

School of Science and Engineering > Biology

Phone: (845) 257-3770

Location: Coykendall Science Building Room 106

Web address: www.newpaltz.edu/biology

There are two tracks within the liberal arts biology curriculum:

(1) Organismal/Environmental Biology and (2) Cell/Molecular Biology.

In addition, we offer the core Biology courses required for students interested in pursuing a Pre-Health/Pre-Medical program of study. We also have two accelerated medical programs with other institutions: 1) the seven-year, dual degree BS/Doctor of Optometry program with the SUNY College of Optometry, and 2) the seven-year, dual degree BS/Doctor of Osteopathic Medicine program with the New York College of Osteopathic Medicine. Students may also minor in Biology. For graduate students, we offer advanced study leading to the MA in Biology or the MAT in Biology.

Biology Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plan
- General Education Courses
- Faculty
- Program Changes

School of Science and Engineering > Biology > Major

Major in:

- » Organismal/Environmental Biology
- » Cell/Molecular Biology

Majors in Organismal/Environmental Biology - 62-69 credits

Required biology core courses 12 credits

BIO201 General Biology I (4)*
BIO202 General Biology II (4)*
BIO320 Genetics (4)

Required track core courses 8-9 credits

BIO340 Ecology (4) **AND**
BIO307 Comparative Vertebrate Anatomy (5) **OR**

BIO305 Plant Morphology (4) **OR**
BIO417 Animal Physiology (4) **OR**
BIO425 Plant Physiology (4)

Track elective with lab (choose 1 course) 4-5 credits

BIO307 Comparative Vertebrate Anatomy (5) **OR**
BIO305 Plant Morphology (4) **OR**
BIO417 Animal Physiology (4) **OR**
BIO425 Plant Physiology (4)

Track elective without lab (choose 1 course) 3 credits

BIO418 Animal Behavior (3) **OR**
BIO412 Evolutionary Theory (3)

Three upper-division Biology elective 9-13 credits

Choose three upper-division Biology courses, one of which must be at the 400-level or above.

Required cognate courses 26-27 credits

CHM201 General Chemistry I (3)*
CHM211 General Chemistry I Lab (1)*
CHM202 General Chemistry II (3)*
CHM212 General Chemistry II Lab (1)*
CHM318 Organic Chemistry I (3)**
CHM306 Organic Chemistry I Lab (1)**
MTH241 Introduction to Statistics (3)

One of the following:

MTH251 Calculus I (4) **OR**
MTH245 Basic Calculus (3)

One of the following pairs of lecture/lab courses:

PHY221 Fundamental Physics I (3) **AND** PHY231 Fundamental Physics I Lab (1) **OR**
PHY201 General Physics I (3) **AND** PHY211 General Physics Lab (1)

One of the following:

CHM319 Organic Chemistry II (3)* **AND** CHM309 Organic Chemistry II Lab (1)* **OR**
BIO318 Biological Chemistry (3)* [BIO318 cannot be used as an upper-division Biology elective if taken to satisfy this cognate requirement.]

**Should be completed in freshman year, in the sequence indicated.*

***Should be completed prior to senior year.*

NOTE: Organic Chemistry II with lab as well as a second semester of Physics with lab and a second semester of Calculus are generally required for students planning to apply to graduate, medical, dental, optometry or veterinary schools. There may be additional courses required for admission to graduate or profession school. For graduate study in animal behavior or behavioral ecology, **BOTH** BIO418 Animal Behavior **AND** BIO412 Evolutionary Theory are recommended. In all cases, course selection should be made under advisement from a member of the department faculty.

Cell/Molecular Biology - 58-63 credits

Required biology courses.....12 credits

BIO201 General Biology I (4)*
BIO202 General Biology II (4)*
BIO320 Genetics (4)

Required track core courses 8 credits

BIO308 Basic Molecular Biology (4)
BIO309 Basic Cell Biology (4)

Track elective with lab (choose 1 course) 4 credits

BIO331 Developmental Biology (4) OR
BIO350 General Microbiology (4) OR
BIO311 Developmental Plant Anatomy (4)

Track elective without lab (choose 1 course) .. 3 credits

BIO318 Biological Chemistry (3) OR
BIO412 Evolutionary Theory (3)

Three upper-division Biology electives 9-13 credits

Choose three upper-division Biology courses, one of which must be at the 400-level or above.

Required cognate courses 26-27 credits

CHE201 General Chemistry I (4)*
CHE211 General Chemistry I Lab (1)*
CHE202 General Chemistry II (4)*
CHE212 General Chemistry II Lab (1)*
CHE318 Organic Chemistry I (3)**
CHE306 Organic Chemistry I Lab (1)**
MAT241 Introduction to Statistics (3)

One of the following:

MAT245 Basic Calculus (3) OR
MAT251 Calculus I (4)

One of the following pairs of courses:

PHY221 Fundamental Physics I (3) and PHY 231 Fundamental Physics I Lab (1), OR
PHY201 General Physics I (3) and PHY211 General Physics I Lab (1)

One of the following:

CHE319 Organic Chemistry II (3)* and CHM309 Organic Chemistry II Lab (1)*, OR
BIO318 Biological Chemistry (3)*
[BIO318 cannot be used as an upper-division Biology elective if taken to satisfy this cognate requirement.]

* *Should be completed in freshman year, in the sequence indicated.*

** *Should be completed prior to senior year.*

NOTE: Organic Chemistry II with lab as well as a second semester of Physics with lab and a second semester of Calculus are generally required for students planning to apply to graduate, medical, dental, optometry or veterinary schools. There may be additional courses required for admission to graduate or professional school. For graduate study in cell or molecular biology, a full year of biochemistry is recommended. In all cases, course selection should be made under advisement from a member of the department faculty.

School of Science and Engineering > Biology > Minor

Minor in Biology - Minimum of 18 credits

Required courses..... 8 credits

BIO201 General Biology I (4)*

BIO202 General Biology II (4)*

A minimum of 10 upper-division credits chosen by advisement.....10 credits

The college also offers an Interdisciplinary minor in Environmental Science as well as the Evolutionary Studies Minor.

Biology > Course Descriptions

BIO111 Introduction to Animal Life (3)

A survey of the animal phyla including the study of structure, metamorphosis, adaptations, and behavior. The development of the students' sensitivity and awareness of what can be learned from careful observations in natural field situations will be emphasized. Designed for non-science majors; does not count toward biology major.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Biology

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO112 Biology Today (3)

Designed to introduce students to selected aspects of biology science. By augmenting their understanding of biological concepts, students develop a deeper appreciation of the natural biological phenomena they are in contact with on a daily basis. In addition, students gain the working background necessary to understand contemporary biological issues such as environmental quality (population, pollution, global climate change), the human genome project, genetic engineering, and discoveries in medicine. When individuals become more biologically literate, they are also better equipped to make informed decisions that directly and indirectly impact their own lives.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Biology

Projected Offerings

Spring 2010, Spring 2011

BIO115 Intro To Plant Life (3)

Introduction to the form and function of plants. The student should acquire an appreciation for plants as living organisms in a biological world, and their economic importance to human beings. Designed for non-science majors; does not count toward biology major.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Biology

Projected Offerings

Fall 2009, Spring 2010, Spring 2011

BIO119 Inheritance (3)

Students will learn and apply basic principles of Mendelian inheritance and DNA manipulation. Students will also examine current genetic technology advances as applied to genetic diseases.

Attributes

- Liberal Arts
- GE3: NSCI
- Systematic Inquiry

Prerequisites

Math Placement Level 4 or (Undergraduate level MAT152)

BIO130 Cancer Biology (3)

Students will explore the biological mechanisms that underlie the development of cancer and the mechanisms by which various cancer treatments work.

Attributes

- GE3: NSCI
- Systematic Inquiry

BIO135 Evolution for Everyone (3)

An introduction to modern evolutionary theory and its applications to a wide range of topics, including epidemiology, forensic medicine, conservation, population biology, social behavior, altruism, sex/mating strategies, religion, and many other aspects of human biology.

Attributes

- GE3: NSCI
- Systematic Inquiry

Projected Offerings

Fall 2009, Fall 2010

BIO140 Modern Biotechnology (3)

Students will explore how modern biotechnology impacts our everyday lives with a topical survey of applications that may include stem cells, biofuels, genetically modified organism (GMO's) and forensics. Students will also learn about the underlying biological principles and molecular techniques that are the basis of modern biotechnology.

Attributes

- GE3: NSCI
- Systematic Inquiry

Prerequisites

Math Placement Level 3

Projected Offerings

Fall 2009, Fall 2010

BIO150 Insects and Human Society (3)

Students will be introduced to the most abundant, diverse, and widespread class of animals on Earth and investigate the critical interactions between insects and humans that influence human behaviors and activities.

Attributes

- GE3: NSCI
- Systematic Inquiry

BIO170 Human Biology (3)

A survey in several phases of human biology. Normal life processes will first be explored followed by the alteration and relationship of alterations to life styles. Subject matter will include human physiology, genetics, evolution and behavior. Designed for non-science majors; does not count toward biology major.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Biology

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO193 Biology Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Biology

BIO199 Pre-Osteo Seminar (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO201 General Biology I (4)

An introduction to modern biology: molecular and cellular organization of living systems, energy transformations and metabolism, the principles of classical and molecular genetics, and the basic embryological changes during the development of an organism.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Fall 2010

BIO202 General Biology II (4)

An introduction to modern biology: diversity of life forms, the process of evolution, and the interactions of organisms with their environment and with each other.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/lab
- GE2A: PHBS w/lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Spring 2010

BIO210 Introductory Biology (4)

A one-semester lecture/laboratory general biology course covering most topics discussed in General Biology I and II and serving the same prerequisite role for electives within the Biology Department. Introductory Biology is designed for part-time and transfer students contemplating a major in biology

and for students in other disciplines where a foundation in basic biological principles would be helpful. For prospective biology majors to enroll, they must be part-time or transfer students.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/lab
- GE2A: PHBS w/lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Spring 2010

BIO293 Biology Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

BIO295 Indep Study Biology (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

BIO296 Departmental Elective

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

BIO299 Pre-Osteopathic Seminar (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO300 Evolutionary Std Sem (see EVO301) (3)

See EVO301.

Attributes

- Liberal Arts
- Writing Intensive

BIO301 Field Biology Fall (3)

Diversity in the plant and animal kingdom; sound scientific methods of observation; interrelationships of organisms to each other and to their environment. Importance of the flora and fauna in our economic and cultural life and the need for conservation practices. Field trips are devoted to the study of several ecological units during fall. Identifications of the common plants and animals and the ability to interpret the signs, sounds, and behavior patterns of organisms.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15201) or (BIO210 or 15210)

Projected Offerings

Fall 2009, Fall 2010

BIO302 Field Biology Spring (3)

Same general pattern as BIO301, but concerns winter and spring phenomena in nature.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010

BIO303 Field Biology Summer (3)

Same general pattern as BIO301, BIO302, but concerns organisms available only during the summer as well as the summer stages in development of plants and animals found during other seasons.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

BIO305 Plant Morphology (4)

Comparative study of life histories, morphology, and phylogenetic relationships of the major plant groups.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Fall 2010

BIO307 Comparative Vertebrate Anatomy (5)

Gross anatomy and functions of systems of representative vertebrates. Skeletal, muscular, circulatory, digestive, respiratory, excretory, reproductive, nerve, and endocrine systems. Dissection is required.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Fall 2009, Fall 2010

BIO308 Basic Molecular Biology (4)

Background, theory and techniques of molecular biology with the analysis of published research. Class discussions, independent research, written and oral presentations required.

Attributes

- Liberal Arts

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) and (CHE201 or 22201) and (CHE202 or 22202)

Projected Offerings

Fall 2009, Fall 2010

BIO309 Basic Cell Biology (4)

A detailed examination of the events that occur within living cells. Particular attention is paid to current experimental techniques and analysis of the recent literature.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) and (CHE201 or 22201) and (CHE202 or 22202)

Projected Offerings

Spring 2010, Spring 2011

BIO311 Developmental Plant Anatomy (4)

Developmental phenomena and anatomical characteristics of plant cells, tissues, and organs.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

BIO313 Developmental Biology (4)

Structural development of an organism from a fertilized egg to the differentiation of organs. Lectures also include regeneration, aging, and cancer. Laboratory work devoted mainly to embryology of the chick.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

BIO318 Biological Chemistry (3)

Study of the chemistry of biologically significant compounds; enzymes and metabolic reactions involved in energy transformations.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210) and (CHE318 or 22318) and (CHE305 or 22305)

Projected Offerings

Spring 2010, Fall 2009

BIO320 Genetics (4)

A study of the principles of heredity from classical experiments with *Drosophila* to current research in molecular genetics utilizing recombinant DNA and gene cloning methodologies. The organization, function, and behavior of the genetic material are discussed on the molecular, chromosomal and population levels. The laboratory examines the genetic systems of a variety of organisms.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15202)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO340 Ecology (4)

A study of principles and concepts of ecology at the ecosystem, community, population, and organism levels of organization. Laboratory and fieldwork emphasize methods of acquiring, analyzing, and interpreting ecological data.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO350 General Microbiology (4)

Morphological, biochemical, physiological, and genetic aspects of microbial growth, especially bacteria. Bacterial classification, growth control, and roles in environment and health also considered. Laboratory teaches essential techniques.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

BIO393 Biology Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

BIO396 Departmental Elective

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

BIO399 Pre-osteopathic Seminar (1)

Third year students participate in patient care including performing patient interviews and some routine medical procedures, to the extent allowed by state law. Third year students visit the NYCOM campus in the fall for their final interview with the NYCOM admissions committee.

