physiology and Biophysics Emeritus</li><li><a href="#">Hand, Samuel B.</a> - Professor of History Emeritus</li><li><a href="#">Handelsman, Morris</a> - Professor of Electrical Engineering Emeritus</li><li><a href="#">Hanley, Edward M.</a> - Professor of Professional Education and Curriculum Development Emeritus</li><li><a href="#">Hannah, Peter R.</a> - Professor of The Rubenstein School of Environment and Natural Resources Emeritus</li><li><a href="#">Hanson, John S.</a> - Professor of Medicine Emeritus</li><li><a href="#">Happ, George</a> - Professor of Biology Emeritus</li><li><a href="#">Hardin, Nicholas Jackson</a> - Professor of Pathology Emeritus</li><li><a href="#">Harris, Everett W.</a> - Associate Professor of Community Development and Applied Economics Emeritus</li><li><a href="#">Hart, Beth A</a> - Professor of Biochemistry Emerita</li><li><a href="#">Harvey, Lydia H</a> - Extension Assistant Professor Emerita</li><li><a href="#">Hasazi, Joseph E.</a> - Associate Professor of Psychology Emeritus</li><li><a href="#">Hasazi, Susan Elaine</a> - Professor of Education Emerita</li><li><a href="#">Haugh, Larry Douglas</a> - Professor of Statistics Emeritus</li><li><a href="#">Haviland, William A.</a> - Professor of Anthropology Emeritus</li><li><a href="#">Hayden, Nancy Joan</a> - Associate Professor of Civil and Environmental Engineering Emerita</li><li><a href="#">Heckman, Joyce E.</a> - Research Assistant Professor of Microbiology and Molecular Genetics Emerita</li><li><a href="#">Heinrich, Bernd</a> - Professor of Biology Emeritus</li><li><a href="#">Held, Jean M.</a> - Associate Professor of Physical Therapy Emerita</li><li><a href="#">Helzer, John Earl</a> - Professor of Psychiatry Emeritus</li><li><a href="#">Hemenway, David Reeves</a> - Professor of Civil and Environmental Engineering Emeritus</li><li><a href="#">Hendley, Edith D.</a> - Professor of Molecular Physiology and Biophysics Emerita</li><li><a href="#">Hermance, Clarke E</a> - Professor of Mechanical Engineering Emeritus</li><li><a href="#">Higgins, Daniel W</a> - Professor of Art Emeritus</li><li><a href="#">Hilberg, Raul</a> - Professor of Political Science Emeritus</li><li><a href="#">Hill, H. Charles</a> - Associate Professor of Dental Hygiene Emeritus</li><li><a href="#">Hirth, David Hammond</a> - Associate Professor of Wildlife and Fisheries Biology Emeritus</li><li><a href="#">Hochheiser, Louis I</a> - Professor of Family Practice Emeritus</li><li><a href="#">Hoffmann, James Paul</a> - Associate Professor of Plant Biology Emeritus</li></ul>			

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- [Honnold, Robert E.](#) - Extension Professor Emeritus
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- [Hopp, Susan M.](#) - Research Associate Professor of Agriculture Emerita
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- [Horton, Edward S.](#) - Professor of Medicine Emeritus
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- [Houston, Charles S.](#) - Professor of Epidemiology and Environmental Health Emeritus
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- [Howe, James Gregory](#) - Professor of Orthopedics and Rehabilitation Emeritus
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- [Howell, David C.](#) - Professor of Psychology Emeritus
- [Huddle, David Ross](#) - Professor of English Emeritus
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- [Irwin, Alan Emory](#) - Professor of Surgery Emeritus
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- [Janson, Richard H.](#) - Professor of Art Emeritus
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- [Johnstone, Donald B.](#) - Professor of Microbiology and Biochemistry Emeritus
- [Jokela, William E](#) - Associate Professor of Plant and Soil Science Emeritus
- [Jones, Leonidas M.](#) - Frederick and Fanny Corse Professor Emeritus
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- Kapp, Bruce S - Professor of Psychology Emeritus
- Karp, Robert - Associate Professor of Medicine 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
- Kessler, Marc - Associate Professor of Psychology 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
- Kraushaar, James Michael - Associate Professor of Business Administration Emeritus
- Krawitt, Edward L. - Professor of Medicine Emeritus
- Kristensen, Eva Adelheid - Associate Professor of Anesthesiology Emerita
- Kristiansson, Karin - Extension Professor Emerita
- Krusinski, Paul Anthony - Professor of Medicine Emeritus
- 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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<ul style="list-style-type: none"><li>Laber, Gene - Professor of Business Administration Emeritus</li><li>Laferriere, Mary E. - Lecturer in Professional Nursing Emerita</li><li>Laible, Jeffrey Paul - Professor of Engineering Emeritus</li><li>Laing, Frederick M. - Research Associate Professor of Botany Emeritus</li><li>Lakin, William Donald - Professor of Mathematics and Statistics Emeritus</li><li>Lamb, Dianne Hall - Extension Associate Professor Emerita</li><li>Lambert, Denis E. - Assistant Professor of Human Development Emeritus</li><li>Lambert, Lloyd - Professor of Physics Emeritus</li><li>Lamden, Merton P. - Professor of Biochemistry Emeritus</li><li>Lamoray, A. Rosemary - Lecturer of Dental Hygiene Emerita</li><li>Landesman, Richard H. - Associate Professor of Biology Emeritus</li><li>Larson, Karin - Lecturer of Mathematics and Statistics Emerita</li><li>Larson, Robert L. - Professor of Education Emeritus</li><li>Lawson, Robert Bernard - Professor of Psychology Emeritus</li><li>Leamy, William P. - Extension Associate Professor of Animal Science Emeritus</li><li>Leff, Herbert Leroy - Associate Professor of Psychology Emeritus</li><li>Leggett, Leslie - Professor of Human Development Studies Emerita</li><li>Leitenberg, Harold - Professor of Psychology Emeritus</li><li>Letteri, Charles A - Associate Professor of Education Emeritus</li><li>LeVitre, Richard Alton - Extension Associate Professor Emeritus</li><li>Levy, Arthur Maurice - Professor of Medicine Emeritus</li><li>Lewin, Carroll - Associate Professor of Anthropology Emerita</li><li>Lewis, Gordon F. - Professor of Sociology Emeritus</li><li>Lewis, John D. - Associate Professor of Obstetrics and Gynecology Emeritus</li><li>Lewis, William J. - Professor of Sociology Emeritus</li><li>Lidral, Frank Wayne - Professor of Music Emeritus</li><li>Liebs, Chester - Professor of History Emeritus</li><li>Lind, Aulis - Associate Professor of Geography Emeritus</li><li>Lindsay, John - Associate Professor of The Rubenstein School of Environment and Natural Resources Emeritus</li><li>Linton, Peter C. - Associate Professor of Surgery Emeritus</li><li>Lipke, William Charles - Professor of Art Emeritus</li><li>Lipson, Marjorie Youmans - Professor of Education Emerita, Professor of Literacy and Elementary Education Emerita</li><li>Little, George T. - Professor of Political Science Emeritus</li><li>Livak, Joyce K. - Associate Professor of Nutritional Sciences Emerita</li><li>Lochhead, John H. - Professor of Zoology Emeritus</li><li>Loewen, James William - Professor of Sociology Emeritus</li><li>Long, George Louis - Professor of Biochemistry Emeritus</li></ul>				

- [Long, Littleton](#) - Professor of English Emeritus
- [Low, Elizabeth Sloan](#) - Lecturer of Mathematics and Statistics Emeritus
- [Lubker, James](#) - Professor of Communication Sciences Emeritus
- [Lucey, Jerold Francis](#) - Professor of Pediatrics Emeritus
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- [Meyers, Herman Wilson](#) - Associate Professor of Integrated Professional Studies Emeritus
- [Milhous, Raymond Lee](#) - Professor of Orthopaedics and Rehabilitation Emeritus
- [Miller, Donald B.](#) - Associate Professor of Surgery Emeritus
- [Miller, Willard Marshall](#) - Assistant Professor of Philosophy 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
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- [Morency, David Charles](#) - Lecturer of Mathematics and Statistics Emeritus
- [Morris, Joyce Lorraine](#) - Research Assistant Professor of Education Emerita
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- [Mossman, Brooke Taylor](#) - Professor of Pathology Emerita
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- [Murad, Timothy](#) - Associate Professor of Spanish Emeritus
- [Murphy, William Michael](#) - Professor of Plant and Soil Science Emeritus
- [Murray, Barbara Lee](#) - Associate Professor of Nursing Emerita
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- [Nichols, Eric Charles](#) - Senior Lecturer of Integrated Professional Studies Emeritus
- [Nielsen, Gordon R.](#) - Extension Assistant Professor of Plant and Soil Science Emeritus
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- Olson, James Paul - Associate Professor of Civil and Environmental Engineering Emeritus
- 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
- Overfield, James Harris - Professor of History Emeritus
- Owen, Frank Charles - Professor of Studio Art Emeritus
- Owre, Edwin M - Professor of Art Emeritus