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO412 Evolutionary Theory (3)

A survey of evolutionary theory, including population genetics, drift, adaptive mechanisms and application to modern biology. The historical development of the subject will illustrate the philosophy of science.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

BIO417 Animal Physiology (4)

Physiology is the study of how living organisms function. This course is designed to give students a basic understanding of physiological principles relating to cells, organs and organ systems and the

integration of animals with their environment. Material presented in lecture and lab will use comparative animal models to demonstrate general physiological concepts.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210) and (CHE201 or 22201)

Projected Offerings

Spring 2010, Spring 2011

BIO418 Animal Behavior (3)

The mechanistic and evolutionary aspects of animal behavior. A survey of systems that illustrate the control, development and function of behavior in a wide variety of animals, including humans.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Fall 2009, Fall 2010

BIO425 Plant Physiology (4)

The principles of plant physiology, development, biochemistry and reproduction. Among the topics examined are: photosynthesis, flowering and reproduction, the control of plant growth and development, hormone and light responses, applications to genetic engineering, plants and civilization, pathology, defense mechanisms and stress physiology.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

BIO430 Principles of Cell Biology (3)

An introduction to the structure and function of cells and their organelles.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210) and (CHE318 or 22318)

BIO475 Biology Research Project 1 (3)

Students will undertake a two semester research project, under the guidance of a faculty mentor. For the Environmental Science major, the project will focus on a detailed examination of a real world environmental problem. The project will culminate in both a written report and an oral presentation in the Senior Seminar for the Environmental Science major or at the Student Research Symposium for the Biology major.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in the following classification: Senior

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO476 Biology Research Project 2 (3)

Continuation of BIO475.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO475 or 15475)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO490 Seminar in Biology (3)

The Seminar course is designed to introduce the advanced student to the process of organizing, writing, and orally presenting selected biological material.

Attributes

- Liberal Arts
- Writing Intensive

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following classifications: Junior, Senior

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO491 Senior Research in Biology (3)

Individual laboratory and field research under the supervision of a faculty member, resulting in a written report, and an oral presentation to biology faculty and students.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in the following classification: Senior

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

BIO493 Biology Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

BIO494 Fieldwork In Biology (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

BIO495 Indep Study Biology (1)

No description is available for this course.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

BIO499 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(BIO201 or 15201) and (BIO202 or 15202) or (BIO210 or 15210)

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School of Science & Engineering: Chemistry

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Location: Coykendall Science Building Room 105

Web address: www.newpaltz.edu/chemistry

The Department of Chemistry at New Paltz offers both undergraduate and masters degree programs. Three undergraduate programs leading to liberal arts degrees are available: the chemistry major, the American Chemical Society (ACS) approved chemistry major, and the chemistry major with biochemistry emphasis.

A student who obtains an ACS-approved degree is eligible for employment as a chemist in industry or government. The ACS-approved program also prepares students for graduate study and for professional training in medicine, dentistry, and veterinary medicine. Course offerings allow chemistry majors to obtain a broad background in several areas of chemistry.

The biochemistry emphasis is designed for the student interested in biochemistry or health-related sciences requiring a substantial background in chemistry. This program provides excellent preparation for health professional training, as well as for graduate study in clinical chemistry, physiology, and medicinal chemistry. Students take core courses in chemistry and biology and complete the year-long biochemistry sequence.

The chemistry major requires fewer advanced courses than the ACS approved program. However, students take, with advisement, the same core courses that provide theoretical and hands-on education in the major areas of chemistry. Students are able to combine a chemistry major with prelaw, business, or teaching programs. This degree with selected courses in biology can prepare students for medical school entrance requirements. Preparation for a non-laboratory career in chemistry could include management or marketing courses offered by the business program at New Paltz.

The American Chemical Society's Committee on Professional Training includes the New Paltz Chemistry Department on its list of approved departments. This is the equivalent to professional accreditation of the liberal arts curriculum. Prospective chemistry majors should consult with the department chair as soon as possible after admission to the College and should take MAT251 and CHE201 in the fall semester of their freshman year.

Chemistry Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses
- Faculty
- Program Changes

School of Science & Engineering: Chemistry > Major

Major in Chemistry (General Degree) 54 credits

Required chemistry courses.....35 credits

CHE201 General Chemistry I (3)
CHE211 General Chemistry I Lab (1)
CHE202 General Chemistry II (3)
CHE212 General Chemistry II Lab (1)
CHE303 Introduction to Analytical Chemistry (4)
CHE314 Inorganic Chemistry (3)
CHE318 Organic Chemistry I (3)
CHE306 Organic Chemistry I Lab (1)
CHE319 Organic Chemistry II (3)
CHE309 Organic Chemistry II Lab (1)
CHE321 Physical Chemistry I (3)
CHE322 Physical Chemistry II (3)
CHE323 Experimental Physical Chemistry (3)
CHE461 Biochemistry I (3) or a Chemistry course at 400 or 500 level approved by the Chair.

Required cognate courses.....19 credits

MAT251 Calculus I (4)
MAT252 Calculus II (4)
MAT341 Applied Mathematics I (3)
PHY201 General Physics I (4)
PHY202 General Physics II (4)

Chemistry (ACS approved degree) 65credits

In addition to the courses required by the general degree in chemistry, the following are required:

CHE315 Inorganic Chemistry Lab (1)
CHE407 Instrumental Techniques (4)
CHE461 Biochemistry I (3)
CHE490 Senior Research in Chemistry (3)

Elective chemistry course..... 3 credits

One additional semester of advanced work selected from 400- and 500-level courses in chemistry.
(CHE495, Independent Study, and CHE494, Fieldwork, do not meet this requirement.)

Required cognate courses.....19 credits

MAT251 Calculus I (4)
MAT252 Calculus II (4)

MAT341 Applied Mathematics (3)
PHY201 General Physics I (4)
PHY202 General Physics II (4)

Chemistry (Biochemistry Emphasis) 73 credits

In addition to the courses required by the general degree in chemistry, the following courses are required:

CHE314 Inorganic Chemistry (3)
CHE461 Biochemistry I (3)
CHE570 Biochemistry (3)
CHE490 Senior Research in Chemistry (3)

Required cognate courses.....31 credits

MAT251 Calculus I (4)
MAT252 Calculus II (4)
MAT341 Applied Mathematics I (3)
PHY201 General Physics I (4)
PHY202 General Physics II (4)
BIO201 General Biology I (4)
BIO202 General Biology II (4)
BIO320 Genetics (4)

School of Science & Engineering: Chemistry > Minor

Minor in Chemistry 17-20 credits

Required Chemistry courses.....8 credits

CHE201 General Chemistry I (4)
CHE202 General Chemistry II (4)

Required Elective courses.....9-12 credits

Choose three from the following:

CHE303 Introduction to Analytical Chemistry (4)
CHE314 Inorganic Chemistry (3)
CHE318 Organic Chemistry I (4)
CHE319 Organic Chemistry II (4)
CHE321 Physical Chemistry I (3)
CHE322 Physical Chemistry II (3)
CHEXXX Course in Chemistry not having Physical Chemistry as prerequisite (3-4)

The college also offers an Interdisciplinary minor in Environmental Science.

Chemistry > Course Descriptions

CHE100 Environmental Chemistry (3)

Principles of chemistry behind the effects of such environmental problems as acid rain, ozone layer depletion, atmospheric and aquatic problems, global warming. Evaluation of experimental data leading scientists to current conclusions regarding these environmental issues.

Attributes

- Liberal Arts
- GE3: NSCI
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following college: Science and Engineering
- May not be enrolled in one of the following majors: 7-12: Chemistry, 7-12: Biology, Adolescence Ed: Biology, Biology, Chemistry, Geology, Physics

Prerequisites

Math Placement Level 3

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CHE182 Chemistry in Art (3)

Materials used in the production of art works, including their sources, properties, and applications. Topics to be covered are: metals, their use in sculpture, printmaking, and gold and silver work; paper; black and white photography; pigments and dyes; coatings (varnishes and synthetic polymers). Designed for non-science majors.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following college: Science and Engineering
- May not be enrolled in the following major: Chemistry

Prerequisites

Math Placement Level 3

Projected Offerings

Fall 2009, Spring 2010

CHE193 Chemistry Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE199 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE201 General Chemistry I (3)

Principles governing chemical change in relation to the atomicity of matter, atomic structure and the periodic system of the elements.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

Math Placement Level 4 or (Undergraduate level MAT152 Minimum Grade of C- or Undergraduate level 64152 Minimum Grade of C-)

Corequisites

CHE211

Projected Offerings

Fall 2009

CHE202 General Chemistry II (3)

Kinetics, thermodynamics, equilibria and electrochemistry.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

Math Placement Level 4 and (CHE201 or 22201)

Corequisites

CHE212

Projected Offerings

Spring 2010, Spring 2011

CHE211 General Chemistry I Lab (1)

Laboratory work complements the lecture material covered in CHE 201.

Corequisites

CHE201

CHE212 General Chemistry II Lab (1)

Laboratory work complements the lecture material covered in CHE202.

Prerequisites

Math Placement Level 4 and (CHE201 or 22201)

Corequisites

CHE202

CHE293 Chemistry Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE295 Indep Study Chemistry (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE296 Departmental Elective

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE299 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE303 Introduction to Analytical Chemistry (4)

Lecture and laboratory work in gravimetric, volumetric, and elementary instrumental analysis. Application of statistics to analytical chemistry.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE202 or 22202)

Projected Offerings

Fall 2009, Fall 2010

CHE306 Organic Chemistry I Lab (1)

Laboratory meets once a week and will provide practical experience in some fundamental techniques of organic chemistry.

Attributes

- Liberal Arts

Prerequisites

(CHE202 or 22202)

Corequisites

CHE318

CHE309 Organic Chemistry II Lab (1)

Laboratory work will utilize the microscale techniques employed in Organic Chemistry I to the study of organic reactions.

Attributes

- Liberal Arts

Prerequisites

(CHE202 or 22202)

Corequisites

CHE319

CHE314 Inorganic Chemistry (3)

Inorganic Chemistry builds on the foundation provided in General and Organic Chemistry. The chemistry of the full periodic table will be discussed. Emphasis will be placed on modern techniques, theories, and applications.

Attributes

- Liberal Arts

Prerequisites

(CHE202 or 22202) and (CHE318 or 22318)

Projected Offerings

Spring 2010, Spring 2011

CHE315 Inorganic Chemistry Laboratory (1)

Inorganic Chemistry Laboratory puts into practice the principles learned in Inorganic Chemistry. Modern laboratory techniques will be taught and used to explore the chemistry of s, p, and d-block elements. Can be taken concurrently with CHE 314.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE202 or 22202) and (CHE318 or 22318)

Projected Offerings

Spring 2010

CHE318 Organic Chemistry I (3)

Structural theory and its application to the study of the properties of carbon compounds.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE202 or 22202)

Corequisites

CHE306

Projected Offerings

Fall 2009, Fall 2010

CHE319 Organic Chemistry II (3)

Continuation of Organic Chemistry I.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE318 or 22318) and (CHE306 or 22306)

Corequisites

CHE309

Projected Offerings

Spring 2010, Spring 2011

CHE320 Physical Chemistry Recitation (1)

Students will work in groups to solve problems that deal with concepts in thermodynamics and kinetics. These in-class activities will reinforce concepts learned in Physical Chemistry I (CHE 321).