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- [Raper, Carlene Allen](#) - Research Associate Professor of Microbiology and Molecular Genetics Emerita
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- [Ratkovits, Bela L.](#) - Professor of Radiology Emeritus
- [Razza, Mary Lou](#) - Research Associate Professor of Education Emeritus
- [Read, Thomas Lawrence](#) - Professor of Music Emeritus
- [Reagin, Dolores M.](#) - Assistant Professor of Organizational, Counseling, and Foundational Studies Emerita
- [Reardon, Mildred Ann](#) - Professor of Medicine Emerita
- [Reed, J. Patrick](#) - Associate Professor of Medical Laboratory and Radiation Sciences Emeritus
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- [Rippa, Alexander S.](#) - Professor of Organizational, Counseling, and Foundational Studies Emeritus
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- [Rosen, James C.](#) - Professor of Psychology and Psychiatry Emeritus
- [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
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<ul style="list-style-type: none"><li>Sachs, Thomas D. - Associate Professor of Physics Emeritus</li><li>Saia, John Jerome - Associate Professor of Family Medicine Emeritus</li><li>Sampson, Samuel F. - Professor of Sociology Emeritus</li><li>Sande, Diane R - Lecturer of Nursing Emerita</li><li>Sandoval, Dolores - Associate Professor of Education Emerita</li><li>Sargent, Frederic O. - Professor of Agricultural and Resource Economics Emeritus</li><li>Savitt, Ronald - Professor of Business Administration Emeritus</li><li>Sawyer, Janet R. - Professor of Professional Nursing Emerita</li><li>Scarfone, Leonard M. - Professor of Physics Emeritus</li><li>Schaeffer, Warren I - Professor of Microbiology and Molecular Genetics Emeritus</li><li>Schenk, William M - Professor of Theatre Emeritus</li><li>Schlunk, Robin R. - Professor of Classics Emerita</li><li>Schmidt, Frederick Eberhard - Associate Professor of Community Development and Applied Economics Emeritus</li><li>Schmokel, Wolfe W. - Professor of History Emeritus</li><li>Schneider, Karen Annette - Extension Associate Professor Emerita</li><li>Schoonmaker, N. James - Professor of Mathematics Emeritus</li><li>Schultz, Harold S. - Professor of History Emeritus</li><li>Schultz, Herbert L - Associate Professor of Music Emeritus</li><li>Schumacher, George A. - Professor of Neurology Emeritus</li><li>Schwalb, Roberta B. - Associate Professor of Professional Nursing Emerita</li><li>Scrase, David Anthony - Professor of German Emeritus</li><li>Secker-Walker, Roger - Professor of Medicine Emeritus</li><li>Sekerak, Robert John - Library Associate Professor Emeritus</li><li>Senecal, Andre Joseph - Professor of French Emeritus</li><li>Senghas, Dorothy C. - Library Assistant Professor in Dana Medical Library Emerita</li><li>Severance, Malcolm F. - Professor of Business Administration Emeritus</li><li>Seybolt, Peter Jordan - Professor Emeritus of Asian Languages &amp; Literatures</li><li>Shackford, Steven Robert - Professor of Surgery Emeritus</li><li>Shane Jr., John Buckley - Lecturer in Natural Resources Emeritus</li><li>Shapiro, Jeryl Robert - Associate Professor of Anesthesiology Emeritus</li><li>Shea, William I. - Associate Professor of Surgery Emeritus</li><li>Shepherd, Allen G. - Professor of English Emeritus</li><li>Shinozaki, Tamotsu - Professor of Anesthesiology Emeritus</li><li>Shirland, Larry Elwyn - Professor of Business Administration Emeritus</li><li>Silverstein, Gerald C. - Lecturer of Microbiology and Molecular Genetics Emeritus</li><li>Simmons, K. Rogers - Associate Professor of Animal Science Emeritus</li><li>Simon, Morris L. - Associate Professor of Political Science Emeritus</li><li>Sims, Ethan Allen - Professor of Medicine Emeritus</li></ul>				