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following majors: Adolescence Ed: Chemistry, Chemistry

Prerequisites

(CHE201 and MAT252 and CHE202 and PHY211 and PHY212 and MAT251)

Corequisites

CHE321, MAT341

CHE321 Physical Chemistry I (3)

Study of ideal and real gases, kinetic molecular theory, thermodynamics, phase and chemical equilibrium, surface chemistry.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE202 or 22202) and (PHY202 or 75202) and (MAT252 or 64252)

Projected Offerings

Fall 2009, Fall 2010

CHE322 Physical Chemistry II (3)

Study of chemical kinetics, electrochemistry, electrolytic equilibria, quantum chemistry, molecular structure; spectroscopy.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE202 or 22202) and (PHY202 or 75202) and (MAT252 or 64252) and (MAT341 or 64341) or (MAT353 or 64353) and (MAT362 or 64362)

Projected Offerings

Spring 2010, Spring 2011

CHE323 Experimental Physical Chemistry (3)

Lecture and laboratory work in methodology and techniques used in physical chemistry. Stresses design of experiments, thorough analysis of data, and the writing of scientific reports.

Attributes

- Liberal Arts

- Writing Intensive

Prerequisites

(CHE321 or 22321) and (ENG160 or 41160) and (ENG180 or 41180) and (CHE303 or 22303) and (CHE322 or 22322)

Projected Offerings

Spring 2010, Spring 2011

CHE393 Chemistry Selected Topic (1)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE396 Departmental Elective

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE399 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

CHE407 Instrumental Techniques (4)

Familiarization with the modern instruments and techniques used in chemistry.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(CHE303 or 22303)

Projected Offerings

Spring 2010, Spring 2011

CHE461 Biochemistry I (3)

Examination of the chemistry of cellular constituents, especially biopolymers, and metabolic reactions leading to biologically useful energy production. Control of intermediary metabolism at the molecular level.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(CHE319 or 22319)

Projected Offerings

Fall 2009, Fall 2010

CHE463 Biochemistry Lab (1)

Introduction to biochemical techniques with emphasis on protein biochemistry. Will provide an experimental experience that will reinforce concepts covered in lecture CHE 461.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(CHE318 or 22318) and (CHE319 or 22319)

Corequisites

CHE461

Projected Offerings

Fall 2009, Fall 2010

CHE485 Seminars in Chemistry (2)

A series of lecture and discussion sessions conducted by distinguished visiting scientists and faculty members and students of the chemistry department. Topics are of current interest in chemistry, many of which cannot be covered in traditional courses.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Adolescence Ed: Chemistry, Chemistry
- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009

CHE490 Senior Research in Chemistry (3)

Student undertakes a program of research under the guidance of a faculty advisor.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Adolescence Ed: Chemistry, Chemistry
- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CHE493 Chemistry Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Adolescence Ed: Chemistry, Chemistry
- May not be enrolled in the following classification: Freshman

CHE494 Fieldwork In Chemistry

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

CHE495 Indep Study Chemistry (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

CHE503 Advanced Organic Chemistry (3)

Topics of current interest in organic research.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following levels: Graduate, Undergraduate

Prerequisites

(CHE319 or 22319)

CHE509 Spectrometric Identification of Organic Compounds (3)

Application of spectrometry (mass, infrared, ultraviolet and nuclear magnetic resonance) to the identification of organic compounds.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following levels: Graduate, Undergraduate

Prerequisites

(CHE319 or 22319) and (PHY202 or 75202)

CHE512 Advanced Inorganic Chemistry (3)

Atomic structure, periodicity, ionic and covalent bonding. Acid-base and solution chemistry. Bonding theories and structure of transition metal complexes.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following levels: Graduate, Undergraduate

Prerequisites

(CHE314 or 22314) and (CHE321 or 22321)

CHE570 Biochemistry (3)

Structure of biomolecules and their assemblies and the chemical reactions of metabolic processes. Molecular aspects of gene replication, transcription and translation.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following levels: Graduate, Undergraduate

Prerequisites

(CHE319 or 22319) and (CHE461 or 22461)

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School of Science & Engineering: Computer Science

Phone: (845) 257-3990

Location: Faculty Office Building Room N12

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The Computer Science Department offers both undergraduate and masters degree programs. The major, which is accredited by the Computing Sciences Accreditation Board, prepares students for graduate study or high-level professional employment in the computer and information technology industries. The department also offers a minor in Computer Science that gives students the background to use the computer in other disciplines.

SUNY New Paltz has a fully networked campus and a multi-user computer system that provides email, Internet access, and software to the campus community. Additionally, the Department of Computer Science maintains several specialized computer laboratories. Computer science students use these resources and gain experience working with current hardware, operating systems, and programming languages.

NOTE: No course (including transfer courses) in which a student receives a grade below C- or a pass/fail grade, may be used to satisfy a major requirement.

NOTE: Some Computer Science courses have a Math Placement Level prerequisite. Consult the Department of Mathematics for information concerning Math Placement Levels.

Computer Science Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses
- Faculty
- Program Changes

School of Science & Engineering: Computer Science > Major

Major in Computer Science 40 credits

1. Computer Science

A. Required31 credits

CPS210 Computer Science I: Foundations (4)

CPS310 Computer Science II: Data Structures (3)

CPS330 Assembly Language and Computer Architecture (4)
CPS340 Operating Systems I (4)
CPS352 Object Oriented Programming (3)
CPS353 Software Engineering (3)
CPS410 Design and Analysis of Algorithms (3)
CPS420 Languages and Machines (3)
CPS450 Design of Programming Languages (3)
CPS480 Senior Seminar (3)

AND

One of the following:

CPS341 Operating Systems II (3) or
CPS430 Compiler Construction (3)

B. Electives..... 3 credits
Any one upper-division computer science course

2. Mathematics 18 credits

A. Required..... 14 credits
MAT251 Calculus I (4)
MAT252 Calculus II (4)
MAT320 Discrete Mathematics for Computing (3)
MAT382 Probability and Statistics (3)

B. Elective..... 4 credits

One of the following:

MAT353 Calculus III (4) or
MAT375 Numerical Methods (3)

3. Engineering 4 credits

EGC230 Digital Logic Design (3)
EGC208 Digital Logic Lab (1)

4. Science 12 credits

A. Required 8 credits

PHY201 General Physics I (4)
PHY202 General Physics II (4)

OR

CHE201 General Chemistry I (4)
CHE202 General Chemistry II (4)

B. Elective..... 4 credits

One of the following courses:

BIO201 General Biology I (4)
CHE201 General Chemistry I (4) (if not used in 4. A.)
GLG220 Physical Geology (4)
PHY201 General Physics I (4) (if not used in 4. A.)

5. Philosophy 3 credits

PHI308 Philosophy and Technology (3)

School of Science & Engineering: Computer Science > Minor

Minor in Computer Science 16 credits

Required Computer Science Course..... 4 credits

CPS210 Computer Science I: Foundations (4)

Elective Computer Science Courses..... 9 credits

Each minor candidate is required to complete at least three 300-level-or-above computer science courses with the prior approval of an advisor from the department. Elective computer science courses must include at least two that are not required in the student's major.

Elective Mathematics Course..... 3 credits

Each minor candidate is required to complete at least one 200-level-or-above mathematics course (except MAT240).

Computer Science > Course Descriptions

CPS100 Computers and Applications (3)

This course will provide students with a broad overview of computers and their uses. Topics include hardware, software, and the Internet/World Wide Web. Various applications such as word processing, spreadsheets, and database management systems will be discussed. The course is not intended for Computer Science majors.

Attributes

- Liberal Arts

Prerequisites

- Math Placement Level 3

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CPS104 Visual Programming (3)

This course covers the Windows environment including files, program groups, Windows Help and applications. It covers visual programming topics such as applications, windows, controls and script writing.

Attributes

- Liberal Arts
- GE2: MATH

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT050 Minimum Grade of C- or Undergraduate level 64050 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CPS193 Computer Science Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

CPS210 Computer Science I: Foundations (4)

Algorithms, computer organization, data representation, program structure, programming techniques, numerical and non-numerical problems with emphasis on the analysis of problems and the formulation of algorithms for their solution. Numerous short programming assignments.

Attributes

- Liberal Arts
- GE2: MATH
- GE2A: MATH

Prerequisites

Math Placement Level 4

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CPS293 Computer Science Selected Topic (1)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

CPS295 Indep Study Comp Science

No description is available for this course.

CPS296 Departmental Elective

No description is available for this course.

CPS299 Modular Course

No description is available for this course.

CPS310 Computer Science II: Data Structures (4)

Advanced programming and techniques for organizing and operating upon data. Lists, stacks, trees, and graphs. Sequential and linked storage allocations. Data structures in language processors. Includes supervised programming laboratory.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS210 Minimum Grade of B- or Undergraduate level 25210 Minimum Grade of B-)

Projected Offerings

Spring 2010, Spring 2011

CPS330 Assembly Language and Computer Architecture (4)

Provides an "under the hood" examination of computer systems. Topics include number systems, machine language, assembly language, linking and loading, instruction set architecture, micro architecture, memory systems, and high-level languages at the assembly level.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

CPS340 Operating Systems I (4)

The design and implementation of single and multi-user operating systems. Memory management, process management, device management.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS325 Minimum Grade of C- or Undergraduate level 25325 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

CPS341 Operating Systems II (3)

Design and implementation of major components of a modern operating system.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS340 Minimum Grade of C- or Undergraduate level 25340 Minimum Grade of C-)

CPS352 Object Oriented Programming (3)

The concepts of object oriented programming -- objects and classes, messages and receivers, encapsulation and inheritance -- and the typical tools -- browsers and libraries -- are presented. A large number of programming assignments require the student to commit substantial time and effort to this course, and provide the student with a working knowledge of object oriented programming.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

CPS353 Software Engineering (3)

This is an introductory software engineering course that has a project as a major component. The emphasis is on the specification, organization, implementation, testing, and documentation of software. Programming proficiency in C as well as a background in data structures, file handling, and basic flowcharting are necessary prerequisites.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

CPS393 Computer Science Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

CPS396 Departmental Elective

No description is available for this course.

CPS399 Modular Course

No description is available for this course.

CPS410 Design and Analysis of Algorithms (3)

Algorithm design, analysis, correctness and implementation. Application such as sorting, trees, graphs, hashing,

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-) and (Undergraduate level MAT310 Minimum Grade of C- or Undergraduate level 64310 Minimum Grade of C-) and (Undergraduate level MAT563 Minimum Grade of C- or Undergraduate level 64563 Minimum Grade of C-)

CPS420 Languages and Machines (3)

Specification and classification of languages. Machine models. Relationship between machines and languages.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-) and (Undergraduate level MAT310 Minimum Grade of C- or Undergraduate level 64310 Minimum Grade of C-) and (Undergraduate level MAT363 Minimum Grade of C- or Undergraduate level 64363 Minimum Grade of C-)

CPS430 Compiler Construction (3)

Design and construction of compilers. General characteristics and machine dependencies.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS450 Minimum Grade of C- or Undergraduate level 25450 Minimum Grade of C-)

CPS440 Database Principles (3)

Study of the logical and physical organization of large databases; database system programming.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

CPS450 Design of Programming Languages (3)

Language processors, data structures, control structures, run-time representation, comparison of programming languages. Students will write programs in several programming languages.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS325 Minimum Grade of C- or Undergraduate level 25325 Minimum Grade of C-)

CPS455 Declarative Languages (3)

Declarative programming concepts. One language in each of the following categories is studied in detail: functional, logical, and object oriented. Students are required to write programs in several languages.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

CPS460 Computer Architecture (3)

Data representation, memory organization, input/output processing, stack computers, parallel computers, pipeline architecture, microprogramming.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS325 Minimum Grade of C- or Undergraduate level 25325 Minimum Grade of C-) and (Undergraduate level EGE230 Minimum Grade of C- or Undergraduate level 40230 Minimum Grade of C-)

CPS470 Computer Communication Networks (3)

Network architecture, data flow control, transmission control, path control, recovery, routing techniques.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level CPS235 Minimum Grade of C- or Undergraduate level 25235 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

CPS480 Senior Seminar (3)

Seniors majoring in computer science research topics in computer science, prepare written reports and make oral presentations.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following major: Computer Science
- Must be enrolled in the following classification: Senior

CPS493 Computer Science Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- May not be enrolled in the following classification: Freshman

CPS494 Fieldwork Comp Science

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

CPS495 Indep Study Comp Science (1)

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

Computer Science > Faculty

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Phone: (845) 257-3720

Location: Resnick Engineering Hall Room 103

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Engineering Program:

- Major
- Course Descriptions
- 8 Semester Plan
- General Education Courses
- Faculty
- Program Changes

Electrical & Computer Engineering > Major in Computer Engineering

The Department of Electrical and Computer Engineering offers both undergraduate and masters degree programs. The undergraduate major in Computer Engineering is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). Students may choose electives in computer hardware, software engineering, computer and information engineering and communication and networking. The Computer Engineering program has been accredited from 2000.

The computer revolution has changed the way in which we live, work and play. Computer engineers are at the heart of this rapid development. Career opportunities for computer engineering graduates continue to be plentiful.