- [Sinclair, Robert O.](#) - Professor of Agricultural and Resource Economics Emeritus
- [Sjogren, Robert](#) - Associate Professor of Microbiology and Molecular Genetics Emeritus
- [Smail, David Frederick](#) - Associate Professor of Anesthesiology Emeritus
- [Smith, Albert M.](#) - Professor of Animal and Food Sciences Emeritus
- [Smith, David Young](#) - Professor of Physics Emeritus
- [Snow, William Charles](#) - Extension Associate Professor Emeritus
- [Sobel, Susan S.](#) - Associate Professor of Psychiatry Emerita
- [Sofferman, Robert Alan](#) - Professor of Surgery Emeritus
- [Solomon, Laura Jean](#) - Research Professor of Family Medicine and Psychology Emerita
- [Soule, Phyllis M.](#) - Assistant Professor of Nutritional Sciences Emerita
- [Sowan, Nancy A.](#) - Associate Professor of Nursing Emerita
- [Spinner Jr., Thomas J.](#) - Professor of History Emeritus
- [Sproul, Marga Susan](#) - Associate Professor of Family Medicine Emerita
- [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 Political Science Emeritus
- [Steele, Doris H.](#) - Extension Professor Emerita
- [Steen, M. Dale](#) - Extension Associate Professor Emerita
- [Steffenhagen, Ronald A.](#) - Professor of Sociology Emeritus
- [Steffens, Henry J.](#) - Professor of History Emeritus
- [Stephany, William A.](#) - Professor of English 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
- [Stokes, Ian Alexander](#) - Research Professor of Orthopaedics and Rehabilitation Emeritus
- [Stoler, Mark Alan](#) - Professor of History Emeritus
- [Stout, Neil R.](#) - Professor of History Emeritus
- [Strassburg, Kathleen](#) - Extension Professor of Textiles, Merchandising and Consumer Studies Emerita
- [Strauss, Michael John](#) - Professor of Chemistry Emeritus
- [Stryker III, Barent W.](#) - Extension Professor Emeritus
- [Sullivan, Anne Marie](#) - Associate Professor of Biomedical Technologies Emerita
- [Sullivan, Mary Jackman](#) - Lecturer of Education Emerita
- [Sumner, J Williams](#) - Extension Assistant Professor Emeritus
- [Sweterlitsch, Richard Carl](#) - Associate Professor of English Emeritus
- [Szilva, Jean](#) - Assistant Professor of Anatomy and Neurobiology Emerita

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- [Tabakin, Burton S.](#) - Professor of Medicine Emeritus
- [Tampas, John Peter](#) - Professor of Radiology 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, Lee J](#) - Professor of English Emeritus
- [Thompson, Noah C.](#) - Extension Professor Emeritus
- [Tindle, Barbara Heywood](#) -
- [Tisdale, William A.](#) - Professor of Medicine Emeritus
- [Todd, John H.](#) - Research Professor of Natural Resources 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
- [Trent, Elizabeth Scannell](#) - Extension Associate Professor for Community Development and Applied Economics Emerita
- [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
- [Twardy, Edward Stuart](#) - Associate Professor of Public Administration Emeritus

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- [Ugalde, Louis Maldonado](#) - Professor of Romance Languages Emeritus
- [Ullrich, Robert C.](#) - Professor of Botany and Agricultural Biochemistry Emeritus
- [Uphold, Ruth Esther](#) - Professor of Surgery Emerita
- [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
- [Von Turkovich, Branimir Francis](#) - Professor of Mathematics and Statistics Emeritus, Professor of Mechanical Engineering Emeritus