The curriculum consists of a humanities and social sciences component, a pre-engineering phase (pre-engineering major code 516) and upper-division engineering course work (computer engineering major code 518). Computer engineering students must meet a modified General Education Requirement. This includes the pre-engineering courses in mathematics and science and the humanities/social science sequence. The pre-engineering and humanities/social science requirements are exactly the same for the electrical engineering and computer engineering programs.

Computer Engineering Curriculum 129-130 credits

Humanities and Social Sciences	18 credits
Pre-Engineering	37 credits
Computer Engineering Core.....	61-62 credits
Technical Electives	13 credits

Although it is possible for a dedicated student who begins the math sequence with Calculus I to complete all degree requirements in four years, our students, like those at most engineering schools in the United States, typically require an additional semester to complete the program.

Humanities and Social Sciences Component 18 credits

Choose one (1) course from each of the following six categories:

1. American History
2. World Civilization
3. Western Civilization
4. Humanities
5. Social Science
6. Art

Pre-Engineering Requirement 37 credits

The pre-engineering course of study consists of 37 credits in mathematics, computer science, physics, chemistry, introductory engineering, and English.

The required courses are:

Mathematics

- MAT251 Calculus I (4)
- MAT252 Calculus II (4)
- MAT353 Calculus III (4)

Computer Science

- CPS210 Computer Science I: Foundations (4)

Physics

- PHY201 General Physics I (4)
- PHY202 General Physics II (4)

Chemistry

- CHE201 General Chemistry I (4)

Engineering

- EGG101 Introduction to Engineering Science (3)

English

- ENG160 Freshman Composition I (3)
 - ENG180 Freshman Composition II (3)
- OR
- ENG205 General Honors English I (3)
 - ENG206 General Honors English II (3)

Admission to the Computer Engineering Major

Students completing the pre-engineering sequence with a grade point average of 2.50 or above are eligible for admission to the computer engineering program (major code 518).

Note that the general education and pre-engineering requirements are identical for both electrical and

computer engineering majors. Therefore, a student who has successfully completed the pre-engineering requirement may declare either the electrical engineering (major code 517) or the computer engineering (major code 518) upper division major.

Students are strongly advised to complete at least six credits of humanities and social science courses before applying for admission to an engineering major.

The admission of transfer students will be based on a detailed comparison of their transcript with the New Paltz pre-engineering requirements and consultation with an advisor from the Department of Electrical and Computer Engineering.

Departmental Academic Policies

Pre-engineering students may not enroll in engineering or engineering-related courses other than Introduction to Engineering Science (EGG101), and Technical Communications (EGG309). Exceptions are frequently granted for Circuits Laboratory (EGE209), Circuit Analysis (EGE210), Digital Logic Laboratory (EGG208), Digital Logic Fundamentals (EGC230), Ordinary Differential Equations [ODE] (MAT359), Discrete Mathematics (MAT320) and Computer Science II: Data Structures (CPS310). Permission to register in any of these courses must be obtained from the Department of Electrical and Computer Engineering before registration.

Students may not enroll in any engineering course unless all prerequisites have been met with a grade of C- or better. Courses taken on a Satisfactory/Unsatisfactory basis cannot be applied toward the engineering degree requirements.

Upper-Division Computer Engineering Requirements

The upper-division engineering course work, which leads to the Bachelor of Science degree in Computer Engineering, consists of the computer engineering core and a series of technical electives.

Computer Engineering Core Curriculum 60-61 credits

The following courses constitute the computer engineering core:

		<u>Total Credits</u>	<u>Design Credits</u>	<u>Eng/Sci Credits</u>
CPS310	Computer Science II: Date Structures	3	1	3
CPS353	Software Engineering	3	2	1
EGE209	Circuits Laboratory	1	0.5	0.5
EGE210	Circuit Analysis	4	0.5	3.5
EGE311	Signals and Systems	3	0.5	2.5
EGE320	Electronics I	3	1.0	2.0
EGE321	Electronics II	3	1.0	2.0
EGE322	Electronics I Lab	1	1	0
EGE323	Electronics II Lab	1	1	0
EGEEGE8	Senior Design Project I1	3	3.0	0
EGEEGE9	Senior Design Project II1	3	3.0	0
EGE3EGE	Engineering Electromagnetics I	3	0.5	2.5
EGEXXX	Engineering Statistics	3	0	0
EGC208	Digital Logic Laboratory	1	0.5	0.5
EGC230	Digital Logic Fundamentals	3	1.0	2.0
EGC308	Microprocessor Laboratory	1	0.5	0.5
EGC331	Microprocessor System Design	3	1.5	1.5
EGC432	Introduction to Computer Architecture	3	1.0	2.0
EGC433	Computer System Design II	3	3.0	0
47309	Technical Communications	3	0	0
MAT320	Discrete Mathematics for Computing	3	0	0
MAT359	Ordinary Differential Equations	3	0	0
PHYXXX	Mechanical Engineering ²	<u>3 or 4</u>	1	2
		60-61		

Computer Engineering Technical Electives 13 credits

Thirteen credits of technical electives are required which must include at least one electrical engineering (EGEXXX) lecture course (3 credits) and one electrical engineering (EGEXXX) laboratory (1 credit). Students must obtain the advice of their advisor about their choice of electives before registering. (Engineering Graduate Courses can be used as undergraduate Technical Electives.)

Lecture Group:	<u>Total Credits</u>	<u>Total Credits</u>	<u>Eng/Sci Credits</u>
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CPS340	Operating Systems I	3	1.0	2.0
CPS341	Operating Systems II	3	1.0	2.0
CPS410	Design and Analysis of Algorithms	3	0	1.0
CPS420	Languages and Machines	3	1.0	1.0
CPS450	Design of Programming Languages	3	0	1.0
EGE312	Communication Systems	3	1.0	2.0
EGE316	Control Systems I	3	1.0	2.0
EGE317	Digital Control Systems	3	1.0	2.0
EGE342	Microwave Fundamentals	3	1.0	2.0
EGC423	Digital Integrated Circuits	3	1.0	2.0
EGE436	Microelectronics Technology	3	1.0	2.0
EGE444	Engineering Optics	3	1.0	2.0
EGEEGC1	Electromechanical Energy Conversion	3	1.0	2.0
EGEEGC2	Electric Power Systems	3	1.0	2.0
EGE4XX	Solid State Devices	3	1.0	2.0
CPS435	VLSI Design	3	1.5	1.5
CPSXXX	Embedded Systems	3	1.5	1.5
CPSXXX	Computer Communications	3	1.0	2.0
MAT375	Numerical Methods	3	0	1.0
MAT382	Probability and Statistics II	3	0	1.0
PHY308	Modern Physics	3	0	0

Laboratory Group:		<u>Total Credits</u>	<u>Total Credits</u>	<u>Eng/Sci Credits</u>
EGE302	Antennas	1	0	1.0
EGE303	Microwave Fundamentals	1	0.5	0.5
EGE304	Control	1	0	1.0
EGE305	Communication	1	0.5	0.5
EGE306	Microwave Circuits	1	0.5	0.5
EGE4XX	Microelectronics Technology	1	0	1.0
EGE4XX	Electromechanical Energy Conversion	1	0	1.0
EGEXXX	Digital Signal Processing	1	0	1.0
EGEXXX	Digital Control	1	0	1.0

Footnotes:

1 Senior Design Project (EGE408 and EGE409) - 6 cr. Seniors must register during each of the last two semesters preceding their graduation for Senior Design Project. A single project under the direction of a single faculty member will be spread over two semesters. This project should provide a meaningful engineering design experience and should draw on the cumulative technical background of the student.

2 Choose one of the following two courses:

PHY315 Engineering Mechanics (4)

PHY422 Thermodynamics (3)

Electrical & Computer Engineering > Major in Electrical Engineering

The Department of Electrical and Computer Engineering offers both undergraduate and masters degree programs. The undergraduate major in Electrical Engineering is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). Students may choose electives in microelectronics, communications, signal processing, control, robotics, energy conversion, microwaves, electromagnetics and computer engineering.

Electrical Engineering continues to be a growth program in the field of engineering due to a rapidly changing technological society and expanding industrial needs. The New Paltz program is designed to meet these needs generally and those of the mid-Hudson valley specifically.

The curriculum consists of a general education component, a pre-engineering phase (pre-engineering major code 516), and upper-division engineering course work (electrical engineering major code 517). Electrical engineering students must meet a modified General Education Requirement. The pre-engineering and general education requirements are exactly the same for the electrical engineering and computer engineering programs.

Electrical Engineering Curriculum 131-132 credits

General Education	18 credits
Pre-Engineering	EGE credits
Electrical Engineering Core	50-51 credits
Technical Electives	23 credits

Although it is possible for a dedicated student who begins the math sequence with Calculus I to complete all degree requirements in four years, our students, like those at most engineering schools in the United States, typically require an additional semester to complete the program.

General Education 18 credits

Choose one (1) course from each of the following six categories:

1. American History
2. World Civilization

3. Western Civilization
4. Humanities
5. Social Science
6. Art

Pre-Engineering Requirement EGE credits

The pre-engineering course of study consists of EGE credits in mathematics, computer science, physics, chemistry, introductory engineering, and English. The required courses are:

Mathematics

- MATCPS1 Calculus I (4)
- MATCPS2 Calculus II (4)
- MAT353 Calculus III (4)

Computer Science

- CPS210 Computer Science I: Foundations (4)

Physics

- PHY201 General Physics I (4)
- PHY202 General Physics II (4)

Chemistry

- CHE201 General Chemistry I (4)

Engineering

- EGG101 Introduction to Engineering Science (3)
- EGG350 Fundamentals of Electrical Engineering (3)

English

- ENG160 Freshman Composition I (3)
- ENG180 Freshman Composition II (3)
- OR
- ENG205 General Honors English I (3)
- ENG206 General Honors English II (3)

Admission to the Electrical Engineering Major

Students completing the pre-engineering sequence with a grade point average of 2.50 or above are eligible for admission to the Electrical Engineering program (major code 517).

Note that the general education and pre-engineering requirements are identical for both electrical and computer engineering majors. Therefore, a student who has successfully completed the pre-engineering requirement may declare either the electrical engineering (major code 517) or the computer engineering (major code 518) upper division major.

Students are strongly advised to complete at least six credits of general education courses before applying for admission to an engineering major.

The admission of transfer students will be based on a detailed comparison of their transcript with the New Paltz pre-engineering requirements and consultation with an advisor from the Department of Electrical and Computer Engineering.

Departmental Academic Policies

Pre-engineering students may not enroll in engineering or engineering-related courses other than Introduction to Engineering Science (EGG101) and Technical Communications (EGG309). Exceptions are frequently granted for Circuits Laboratory (EGE209), Circuit Analysis (EGE210), Fundamentals of Electrical Engineering (EGG350), Digital Logic Laboratory (EGG208), Digital Logic Fundamentals (EGG230), Ordinary Differential Equations [ODE] (MAT359), and Linear Algebra (MAT362). Permission to register in any of these courses must be obtained from the department before registration.

Students may not enroll in any engineering course unless all prerequisites have been met with a grade of C- or better. Courses taken on a satisfactory/unsatisfactory basis cannot be applied to meet the engineering degree requirements.

Upper-Division Electrical Engineering Requirement

The upper-division electrical engineering course work, which leads to the Bachelor of Science degree in Electrical Engineering, consists of the electrical engineering core and a series of technical electives.

Electrical Engineering Core Curriculum 51-52 credits

The following courses constitute the electrical engineering core:

		<u>Total Credits</u>	<u>Design Credits</u>	<u>Eng/Sci Credits</u>
EGE209	Circuits Laboratory	1	0.5	0.5
EGExxx	Circuit Analysis	3	0.5	2.5
EGE311	Signals and Systems	4	0.5	2.5
EGE320	Electronics I	3	1.0	2.0
EGE321	Electronics II	3	1.0	2.0
EGE322	Electronics I Lab	1	1.0	0
EGE323	Electronics II Lab	1	1.0	0
EGE340	Engineering Electromagnetics I	3	0.5	2.5
EGE341	Engineering Electromagnetics II	3	0.5	2.5
EGE408	Senior Design Project I1	3	3.0	0
EGE409	Senior Design Project II1	3	3.0	0
EGG208	Digital Logic Laboratory 1	1	0.5	0.5
EGG230	Digital Logic Fundamentals 3	3	1.0	2.0
EGG308	Microprocessor Laboratory 1	1	0.5	0.5
EGG331	Microprocessor System Design	3	1.0	2.0
EGG309	Technical Communications	3	0	0
MAT359	Ordinary Differential Equations	3	0	0
EGEXXX	Engineering Statistics	3	0	0
MAT362	Linear Algebra	3	0	0
PHYXXX	Mechanical Engineering2	<u>3 or 4</u>	1.0	2.0
		50-51		

Electrical Engineering Technical Electives 23 credits

Twenty-three credits of technical electives are required which must include at least three electrical and/or computer engineering (EGEXXX and/or EGGXXX) lecture courses (9 credits) and two engineering (EGEXXX and/or EGGXXX) laboratories (2 credits). Students must obtain the advice of their advisor about their choice of electives before registering. (Engineering graduate courses can be used as undergraduate technical electives.)