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<ul style="list-style-type: none"><li>Waller, Julian A. - Professor of Medicine Emerita</li><li>Wallman, Lester J. - Professor of Neurosurgery Emeritus</li><li>Wang, Jue-Fei - Research Professor of Educational Leadership and Policy Studies Emeritus</li><li>Warhol-Down, Robyn R. - Professor of English Emerita</li><li>Waterman, G. Scott - Professor of Psychiatry Emeritus</li><li>Watson, Frank - Lecturer in Education Emeritus</li><li>Watzin, Mary Catherine - Professor of Natural Resources Emerita</li><li>Way, Winston A. - Extension Professor of Plant and Soil Science Emeritus</li><li>Weaver, Lelon Jr. A. - Associate Professor of Psychology Emeritus</li><li>Webb, George - Associate Professor of Molecular Physiology and Biophysics Emeritus</li><li>Webster, Fred C. - Professor of Agricultural and Resource Economics Emeritus</li><li>Webster, Selina M. - Professor of Clothing, Textiles, and Design Emerita</li><li>Weed, Lawrence L. - Professor of Medicine Emeritus</li><li>Weiger, John G. - Professor of Romance Languages Emeritus</li><li>Weiner, Sheldon - Professor of Psychiatry Emeritus</li><li>Weinrich, Francis A. - Assistant Professor of Music Emeritus</li><li>Welch, James - Professor of Animal and Food Sciences Emeritus</li><li>Welch, Lorraine M - Associate Professor of Nursing Emerita</li><li>Weller, David L - Professor of Botany and Agricultural Biochemistry Emeritus</li><li>Wells, Jospeh - Professor of Anatomy and Neurobiology Emeritus</li><li>Welsh, George William - Associate Professor of Medicine Emeritus</li><li>Weltin, Eugen E. - Associate Professor of Chemistry Emeritus</li><li>Wertheimer, Alan Philip - Professor of Political Science Emeritus</li><li>Wesseling, Pieter - Associate Professor of Romance Languages Emeritus</li><li>Wessinger, Nancy B - Associate Professor of Education Emerita</li><li>Whaples, Donald R. - Extension Professor Emeritus</li><li>Whatley, Janet Elinor - Professor of French Emerita</li><li>White, Robert E. - Extension Assistant Professor Emeritus</li><li>White, William N. - Professor of Chemistry Emeritus</li><li>Whitebook, Susan M. - Assistant Professor of Romance Languages Emerita</li><li>Whitmore Jr., Roy A. - Professor of The Rubenstein School of Environment and Natural Resources Emeritus</li><li>Whittlesey, Margaret B. - Associate Professor of Special Education Emerita</li><li>Wiggans, Samuel C. - Professor of Plant and Soil Science Emeritus</li><li>Wigness, Robert C. - Professor of Music Emeritus</li><li>Williams, Blair - Professor of Human Nutrition and Foods Emeritus</li><li>Williams, Wayne Weston - Professor of Education Emeritus</li><li>Willmuth, Lewis R. - Associate Professor of Psychiatry Emeritus</li><li>Wilson, Mary S. - Professor of Communication Sciences Emerita</li></ul>				

- [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
- [Worden, John Kimball](#) - Research Professor of Family Medicine Emeritus
- [Worley, Ian Almer](#) - Professor Emeritus in the Rubenstein School of Environment and Natural Resources
- [Wright, Robert Kingman](#) - Professor of Mathematics Emeritus

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- [Young, William J.](#) - Professor of Anatomy and Neurobiology Emeritus
- [Yuan, Susan Jane](#) - Research Assistant Professor of Education Emerita

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- [Zarate, Armando](#) - Professor of Spanish Emeritus
- [Zimny, Nancy Joyce](#) - Associate Professor of Physical Therapy Emerita
- [Zucker, Barbara M](#) - Professor of Art Emerita

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The Board of Trustees  
The University of Vermont

- **Peter Shumlin**, Governor, *ex officio*
- **E. Thomas Sullivan**, President, *ex officio*

## Term Ending March 2013

- **Harry L. Chen** Mendon, Vermont
- **Jeffrey L. Davis** Underhill Center, Vermont
- **Kyle F. DeVivo** Kensington, Connecticut
- **Donna G. Sweaney** Windsor, Vermont
- **Jeanette White** Putney, Vermont

## Term Ending March 2014

- **Samuel E. Bain** Wellesley, Massachusetts
- **Robert F. Cioffi** New Canaan, Connecticut
- **William F. Ruprecht** New York, New York