Lecture Group:

		<u>Total Credits</u>	<u>Design Credits</u>	<u>Eng/Sci Credits</u>
CPS310	Computer Science II: Data Structure	4	1.0	3.0
CPS340	Operating Systems I	3	1.0	2.0

CPS341	Operating Systems II	3	1.0	2.0
CPS353	Software Engineering	3	2	1
CPS410	Design and Analysis of Algorithms	3	0	1.0
CPS420	Languages and Machines	3	1.0	1.0
CPS450	Design of Programming Languages	3	0	1.0
EGE312	Communication Systems	3	1.0	2.0
EGE316	Control Systems I	3	1.0	2.0
EGE317	Digital Control Systems	3	1.0	2.0
EGE342	Microwave Fundamentals	3	1.0	2.0
EGE436	Microelectronic Technology	3	1.0	2.0
EGE451	Electromechanical Energy Conversion	3	1.0	2.0
EGE452	Electric Power Systems	3	1.0	2.0
EGE4XX	Solid State Devices	3	1.0	2.0
EGE494	Co-op/Fieldwork	3	1.5	1.5
EGG423	Digital Integrated Circuits	3	1.0	2.0
EGG432	Intro Computer Architecture	3	1	2
EGG435	VLSI Design	3	0.5	1.5
EGG493	Digital Systems Design	3	2	1
EGG4XX	Embedded Systems	3	1.5	1.5
EGG4XX	Computer Communication	3	1.0	2.0
MAT320	Discrete Mathematics	3	0	0
MAT375	Numerical Methods	3	0	1.0
MAT382	Probability and Statistics II	3	0	1.0
MAT488	Partial Differential Equations	3	0	0
PHY309	Modern Physics II	3	0	0

Laboratory Group:

		<u>Total Credits</u>	<u>Design Credits</u>	<u>Eng/Sc Credit</u>
EGE302	Antennas	1	0	1.0
EGE303	Microwave Fundamentals	1	0.5	0.5
EGE304	Control	1	0	1.0
EGE305	Communication	1	0	1.0
EGE306	Microwave Circuits	1	0.5	0.5

EGE4XX	Microelectronics Technology	1	0	1.0
EGEXXX	Electromechanical Energy Conversion Lab	1	0	1.0
EGEXXX	Computer Simulation	1	0	1
EGEXXX	Electric Power	1	0	1
EGG401	VLSI Design	1	0.5	0.5

Footnotes:

1 Senior Design Project (EGE408 and EGE409) - 6 cr. Seniors must register during each of the last two semesters preceding their graduation for Senior Design Project. A single project under the direction of a single faculty member will be spread over two semesters. This project should provide a meaningful engineering design experience and should draw on the cumulative technical background of the student.

2 Choose one of the following two courses:

PHY315 Engineering Mechanics (4)

PHY422 Thermodynamics (3)

Electrical and Computer Engineering > Course Descriptions

EGC208 Digital Logic Laboratory (1)

Self-paced laboratory involving design of digital systems using programmable logic based design tools.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Computer Science, Electrical Engineering, Undeclared: Engineering

Prerequisites

(EGC230 or 45230)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGC230 Digital Logic Fundamentals (3)

An introduction to digital logic design. Topics include algebra of logical variables, logical functions, combinational circuit design, flip-flops, counters, arithmetic, and sequential circuit design.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Computer Science, Electrical Engineering, Undeclared: Engineering

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGC295 Indep Study Comptr Engin (1)

No description is available for this course.

EGC308 Microprocessor Laboratory (1)

Self-paced laboratory to provide hands-on experience encompassing Assembly and C programming languages and interfacing peripheral devices as applied to microprocessor systems.

Restrictions

- May not be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering, Undeclared: Engineering

Prerequisites

(EGC331 or 45331)

Projected Offerings

Fall 2009, Fall 2010

EGC331 Microprocessor System Design (3)

An introduction to microprocessor systems. Topics include microprocessor organization, Assembly language programming, memory interfacing and timing, programmable peripheral interface, timer, interrupts and programmable interrupt controller, and serial data communication.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering, Undeclared: Engineering

Prerequisites

(EGC230 or 45230)

Projected Offerings

Spring 2010, Spring 2011

EGC401 VLSI Design Laboratory (1)

Software and hardware used in VLSI design. Applications to N-MOS and CMOS.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Corequisites

EGC435

Projected Offerings

Spring 2010, Spring 2011

EGC412 Data Communications (3)

A first course in Data Communications, which introduces the problems, solutions, and limitations associated with interconnecting computers by communication networks (LAN or WAN). The seven layer ISO Open Systems Interconnect (OSI) reference model serves as framework for the course with major emphasis on layers one through four (physical, data link, network, and transportation.)

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC331 or 45331)

EGC416 Embedded Systems (3)

Provides student with an understanding of design and analysis processes required to implement a computer controlled real time industrial process. Selection of microcontroller, control concepts, sensors, drivers, software requirements, analog to digital conversion, digital to analog conversion, intelligent display interfacing, design applications and use of "Fuzzy Logic".

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC331 or 45331)

EGC423 Digital Integrated Circuits (3)

MOS transistor, logic gate circuits and electrical characteristics. P-N junction and Schottky diodes. BJT, inverter and digital gate circuits. Regenerative circuits. Semiconductor memories. Design projects. Course based on charge-control and SPICE2 large signal MOSFET, diode and BJT models, and the related integrated circuit analysis.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE321 or 40321) and (EGC230 or 45230)

EGC432 Introduction to Computer Architecture (3)

Design of a simple processor. Topics include performance metrics, data formats, instruction sets, design of arithmetic unit, datapath and control design, pipelined architecture, memory hierarchies including caches and virtual memory, I/O systems, and multiprocessor systems.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC331 or 45331)

Projected Offerings

Spring 2010, Spring 2011

EGC435 VLSI Design (3)

Introduction to MOS devices and circuits (N-MOS, CMOS), MOS transistor theory. Integrated system processing technology and design rules (N-MOS and CMOS), circuit characterization and performance estimation, N-MOS and CMOS circuits and logic design. Interfacing. Introduction to VLSI design tools. Testability analysis. Microarchitecture of VLSI systems. Chip design projects.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC230 or 45230) and (EGE321 or 40321)

Projected Offerings

Fall 2009

EGC450 Digital Systems Design (3)

An introduction to digital systems design using a hardware description language. Topics include programmable counters, shift registers, design of synchronous and asynchronous sequential machines.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC230 or 45230)

EGC493 Comp Eng Select Topics (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE230 or 40230)

EGC494 Fieldwork Computer Engin

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

EGC495 Indep Study Compnr Engin

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

EGE193 Engineering Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGE209 Circuits Laboratory (1)

Laboratory exercises covering the material of EGE210 Circuit Analysis. Corequisite: EGE210.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering, Undeclared: Engineering

Corequisites

EGE250

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGE250 Circuit Analysis (3)

This course introduces students to circuit theorems, ac circuits and three phase circuits as well as two ports, frequency response mutual inductance and transformers.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering, Undeclared: Engineering

EGE293 Engineering Selected Topic (1)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 75202)

EGE295 Indep Study Elec Engineering (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGE302 Antenna Laboratory (1)

Measurement of the far field pattern and characteristics of wire antennas and arrays for VHF. Measurement of the field pattern and characteristics of reflector type antennas in the X-band, and of aperture type antennas and arrays in the X-band.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE445 or 40445)

EGE303 Microwave Fundamentals Laboratory (1)

Measurement of VSWR and wavelength in waveguides, stub tuners and matching, calibration of attenuators, time domain reflectometry and frequency domain network analyzer measurement. Prerequisite/Corequisite: EGE342.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE342 or 40342)

EGE304 Control Laboratory (1)

Transient response and frequency response measurements to characterize control system devices and components. Laboratory study of open-loop and closed-loop linear systems. Steady-state error analysis; positional speed control systems.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Corequisites

EGE316

EGE305 Communication Laboratory (1)

AM communication circuits. FM communication. SSB communication circuits. RF power transmitting. Phaselocked loop circuits, frequency synthesis, time division multiplexing (sampling,

PCM, DM), frequency division multiplexing, amplitude shift keying, phase shift keying, frequency shift keying.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE312 or 40312)

EGE306 Microwaves Circuits Laboratory (1)

Design, build and test planar microwave devices such as power divider, coupler, filter, mixer, amplifier, and oscillator.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

EGE311 Signals and Systems (3)

Continuous and discrete-time signals, systems, and their properties. Continuous and discrete-time linear time-invariant systems. Convolution sum and convolution integral. System descriptions using differential and difference equations. Continuous - time Fourier series, Fourier transform, and their properties. Frequency - selective filters, amplitude modulation, and sampling.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE250 or 40250) and (MAT359 or 64359)

Projected Offerings

Spring 2010, Spring 2011

EGE312 Communication Systems (3)

Signal analysis, signal transmission. Digital communication systems. Amplitude modulation; angle modulation.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE311 or 40311)

EGE316 Control Systems I (3)

Mathematical modeling of physical systems, signal flow graph, feedback control systems; stability; time domain analysis, frequency response and analysis of design using root locus, and frequency domain methods, Nyquist criterion and Nichols Chart, design of the PID controllers, time domain design of the phase lead and lag controllers.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE311 or 40311)

Projected Offerings

Spring 2010, Spring 2011

EGE317 Digital Control Systems (3)

Analysis and design of discrete-time control systems. General formulation of dynamic systems using difference equations. The Z-transform and its applications. Signal conversion and processing. Stability analysis. Design of discrete-time control system via transform methods. Compensator design using classical techniques.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE311 or 40311)

EGE320 Electronics I (3)

Semiconductor, diodes, zener diodes, diode circuits. Bipolar junction transistors: physics, biasing and

amplification. Metal-oxide semiconductor field effect transistor: physics, biasing and amplification. Bipolar transistor as a switch. Field effect transistor as a resistor.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE250 or 40250)

Projected Offerings

Fall 2009, Fall 2010

EGE321 Electronics II (3)

Multistage amplifiers (direct coupled, capacitor coupled). Cascade stage, differential amplifiers. Widlar current source. Operational amplifiers. Applications of operational amplifiers. Frequency response of amplifiers. Tuned amplifiers. Oscillators. Waveform generators. Feedback amplifiers. Power amplifiers. Laboratory exercises.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE320 or 40320)

Projected Offerings

Spring 2010, Spring 2011

EGE322 Electronics I Laboratory (1)

Laboratory exercises covering characterization of diodes, BJT, and JFET, diode circuits and biasing and amplification of BJT and JFET.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Corequisites

EGE320

Projected Offerings

Fall 2009, Fall 2010

EGE323 Electronics II Laboratory (1)

Laboratory exercises covering the multistage amplifier, direct coupled amplifier, difference amplifier, op-amp applications, frequency response, oscillator, waveform generator, power amplifier, and frequency response.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Corequisites

EGE321

Projected Offerings

Spring 2010, Spring 2011

EGE340 Engineering Electromagnetics I (3)

Transmission line theory. Graphical solutions using Smith Chart. Impedance matching. Transients on lossless lines. Coordinate systems and vector calculus. Maxwell's equations and the wave equation. Uniform plane waves.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE250 or 40250) and (EGE353 or 40353)

Projected Offerings

Fall 2009, Fall 2010

EGE341 Engineering Electromagnetics II (3)

Electrostatic fields in free space and material media. Electric energy, potential, and capacitance. Laplace's and Poisson's equations. Magnetostatic fields in free space and material media. Magnetic energy, magnetic potential, and inductance. Magnetic circuits. Quasi-static electromagnetic fields. Induction, magnetic forces and torques.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE340 or 40340)

Projected Offerings

Spring 2010, Spring 2011

EGE342 Microwave Fundamentals (3)

Review of Maxwell's equations, propagation of plane waves, reflection and transmission of plane waves, transmission line analysis, strip lines and microstrip lines, waveguide analysis, microwave networks.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(EGE341 or 40341)

EGE370 Engineering Statistics (3)

No description is available for this course.