## Term Ending March 2015

- **Carolyn W. Branagan** Georgia, Vermont
- **Christopher A. Bray** New Haven, Vermont
- **David E. Potter** North Clarendon, Vermont
- **Mark S. Young** Orwell, Vermont

## Term Ending March 2016

- **David A. Daigle** Greenwich, Connecticut
- **Deborah H. McAneny** Southborough, Massachusetts
- **Dale A. Rocheleau** South Burlington, Vermont

## Term Ending March 2017

- **Bill Botzow** Bennington, Vermont
- **Frank J. Cioffi** St.Albans, Vermont
- **Joan G. Lenes** Shelburne, Vermont
- **Keisha K. Ram** Burlington, Vermont

## Term Ending March 2018

- **Robert P. Brennan, Jr.** Chappaqua, New York
- **Richard Gamelli** Burr Ridge, Illinois

- **Dennis J. Mahoney** West Chester, Pennsylvania
- **Lisa M. Ventriss** South Burlington, Vermont

See also, *[the Board of Trustees Web site](#)* .

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### Administration The University of Vermont

- Sullivan, E. Thomas, J.D. President (*effective July 15,2012*)
  - Knodell, Jane E., Ph.D. Senior Vice President & Provost
  - Bazluke, Francine T., J.D. Vice President for Legal Affairs & General Counsel
  - Grasso, Domenico, Ph.D. Vice President for Research & Dean of Graduate Studies
  - Bundy III, O. Richard M.B.A. CEO & President, The UVM Foundation
  - Cate, Richard H. M.P.A. Vice President for Finance & Administration; Treasurer
  - Gustafson, Thomas J., Ed.D. Vice President for University Relations & Campus Life
  - Lucier, Christopher H. M.P.A. Vice President for Enrollment Management
- 
- Belliveau, Cynthia M.B.A. Dean, Continuing Education
  - Cole, Bernard F., Ph.D. Interim Dean, College of Engineering and Mathematical Sciences
  - Frederick C. Morin III, M.D. Dean, College of Medicine
  - Lantagne, Douglas O., Ph.D. Dean, Extension System
  - Saule, Mara M.L.S. Dean, Libraries & Learning Resources
  - Goldberg, Joel, Ph.D. Interim Dean, College of Arts and Sciences
  - Miller, Fayneese S., Ph.D. Dean, College of Education and Social Services
  - Prelock, Patricia A., Ph.D. Dean, College of Nursing and Health Sciences
  - Rizvi, Abu, Ph.D. Dean, Honors College
  - Sharma, Sanjay, Ph.D. Dean, School of Business Administration
  - Vogelmann, Thomas C., Ph.D. Dean, College of Agriculture and Life Sciences
  - Watzin, Mary C., Ph.D. Dean, Rubenstein School of the Environment and Natural Resources