Restrictions

- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering

Prerequisites

(MAT252 or 64252)

EGE393 Engineering Selected Topics (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGE399 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGE401 VLSI Design Laboratory (1)

Software and hardware used in VLSI design. Applications to NMOS and CMOS.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Corequisites

EGE435

EGE408 Senior Design Project I (3)

First part of a two-semester design project. A written progress report is required at the end of the semester.

Attributes

- Liberal Arts
- Writing Intensive

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGE409 Senior Design Project II (3)

Second part of a two-semester design project. Written and oral reports are required at the end of the semester.

Attributes

- Liberal Arts
- Writing Intensive

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE408 or 40408)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGE423 Digital Integrated Circuits (3)

MOS transistor, logic gate circuits and electrical characteristics. P-N junction and Schottky diodes. BJT, inverter and digital gate circuits. Regenerative circuits. Semiconductor memories. Design projects. Course based on charge-control and SPICE2 large signal MOSFET, diode and BJT models, and the related integrated circuit analysis.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE320 or 40320) and (EGC230 or 45230)

EGE435 VLSI Design (3)

Introduction to MOS devices and circuits (N-MOS, CMOS), MOS transistor theory. Integrated system processing technology and design rules (N-MOS and CMOS), circuit characterization and performance estimation, N-MOS and CMOS circuits and logic design. Interfacing. Introduction to VLSI design tools. Testability analysis. Microarchitecture of VLSI systems. Chip design projects?

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGC230 or 45230) and (EGE320 or 40321)

EGE436 Microelectronic Technology (3)

Crystal growth. Epitaxy. Major steps in the fabrication of VLSI circuits. Process simulation and diagnostic techniques. Yield and reliability.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE320 or 40320)

EGE440 Solid State Devices (3)

This course introduces the basics of semiconductor physics and physics and modeling of semiconductor devices such as pn diode, bipolar transistor, field effect transistor, optical, power and microwave devices.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE320 or 40320)

Corequisites

EGE320

EGE445 Antenna Systems (3)

Each fall. Antenna parameters, wire antennas, arrays of wire antennas, aperture type antennas, reflectors and feeds.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE341 or 40341)

EGE450 Microelectronic Technology Lab (1)

This course introduces students to various processing involved in fabrication of integrated circuits such as thermal oxidation, film deposition, lithography, cleaning and etching, rapid thermal processing and characterization.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE436 or 40436)

Corequisites

EGE436

EGE451 Electromechanical Energy Conversion (3)

Fundamentals of electromechanical energy conversion. Transformers. Induction machines, three phase and single phase. Synchronous machines.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE250 or 40250)

Projected Offerings

Fall 2009, Fall 2010

EGE452 Electric Power Systems (3)

Energy sources, transmission line parameters, transmission line modeling, power flow analysis, voltage and frequency control.

Restrictions

- Must be enrolled in the following level: Undergraduate
- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering
- May not be enrolled in the following classification: Freshman

Prerequisites

(EGE251 or 40251)

Projected Offerings

Spring 2010, Spring 2011

EGE493 Engineering Selected Topics

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

EGE494 Fieldwork Engineering (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

EGE495 Indep Study Elec Engineering (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

EGG101 Introduction to Engineering Science (3)

(One 1-hour and one 3-hour session per week.) Various fields of engineering, activities, career opportunities and areas of electrical engineering. History of electrical engineering. Present and future trends in various areas of electrical engineering, such as energy conversion, automatic control, electronic communications and computers. Engineering ethics and professionalism. Visits to representative industries.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Projected Offerings

Fall 2009, Fall 2010

EGG150 Information Technology (3)

No description is available for this course.

EGG193 Engineering Selected Topic (1)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(EGG101 or 40101)

EGG250 Renewable Energy (3)

Energy supply from alternative resources as a result of solar power (such as direct solar radiation, and indirect forms such as bioenergy, water and wind power), as well as geothermal energy and their effect on the environment is studied using a scientific approach.

Attributes

- Liberal Arts
- GE3: NSCI
- Systematic Inquiry

Prerequisites

MAT151 or 64151 or Math Placement Level 3

EGG293 Engineering Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGG295 Indep Study General Engi

- No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGG309 Technical Communications (3)

Oral, written and communicative issues of the professional engineers, schedules, job specifications, step-by-step directions, presentation of data, professional articles, abstracts, technical proposals, oral presentations, information formatting for world wide web.

Attributes

- Liberal Arts
- Writing Intensive

Restrictions

- Must be enrolled in the following level: Undergraduate

- Must be enrolled in one of the following majors: Computer Engineering, Electrical Engineering, Undeclared: Engineering

Prerequisites

(ENG160 or 41160) and (ENG180 or 41180)

Projected Offerings

Fall 2009, Fall 2010

EGG350 Fund of Engineering Review (3)

No description is available for this course.

EGG393 Engineering Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGG399 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

EGG493 Engineering Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

EGG495 Indep Study Generl Engin (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Electrical & Computer Engineering > Faculty

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School of Science & Engineering: Environmental Geochemical Science

Phone: (845) 257-3760

Location: Wooster Science Building, Room 202

Web address: www.newpaltz.edu/envscience

Environmental Geochemical Science is an interdisciplinary undergraduate degree program administered by the Department of Geological Sciences, focusing on the environmental aspects of Geology and Chemistry. Through formal courses, laboratories, and research projects, students develop an awareness of the geological and chemical processes that impact society and the environment. Both a major in Environmental Geochemical Science and a minor in Environmental Science are offered.

In the major program, a sophomore level Introduction to Environmental Science and Engineering, will draw on the foundation courses to bring together a truly interdisciplinary view of environmental science. Students will see how the different sciences must be combined to understand and address environmental problems. Particular emphasis will be placed on the roles of chemistry, geology, and environmental engineering. In the senior year, students will engage in a full year Senior Research Project under the supervision of a faculty mentor or an experienced regional scientist. During the spring term of the senior year, oral presentations of student research projects will be made in a Senior Seminar. This seminar will also feature guest scientists who will relate their own work in environmental science.

This major program is a rigorous four year sequence in science and mathematics, so it is essential that interested students seek advising early in their college studies. First year students should take Physical Geology (GLG220), General Chemistry 1 (CHE201), and Calculus 1 (MAT251) in their first semester, followed by General Chemistry 2 (CHE202), Calculus 2 (MAT252), and Introductory Biology (BIO210) in their second semester.

Transfer students should complete the above first year requirements before entering SUNY New Paltz, and should additionally take one year of calculus-based physics, a course in statistics, a laboratory course in historical geology, and organic chemistry.

This information is provided as a resource for students to aid in selecting a major or degree track. Students should, however, obtain a current plan of study form and consult with an advisor before selecting a program or enrolling in coursework. Complete advising guidelines may be obtained from the Department of Geological Sciences Office or by consultation with the Director of the Environmental Science program.

Environmental Geochemical Science Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses

- Faculty
- Program Changes

School of Science & Engineering: Environmental Geochemical Science > Major

Major in Environmental Geochemical Science 76-77 credits

Mathematics and Physics..... 19 credits

MAT241 Introduction to Statistics (3)

MAT251 Calculus 1 (4)

MAT252 Calculus 2 (4)

PHY201 General Physics 1 (4)

PHY202 General Physics 2 (4)

Biology..... 8 credits

BIO210 Introductory Biology (4)

BIO340 Ecology (4)

Chemistry 20 credits

CHE201 General Chemistry 1 (4)

CHE202 General Chemistry 2 (4)

CHE318 Organic Chemistry 1 (4)

CHE303 Introduction to Analytical Chemistry (4)

CHE407 Instrumental Techniques (4)

Geology..... 12 credits

GLG220 Physical Geology (4)

GLG301 Historical Geology (4)

GLG407 or GLG507 Introduction to Hydrology (4)

Environmental Science..... 17-18 credits

ENS370 Introduction to Environmental Science (4)

One of the following two Regulatory Elective courses:

ENS346 Conservation & Environmental Impact (3)

GEO406 Natural Resources: Utilization & Management (3)

BIO475/6, CHE475/6 or GLG475/6 Senior Research Project (6)

ENS477 Senior Seminar in Environmental Science (1)

One Environmental Science Elective:

ENSxxx (3-4)

The Department of Geological Sciences also offers a minor in Environmental Science. It provides students with the opportunity to broaden their knowledge in areas of natural science and social science germane to environmental issues.

School of Science & Engineering: Environmental Geochemical Science > Minor

Minor in Environmental Geochemical Science (22-24 credits):

This minor targets students with a primary interest in the physical sciences and an inclination to learn about environmental issues. Students completing this program will have made substantial progress towards fulfilling the requirements for majoring in Environmental Geochemical Science, Chemistry or Geology.

CORE (16 credits)

CHE201 General Chemistry 1 (4)

CHE202 General Chemistry 2 (4)

GLG220 Physical Geology (4)

GLG370 Introduction to Environmental Science & Engineering (4)

ELECTIVES (6-8 credits)

BIO210 Introductory Biology (4)

BIO340 Ecology (4)

CHE303 Introduction to Analytical Chemistry (4)

CHE318 Organic Chemistry (4)

GEO383 Introduction to Geographic Information Systems (3)

GEO406 Natural Resource Management (3)

GLG339 Natural Resources and Energy (3)

GLG346 Conservation and Environmental Impact (3)

GLG407 or GLG507 Introduction to Hydrogeology (3)

It is strongly recommended that students consult with the Coordinator of Environmental Science and/or an advisor in their major department as early as possible in their course planning.

Environmental Geochemical Science > Course Descriptions

ENV100 Envirn Chem (see CHE100) (3)

See CHE100.

Attributes

- Liberal Arts
- GE3: NSCI
- Systematic Inquiry

ENV185 Stats & Pub Plcy (see MAT185) (3)

See MAT185.

Attributes

- Information Literacy
- Liberal Arts
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

ENV191 Fieldwork Envrnmntl St 1

Fieldwork experience for students pursuing a Minor in Environmental Studies consisting of immersion for at least 10 hours in the actual work of one of several approved external organizations directed toward some aspect of environmental sustainability.

Attributes

- Liberal Arts

ENV192 Fieldwork Envrnmntl St 2

Fieldwork experience for students pursuing a Minor in Environmental Studies consisting of immersion for at least 10 hours in the actual work of one of several approved external organizations directed toward some aspect of environmental stability.

Attributes

- Liberal Arts

ENV205 Envrnmt Geo (see GLG205) (3)

See GLG205.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

ENV250 Eco Anthro (see ANT250) (3)

See ANT250.

Attributes

- Liberal Arts
- Systematic Inquiry
- GE3: SSCI

ENV274 Envi & Culture (see GEO274) (3)

See GEO274.

Attributes

- Liberal Arts
- Systematic Inquiry
- GE2: SSMS
- GE2A: SSMS
- GE3: SSCI

ENV285 Geography Hzrds (see GEO285) (3)

See GEO285.

Attributes

- Liberal Arts
- GE3: NSCI
- Systematic Inquiry

ENV311 Am Environ Pol (see POL311) (3)

See POL311.

Attributes

- Liberal Arts

ENV317 Envi Sociology (see SOC317) (3)

See SOC317.

Attributes

- Liberal Arts

ENV339 Ntrl Resrc Energy (see GLG339) (3)

See GLG339.

ENV346 Cnserv Env Impact (see GLG346) (3)

See GLG346.

Attributes

- Liberal Arts
- Writing Intensive

ENV347 Pltc Env & Dev (see POL 347) (3)

See POL347.

Attributes

- Liberal Arts

ENV383 Intro to GIS (see GEO383) (3)

See GEO383.

Attributes

- Liberal Arts

ENV393 Environmental Studies Selected Topics (1)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

ENV406 Ntrl Rsrc Manag (see GEO406) (3)

See GEO406.

Attributes

- Liberal Arts

ENV481 Trnscnlrl Health (see ANT481) (3)

See ANT481.

Attributes

- GE2: AALA
- GE2A: AALA
- Liberal Arts
- Systematic Inquiry
- GE3: WRLD


Environmental Geochemical Science > Faculty

List of faculty who teach in this program coming soon.

School of Science & Engineering: Environmental Studies

Phone: (845) 257-3728

Location: Resnick Engineering Hall 114

Web address: www.newpaltz.edu/environmentalstudies 

The Environmental Studies Minor is an interdisciplinary program which gives an overview of the causes and consequences of our current environmental problems and provides basic tools and understanding students will need to become active participants in the solutions. Course work comes from Anthropology, Chemistry, Geography, Geology, Mathematics, Political Science and Sociology.

For more information about this minor, please contact

Dr. David Clark

Program Director

clarkd@newpaltz.edu

(845) 257-3728.

Environmental Studies Program:

- [Minor](#)
- [Course Descriptions](#)
- [8 Semester Plans](#)
- [General Education Courses](#)
- [Faculty](#)
- [Program Changes](#)

Environmental Studies > Minor

Minor in Environmental Studies - 22 credits

- Social Science: 2 courses chosen from: 6 credits
 - ANT250 Ecological Anthropology (SSCI)
 - GEO374 Environment and Culture
 - POL347 Politics of Environment and Development
 - SOC317 Environmental Sociology
- Natural Science:
 - CHE100 Environmental Chemistry (NSCI) 3 credits
 - GLG205 Environmental Geology (NSCI) 4 credits
- Mathematics
 - MAT185 Statistics and Public Policy (MATH) 3 credits

- Electives: 2 courses chosen from: 6 credits
 - ANT481 Transcultural Health (WRLD)
 - GEO285 Geography of Hazards (NSCI)
 - GEO383 Introduction to Geographic Information Systems
 - GEO406 Natural Resource Management
 - GLG339 Natural Resources and Energy
 - GLG346 Conservation and Environmental Impact
 - POL311 American Environmental Politics
- Fieldwork 0 credits
 - 20 hours work for approved organization

Environmental Studies > Course Descriptions

ENS193 Envr Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the [Schedule of Classes](#) for more information regarding this course.

ENS293 Envr Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the [Schedule of Classes](#) for more information regarding this course.

ENS295 Indep Study Envr

No description is available for this course.

ENS393 Envr Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the [Schedule of Classes](#) for more information regarding this course.

ENS493 Envr Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the [Schedule of Classes](#) for more information regarding this course.

Restrictions

- May not be enrolled in the following classification: Freshman

ENS495 Indep Study Envr

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

School of Science & Engineering: Geological Sciences

Phone: (845) 257-3760

Location: Wooster Science Building, Room 202

Web address: www.newpaltz.edu/geology

The Department of Geological Sciences offers both undergraduate and masters degree programs. Through formal courses, field work, and research projects, the students develop an awareness of the geological processes that shape our planet, and their impact on society and the environment. The undergraduate major in geology offers concentrations in both General Geology and Environmental Geoscience.

Elementary education and secondary education degrees in Earth Science are offered at both the undergraduate and masters levels. These programs are described under the School of Education listings. An undergraduate degree in Environmental Geochemical Science, also offered by this department, has a separate listing. A minor in geology is available for those majoring in other fields.

Interdisciplinary in nature, the undergraduate degree in geology requires courses in geology and cognate areas. The General Geology option is recommended for those contemplating graduate work in the geological sciences. For any of the geology programs, Physical Geology (GLG220) should be taken in the fall semester of the freshman year, followed by Historical Geology (GLG301) in the spring. General Chemistry I (CHE201), General Chemistry II (CHE202) and Calculus I (MAT251) should also be taken in the freshman year. It is also possible to begin the major in the sophomore year with proper advising.

Transfer students should complete as many of the cognate requirements as possible before entering New Paltz. Ideally, one year each of college chemistry, physics, and calculus should be completed in addition to a one year laboratory sequence in geology (physical and historical geology).

It is important that all students seek advising early on, so they can complete the major on time. Students should get their advisor's approval of elective courses selected "by advisement" before taking the courses. It is the students' responsibility to become familiar with the program requirements, and to work out the details of their program with the aid of their advisors. Additional advising information is available in the department office (WSB 202).

Students must earn a grade of C- or better in all courses required for the geology major or minor.

For non-majors interested in geology, or those considering a geology minor, the recommended sequence is Physical Geology (GLG220) followed by Historical Geology (GLG301).

Honor's Research

Honor's Research is for students who wish to conduct a specialized research project at the undergraduate level. Students who plan on obtaining an M.A. or Ph.D. are advised to enroll in this course if they satisfy the prerequisites. Honor's Research is a very good means of letting the student, as

well as faculty at New Paltz and other schools, identify whether or not he or she is suited for graduate work.

In order to enroll in Honor's Research (GLG491) a student must maintain a cumulative average of at least 3.00, and be recommended by a geology faculty sponsor and the department chair. Guidelines for research projects are available in the department office, and should be carefully read prior to meeting with the department chair to discuss the program.

Geological Sciences Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses
- Faculty
- Program Changes

School of Science & Engineering: Geological Sciences > Major

Major in Geology

Track I – General Geology 58-63 credits

Geology Core 27 credits

- GLG220 Physical Geology (4)
- GLG301 Historical Geology (4)
- GLG311 Mineralogy-Crystallography (4)
- GLG313 Optical Mineralogy (3)
- GLG314 Petrology (4)
- GLG331 Stratigraphy-Sedimentation (4)
- GLG338 Structural Geology (4)

Geological Science Courses 8-12 credits

- GLG305 Paleontology (4)
- GLG492 Research in Geology (1-4)
- GLG481 Field Excursion
- One 400 or 500-level geology course by advisement:*
- GLG 4XXX or GLG5XX (3-4)

Cognate Courses..... 23-24 credits

- CHE201 General Chemistry I (4)
- CHE202 General Chemistry II (4)
- MAT251 Calculus I (4)
- PHY201 General Physics I (4)

One of the following by advisement:

- MAT241 Introduction to Statistics (3)
- MAT252 Calculus II (4)

One of the following by advisement:

PHY202 General Physics II (4)

PHY222 Fundamental Physics II (4)

Recommended Courses:

BIO210 Introductory Biology (4)

CPS210 Computer Science I: Foundations (4)

GEO383 Introduction to Geographic Information Systems (3)

It is recommended that students who plan to do graduate or professional work in geology take a six-week field geology camp in the summer following their final semester at New Paltz.

Track II – Environmental Geoscience 56-58 credits

Geology Core 27 credits

GLG220 Physical Geology (4)

GLG301 Historical Geology (4)

GLG311 Mineralogy and Crystallography (4)

GLG313 Optical Mineralogy (3)

GLG314 Petrology (4)

GLG331 Stratigraphy-Sedimentation (4)

GLG338 Structural Geology (4)

Geological Science Courses 6-7 credits

One of the following by advisement:

GLG339 Natural Resources and Energy (3)

GLG346 Conservation and Environmental Impact (3)

GLG434 Environmental Surveying Geology (3)

One 400 or 500-level geology course by advisement:

GLG4XX or GLG5XX (3-4)

Cognate Courses..... 23-24 credits

CHE201 General Chemistry I (4)

CHE202 General Chemistry II (4)

MAT251 Calculus I (4)

PHY201 General Physics I (4)

One of the following by advisement:

MAT241 Introduction to Statistics (3)

MAT252 Calculus II (4)

One of the following by advisement:

PHY202 General Physics II (4)

PHY222 Fundamental Physics II (4)

Recommended Courses

BIO210 Introductory Biology (4)

CPS210 Computer Science I: Foundations (4)

GEO383 Introduction to Geographic Information Systems (3)

School of Science & Engineering: Geological Sciences > Minor

Minor in Geology 18 credits

Required Courses 8 credits
GLG220 Physical Geology (4)
GLG301 Historical Geology (4)
Elective Courses 10 credits

A minimum of ten credits from any of the following:

Geology Courses

GLG305 Paleontology (4)
GLG311 Mineralogy and Crystallography (4)
GLG313 Optical Mineralogy (3)
GLG314 Petrology (4)
GLG331 Stratigraphy-Sedimentation (4)
GLG338 Structural Geology (4)

Environmental Geoscience Courses

GLG120 Weather and Environment (4)
GLG205 Environmental Geology (4)
GLG339 Natural Resources and Energy (3)
GLG346 Conservation and Environmental Impact (3)
GLG434 Environmental Surveying Geology (3)

The college also offers an Interdisciplinary minor in Environmental Science. See index.

Geological Sciences > Course Descriptions

GLG100 The Planet Earth (3)

Major events in the development of the earth from a primordial planet to its present-day appearance. Use of the scientific method to study past and present earthquakes, mountain-building processes, origin and evolution of life amid the background of the changing physical environment, continental drift and plate tectonics, and glaciations. Not open to students who are now taking or who have taken GLG220. Recommended sequential course is GLG110, The Evolving Earth.

Attributes

- Liberal Arts
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab

GLG110 The Evolving Earth (3)

Evolution of the physical and biological past of the earth preceding and during human evolution. Present and future problems of the human scene are examined in the light of evolutionary patterns. Although designed as a sequence to GLG100, The Planet Earth, the two courses may be taken independently of each other.

Attributes

- Liberal Arts
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab

GLG120 Weather and Environment (4)

A non-mathematical introduction to the basic principles of weather and weather forecasting and their effect on man. Laboratory studies of weather maps and related charts.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

GLG193 Geological Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

GLG199 Modular Course

No description is available for this course.

GLG205 Environmental Geology (4)

The geological system as a framework for understanding environmental problems; man and his interactions with geological systems. Conservation, utilization, and management of natural resources. Field trips.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

GLG220 Physical Geology (4)

Basic concepts of geology. Minerals, rocks, and rock-forming processes. Geologic time and age dating. Erosion, streams, groundwater, glaciers, geologic structures, earthquakes, plate tectonics, and other geologic processes.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

GLG293 Geological Selected Topic (2)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

GLG295 Indep Study Geology

No description is available for this course.

GLG299 Phys Glg-Fld Excur (1)

No description is available for this course.

Corequisites

GLG220

GLG300 Evo Studies Sem (see EVO301) (3)

See EVO301.

Attributes

- Liberal Arts
- Writing Intensive

GLG301 Historical Geology (4)

Geological and geographic developments of the continents throughout the earth's history, with emphasis on North America. Methods used in calculating the age of our planet, and interpreting the history of its rocks. Evolution of plants and animals through geologic time. In the laboratory, geologic maps and a few common fossils are studied. Local and regional field trips.

Attributes

- Liberal Arts
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab

Prerequisites

(GLG220 or 50220)

Projected Offerings

Spring 2010, Spring 2011

GLG303 Geomorphology (4)

Overview of surficial geological processes and how they control landscapes evolution. A geological investigation of hill slopes, rivers, deserts, glaciers, coasts, and oceans with an emphasis on local and regional landscapes and environmental implications.

Attributes

- Liberal Arts

Prerequisites

Undergraduate level GLG220 or Undergraduate level 50220

GLG305 Paleontology (4)

Principles and methods in the study of fossils; morphology, classification and evolution, ecologic relationships between organisms and sedimentary systems, geographic distribution, and stratigraphic range. Field trips.

Attributes

- Liberal Arts

Prerequisites

(GLG301 or 50301) or (BIO210 or 15210)

Projected Offerings

Spring 2010, Spring 2011

GLG311 Mineralogy and Crystallography (4)

Basic elements of solid internal and external crystallography and principles of crystal chemistry and

geochemistry. Properties, occurrence, geochemistry, and hand specimen identification of the more common economic and rock-forming minerals. Field trips.

Attributes

- Liberal Arts

Prerequisites

(CHE201 or 22201) and (GLG220 or 50220)

Projected Offerings

Fall 2009, Fall 2010

GLG313 Optical Mineralogy (3)

Theory of the transmission of polarized light through crystalline solids. Use of the polarizing microscope in mineral identification. Optical properties of the common rock-forming minerals.

Attributes

- Liberal Arts

Corequisites

GLG311

Projected Offerings

Fall 2009, Fall 2010

GLG314 Petrology (4)

Study of the igneous, metamorphic and sedimentary rocks that form the solid earth. Rock composition, classification, distribution and origin. Volcanic, tectonic and other environments of rock formation. Phase diagrams, age dating, and rock chemistry. Laboratory microscope study of thin sections. Field trips.

Attributes

- Liberal Arts

Prerequisites

(CHE202 or 22202) and (GLG311 or 50311) and (GLG313 or 50313)

Projected Offerings

Spring 2010, Spring 2011

GLG331 Stratigraphy-Sedimentation (4)

Stratified rocks, their formation today as clues to the formation of similar rocks in the past, their local descriptions, their correlation in a regional and world-wide framework, and the principles and methods used in interpreting the geologic history they record. Laboratory and field methods in the study of sedimentation, sedimentary rocks and stratigraphic successions found in outcrops.

Attributes

- Liberal Arts
- Writing Intensive

Prerequisites

(GLG301 or 50301) and (GLG305 or 50305) and Math Placement Level 5

Projected Offerings

Fall 2009, Fall 2010

GLG334 Principles of Oceanography (4)

The physical, chemical, geological, biological, and economic aspects of the science of oceanography; properties of seawater, ocean dynamics, coastal processes, marine sediments, sea-floor spreading, and continental drift, sea life fisheries, petroleum and the sea, marine technology, etc. Field trips. Laboratory.

Attributes

- Liberal Arts

GLG338 Structural Geology (4)

Study of the structure and deformation of the Earth's crust. Includes rock mechanics, faulting, folding, fabric, geometric analysis, diapirism, and tectonics. Laboratories cover geologic map interpretation, use of spherical projections, and field work. Field trips.