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## 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. Dr. Kenneth Ivan Golden is the Williams Professor of Mathematics.
- 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. Dr. 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. Dr. William E. Geiger, Jr. 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. Dr. Charles W. Kilpatrick is the Howard Professor.
- The **Flint Professorship of Mathematics, Natural or Technic Science** was established in 1895 by a bequest from Edwin Flint. Dr. Robert G. Jenkins is the the Flint Professor of Mathematics, Natural or Technic Science.
- 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. Dr. William A. Gibson is the Converse Professor.
- The **Thayer Professorship in 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. Dr. 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. Dr. Frank MacLlewlyn Bryan Sr. 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. Dr. Judith L. Van Houten is the Perkins Professor.
- The **Elliot W. Shipman Professorship of Ophthalmology** was established in 1934 by a bequest from Dr. Elliot W. Shipman, M.D., 1885.
- 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. Dr. Robert H. Rodgers 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. Dr. Lokangaka Losambe is the Corse Professor of English Language and Literature.
- The **Lawrence Forensic Professorship of Speech** was established in 1965 by Edwin W. Lawrence, lawyer and financier of Rutland, Vermont, A.B., 1901. Dr. Alfred C. Snider 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. Pramodita Sharma is the Sanders Professor.
- 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. Dr. James M. Sinkula 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.
- The **Ernest Hiram Buttles Chair in Pathology** was established in 1984 to honor Ernest Hiram Buttles, Professor of Pathology and Bacteriology, 1921 to 1946. John Henry Lunde, M.D., is the Buttles Chair in Pathology.
- The **McClure Professorship in Musculoskeletal Research** was established in 1988 by J. Warren and Lois H. McClure. Dr. Bruce David Beynon is the McClure Professor.
- The **E. L. Amidon Chair in the Department of Medicine** was established in 1989 to honor Dr. E.L. Amidon, a revered teacher and former chair of the Department of Medicine. Polly E. Parsons, M.D., is the Amidon Chair.
- The **Nicole Maria Stata Professorship in Management** was established in 1994 by Ray and Maria Stata in honor of their daughter Nicole '91.
- The **Roger H. Allbee '31 Professorship in Surgery** was created in 1992 by Roger H. Allbee, M.D., '31, to provide support for a research fellow in the Department of Surgery.
- The **Gund Chair in Liberal Arts**, established in 1995 by Gordon and Lulie Gund, provides the College of Arts and Sciences with the opportunity to attract a leading teacher-scholar to one of the liberal arts disciplines. Dr. Robert V. Bartlett is the Gund Chair.
- The **Harry W. Wallace Professorship in Neonatology** was established in the Department of Pediatrics 1995 by the family of Harry W. Wallace to represent Mr. Wallace's philanthropic interests. Roger F. Soll, M.D., is the Wallace Professor.
- 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. Dr. X. Sean Wang is the Dorothean Chair.
- 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. Benjamin Littenberg, M.D., is the Tufo Chair in General Internal Medicine.
- 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. David N. Krag, M.D., is the S.D. Ireland Family Professor.
- The **Robert F. and Genevieve B. Patrick Chair in Nephrology** was created in 2000 through a generous bequest from the estate of Genevieve Patrick. The endowment is intended to support the study or specialty of nephrology. Richard Solomon, M.D., is the Patrick Chair in Nephrology.
- The **Robert F. and Genevieve B. Patrick Endowed Chair** was established in 2000 from the estate of Genevieve Patrick. Dr. William Breck Bowden is the Patrick Chair in Watershed Science and Planning.
- The **John Van Sicklen Maeck, M.D., Chair in Obstetrics and Gynecology** was established in 2000. The endowment supports the Chair of the Department of Obstetrics, Gynecology and Reproductive Sciences, who also holds the faculty position. Mark Phillippe, M.D., is the John Van Sicklen Maeck, M.D., Chair in Obstetrics and Gynecology.
- The **Gund Professorship of Ecological Economics** was established in 2001 by Gordon and Lulie Gund and their sons, Grant and Zachary.
- The **Stanley S. Fieber '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.
- The **Duncan W. Persons, M.D., '34 Green & Gold Professorship in Ophthalmology** was established in 2003. Bryan Y. Kim, M.D., is the Persons Professor.
- The **Endowed Professorship in Radiation Therapy** was established in the College of Nursing and Health Sciences in 2003 by an anonymous donor. Dr. M. Ahmad Chaudhry is the Endowed Professor in Radiation Therapy.
- The **Irwin H. Krakoff, M.D. Green & Gold Professorship** in the Vermont Cancer Center was established in 2003 in honor of Dr. Krakoff, first director of the Vermont Cancer Center. It supports outstanding senior or promising junior faculty members in the VCC in cancer research. Claire F. Verschraegen, M.D. is the Irwin H. Krakoff, M.D. Green and Gold Professor in the Vermont Cancer

Center.

- The **Albert G. Mackay '32 and H. Gordon Page '45 Professorship in Surgical Education** was established in 2005 to support the academic mission of the Department of Surgery. James Charles Hebert, M.D., is the Mackay-Page Professor.
- The **Keller Family Professorships in Finance** were established in 2004 by Judith and James Keller '72.
- The **Heinz and Rowena Ansbacher Green and Gold Professorship in Psychology** was established by Max, Ben, Ted, and Charles Ansbacher in October 2004 to honor the lifetime achievement of their father and mother, Heinz and Rowena, in the field of Psychology. Dr. Rex Forehand is the Ansbacher Green and Gold Professor in Psychology.
- The **Cordell E. Gross Green and Gold Professorship in Neurosurgery** was established in 2005. Bruce I. Tranmer, M.D., is the Gross Green & Gold Professor in Neurosurgery.
- The **Mary Kay Davignon Green and Gold Professorship** was established in 2005 to support the strategic priorities of the Dean of Medicine. Christopher Filippi, M.D., Ph.D., is the Davignon Green & Gold Professor.
- The **John P. and Kathryn H. Tampas '54 Green & Gold Professorship in Radiology** was established in 2005 to support education and research in the Department of Radiology. Christopher Gene Filippi, M.D., is the Tampas, M.D., '54 Green & Gold Professor in Radiology.
- The **Samuel B. and Michelle D. Labow Green & Gold Professorship of Colon & Rectal Surgery** was established in 2005 to support colon & rectal surgeons in the Department of Surgery. Neil H. Hyman, M.D., is the Labow Green & Gold Professor of Colon & Rectal Surgery.
- The **A. Bradley Soule and John Tampas Green & Gold Professorship of Radiology** was established in 2006 to support the Department of Radiology's academic mission. Jeffrey S. Klein, M.D., is the Soule-Tampas Green & Gold Professor of Radiology.
- The **R. James McKay, M.D., Green and Gold Professor in Pediatrics** was established in 2006 to support the research and educational activities in the Department of Pediatrics. Marshall L. Land, M.D., is the McKay Green and Gold Professor.
- The **Richard and Pamela Ader Green and Gold Professor** was established in 2006 by Richard H. Ader '63 to be awarded to a faculty member in the College of Arts & Sciences or School of Business Administration. Dr. William E. Mierse is the Ader Green and Gold Professor.
- The **Raul Hilberg Distinguished Professorship of Holocaust Studies** was established in 2006 by Leonard '51 and Carolyn Miller in the College of Arts & Sciences Holocaust Studies Program. Dr. Frank Nicosia is the Raul Hilberg Distinguished Professor of Holocaust Studies.
- The **Leonard and Carolyn Miller Distinguished Professor of Holocaust Studies** was established in 2006 by Leonard '51 and Carolyn Miller in the College of Arts & Sciences Holocaust Studies Program. Prof. Alan E. Steinweis is the Miller Distinguished Professor of Holocaust Studies.
- The **Richard A. Dennis University Professorship** was established in 2006 by family and friends of Richard A. Dennis '57 as a university-wide professorship, assigned at the discretion of the Provost, to recruit or retain a faculty member embodying the ideals to which Dick Dennis dedicated his life. Mr. Major Jackson is the Richard A. Dennis University Professor.
- The **Jerold F. Lucey, M.D., Chair in Neonatal Medicine** was established in 2007 by Vermont Oxford Network, Inc. and other donors to advance the care of newborn infants and their families through research, education, and quality improvement in the Department of Pediatrics. Jeffrey Horbar, M.D., is the Lucey Chair in Neonatal Medicine.
- The **Thomas Achenbach Chair in Developmental Psychopathology** was established in 2007 by the Research Center for Children, Youth and Families, Inc. to support research and education in the Department of Psychology. James J. Hudziak, M.D., is the Achenbach Chair in Developmental Psychopathology.
- The **Robert L. Bickford, Jr. Professorship** was established in the College of Agriculture & Life Sciences in 2007 by Robert L. Bickford, Jr. '43 and Oletha T. Bickford '41 to advance the teaching and research of a distinguished professor whose research efforts are at the intersection of nutrition, biochemistry and human health. Dr. Rachel K. Johnson is the Robert L. Bickford, Jr. Green & Gold Professor.

In July 2008, David and Roxanne Breazzano established the **Breazzano Family Green & Gold Professorship** to support an endowed faculty position in the College of Arts & Sciences. James Vigoreaux is the Breazzano Family Green & Gold Professor.

- The **Robert B. Lawson Green & Gold Professorship** in Psychology was established in 2010 by the Segal & Davis Family Foundation of Charlestown, W.V., in honor of Dr. Robert B. Lawson, who retired in May of 2010 from UVM's Department of Psychology. The professorship was founded to support teaching, service and research in the Department of Psychology. Dr. Mark Bouton has been named as the first Lawson Green & Gold Professor in Psychology.

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### Program Requirements

Please consult the Graduate College Dean's Office or the Department for the program requirements.