Attributes

- Liberal Arts
- Writing Intensive

Prerequisites

(GLG220 or 50220) and Math Placement Level 5

Projected Offerings

Fall 2009, Fall 2010

GLG339 Natural Resources and Energy (3)

Relation of the production of energy and its environmental impact on the finite nature of our natural resources. Review and critical evaluation of past, present, and future energy technologies.

Attributes

- Liberal Arts

Projected Offerings

Spring 2010, Spring 2011

GLG346 Environmental Impact Assessment (3)

Study of the ways by which man's impact on nature and the environment is assessed and evaluated. Aspects of Environmental Impact Statements that are of significance to environmental geology, including air quality, meteorology, water quality, hydrogeology, land use, waste management, energy use and conservation.

Attributes

- Liberal Arts
- Writing Intensive

Prerequisites

(ENG160 or 41160) and (ENG180 or 41180) and (GLG205 or 50205)

Projected Offerings

Fall 2009, Fall 2010

GLG370 Environmental Geochemical Science (4)

A survey course covering the broad scope of environmental science and engineering, including air pollution, water pollution, water quality control, environmental chemistry, global atmospheric change, solid waste management and resource recovery. Case studies and outside speakers.

Attributes

- Liberal Arts

Prerequisites

CHE202 and GLG220

Projected Offerings

Fall 2009, Fall 2010

GLG393 Geological Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

GLG399 Modular Course

No description is available for this course.

GLG407 Hydrogeology (4)

Physical properties of groundwater flow, well hydraulics, water quality, the occurrences and distribution of groundwater, and to refine general quantitative and computer skills.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

GLG220 and Math Placement Level 5

GLG434 Environmental Surveying Geology (3)

Field-oriented course, includes non legal surveying, basic principles and elementary methods; the use and application of plane table and transit surveying. Also, introduction to the application and use of topographic, geologic, and soils maps, and aerial photographs.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

GLG205 and GLG331

GLG435 Field Geology (4)

Problems and methods of geological field study. Use of the Brunton compass, plane table, alidade, the construction of a geologic map, the solving of a geologic field problem and the writing of a report. Primarily taught in the field.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

GLG338

Projected Offerings

Fall 2009, Fall 2010

GLG475 Geology Research Project 1 (3)

Students will undertake a two semester research project, under the guidance of a faculty mentor, focusing on a detailed examination of a real world environmental problem. The project will culminate in a written document and an oral presentation in the Senior Seminar.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following majors: Environmental Geochem Science, Geology
- Must be enrolled in the following classification: Senior

GLG476 Geology Research Project 2 (3)

Continuation of GLG475.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following majors: Environmental Geochem Science, Geology
- May not be enrolled in the following classification: Freshman

Prerequisites

GLG475

GLG477 Senior Seminar in Environmental Science (1)

A series of presentations by senior students and by invited speakers. In the course, students nearing graduation present the findings of their senior project. On alternate weeks, invited professionals from the environmental sciences present relevant aspect of their work.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in one of the following majors: Environmental Geochem Science, Geology
- May not be enrolled in the following classification: Freshman

Prerequisites

(GLG475 or 50475) or (CHE475 or 22475) or (BIO475 or 15475)

GLG481 Field Excursion (1-3) (1)

Geology of a selected area of North America. Readings and discussions of the detailed tectonic and petrological evolution of selected classical geologic areas. Field excursions to type areas. May be repeated for credit provided listed topic changes.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

GLG490 Seminar in Geology (2-4)

Current problems and projects in geology. Developing ability to evaluate evidence critically and to understand current geological literature.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

GLG491 Honor's Research (4)

Individual advanced research in geology. Students are expected to complete a research thesis in consultation with instructor and chair.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

GLG492 Research in Geology (1-4) (1)

Laboratory or field research project to be completed in consultation with a geology faculty member in accord with the department guidelines for research.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

GLG493 Geological Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- May not be enrolled in the following classification: Freshman

GLG494 Fieldwork In Geology

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

GLG495 Indep Study Geology (1)

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

GLG499 Modular Course

No description is available for this course.

Restrictions

- May not be enrolled in the following classification: Freshman

School of Science & Engineering: Geological Sciences > Faculty

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The Department of Mathematics offers both undergraduate and masters degree programs. The undergraduate major in Mathematics provides a strong theoretical background for graduate or industrial work in any area of mathematics. Three concentrations are available: Pure Mathematics, Actuarial Science, and Computer Science. Students develop a strong mathematical foundation applicable to many fields, the ability to think analytically and make sound judgments and the ability to organize, analyze and interpret numerical data. The Mathematics majors for students in the Elementary and Secondary Education programs are listed under the School of Education.

The mathematics curriculum is specifically structured to enable students to establish a firm academic base in mathematical principles before proceeding to advanced study. No course (including a transfer course) in which a pass/fail or a grade of less than C- is received may be used to meet a prerequisite or to satisfy a requirement in any major offered by the Department of Mathematics.

All students wishing to declare any Mathematics major must meet certain course and GPA requirements. Students not meeting these requirements may be eligible to declare a premajor in Mathematics. Contact the department for details.

Summary of Math Placement Levels and What They Mean:

MPL	Meaning	Courses that will raise level (a grade of C- or better will raise MPL to (x))	Or take this MP Exam
1	Deficiency in Fundamental Skills	MAT050 Basic Algebra (2) MAT151 College Math (3) MAT152 + MAT093 College Algebra with Supplemental Workshop (4)	Basic Algebra
2	Deficiency in College Level Mathematics Skills	MAT151 College Math (3) MAT152 College Algebra (4)	College Algebra
3	Ready for some General Education MATH courses, (see specific prerequisites)	MAT152 College Algebra (4)	College Algebra
4	Prepared for Precalculus or any General Education MATH course, MATH req. met for GE II and IIA but may still need ANSK course.	MAT181 Precalculus (5) MAT245 Basic Calculus (5)	Precalculus
5	General Education MATH requirement met for GE III; MATH & ANSK met for GE II& IIA, ready for Calculus I (MAT251).	MAT251 Calculus I (6)	
6	Successfully completed Calculus I		

Mathematics:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses
- Faculty
- Program Changes

School of Science & Engineering: Mathematics >Major

Major in Mathematics 53 credits

Required Mathematics Courses..... 36 credits

MAT251 Calculus I (4)

MAT252 Calculus II (4)

MAT260 Introduction to Proof I (3)

MAT303 Foundations of Analysis (3)

MAT304 Foundations of Algebra (3)

MAT321 Intermediate Analysis I (3)

MAT353 Calculus III (4)

MAT359 Ordinary Differential Equations (3)

MAT362 Linear Algebra (3)

MAT364 Introduction to Abstract Algebra I (3)

MAT381 Probability and Statistics I (3)

Elective Courses 9 credits

A total of 9 credits in mathematics or computer science courses at the 300 level or above. (With minor exceptions. Please contact the department for a current list.)

Required Cognate Courses 8 credits

(Students are advised to choose courses so that the other 8 credits are used to meet their Natural Science GE requirement.)

Of the six sequences listed below, Mathematics majors must take at least one of the Physics or Computer Science sequences, and must take two sequences overall.

General Physics I and II	(PHY201 & PHY202) (4 + 4),
Computer Science I and II	(CPS210 & CPS310) (4 + 4),
General Biology I and II	(BIO201 & BIO202) (4 + 4),
General Chemistry I and II	(CHE201 & CHE202) (4 + 4),
Physical and Historical Geology	(GLG220 & GLG301) (4 + 4),
Micro and Macro Economics	(ECO206 & ECO 207) (3 + 3).

School of Science & Engineering: Mathematics > Minor

Minor in Mathematics 20 credits

Required Courses* 11 credits

MAT251 Calculus I (4)

MAT252 Calculus II (4)

MAT260 Intro Proof 1 (3)

Electives*..... 9 credits

Three upper-division mathematics electives.

**At least half of the credits for this minor must be from courses not used as part of the student's major.*

Mathematics > Course Descriptions

MAT093 Math Selected Topic

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

MAT140 Mathematics for Elementary School Teachers 1 (3)

First course of a two-semester sequence covering problem solving, numeration, number theory, relations, functions, integers, rational and real numbers, statistics, probability, and the use of the calculator. Open to students seeking New York State certification in Elementary Education.

Attributes

- Liberal Arts
- GE2: MATH
- GE2A: MATH

Prerequisites

Math Placement Level 3 or Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level MAT151 Minimum Grade of C

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT151 College Mathematics (3)

Topics from basic and intermediate algebra are reviewed. Emphasis is on using algebra to solve real world problems from such areas as geometry, finance, business, and science. The concepts of variable

and function and the use of formulas will be stressed. Problems will be presented in various formats; graphically, numerically, and symbolically. NOTE: Not to be taken for credit by students with MPL 4 or more.

Attributes

- Liberal Arts
- GE2: MATH
- GE2A: MATH

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT152 College Algebra (3)

Factoring, multiplying and dividing algebraic expressions, coordinate geometry, functions and functional notation, polynomials, exponents, logarithms, and inequalities. Primarily preparation for more advanced courses, but also open to students desiring a background in college algebra. NOTE: Not to be taken for credit by students with MPL 4 or more.

Attributes

- Liberal Arts
- GE2: MATH
- GE2A: MATH

Prerequisites

Math Placement Level 3 or Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C- or Undergraduate level MAT151 Minimum Grade of C

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT181 Precalculus (4)

Topics needed for the study of calculus: brief review of algebra; exponential and logarithmic functions; trigonometry; binomial theorem; remainder and factor theorems; mathematical induction; sequences; series; introduction to complex numbers.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 4 or (Undergraduate level MAT152 Minimum Grade of C- or Undergraduate level 64152 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT182 Graphs and Optimization (3)

Optimization problems that arise in scheduling, routing and management will be solved by translating them into problems about finite graphs and then studying mathematical techniques of graph theory.

Intended for General Education; not part of any Math major.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT183 Introduction to Mathematical Modeling (3)

Previously learned mathematics is reviewed and applied in a broad range of fields. Selected topics from graph theory, linear programming, exponential growth and decay, statistics, probability, game theory, voting theory, apportionment, and coding systems. Intended for General Education; not part of any Math major.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT184 Elements of Geometry (3)

History of geometry and its applications. Euclid's Axioms and geometric proof. Practical applications of geometry. Solid geometry. Polygons and tessellations of the plane. Intended for General Education; not part of any Math major.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT185 Stats and Public Policy (3)

Fundamental concepts of statistics with an applied approach designed to create savvy "statistical consumers", able to understand, evaluate, and analyze quantitative evidence presented in the media on issues relevant to citizens in our society today. Intended for General Education; not part of any Math major.

Attributes

- Information Literacy
- Liberal Arts
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT186 Infinity (3)

An elementary introduction to mathematical infinity and its uses. Notation for infinite sets and sequences. Difference equations. Method of exhaustion. Cardinals, ordinals, and equipotence. Independence of the Continuum Hypothesis. Intended for General Education; not part of any Math major.

Attributes

- Liberal Arts
- GE3: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

MAT193 Math Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

MAT240 Mathematics for Elementary School Teachers 2 (3)

Second course of a two-semester sequence covering problem solving, logic, analysis of geometric shapes and solids, measurement, congruence, similarity, constructions, coordinate geometry, transformations, programming in LOGO, and the use of the calculator. Open only to students seeking New York State certification in Elementary Education.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH
- GE2A: MATH
- Systematic Inquiry

Prerequisites

(Undergraduate level MAT140 Minimum Grade of C- or Undergraduate level 64140 Minimum Grade of C-) and (Math Placement Level 3 or Undergraduate level MAT151 Minimum Grade of C- or Undergraduate level 64151 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT241 Introduction to Statistics (3)

Descriptive statistics, measure of central tendency and dispersion, population parameters and sample statistics, use of probability distributions for statistical inference, binomial and normal distributions, introduction to hypothesis testing. Designed for non-mathematics majors. Not open to students who have taken MAT381 or MAT382.

Attributes

- Liberal Arts
- GE2: MATH
- GE3: MATH

- GE2A: MATH
- Systematic Inquiry

Prerequisites

Math Placement Level 4 or (Undergraduate level MAT152 Minimum Grade of C- or Undergraduate level 64152 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT245 Basic Calculus (4)

Survey of calculus useful to students of business, information science, and the social and biological sciences. Differentiation and integration of polynomial, rational, exponential, and logarithmic functions. Emphasis on techniques and applications, chosen from such fields as economics, psychology, and biology. This course does not give sufficient preparation for Calculus II. Students planning to continue their study of calculus are advised to register for Calculus I.

Attributes

- Liberal Arts
- GE2: MATH
- GE2A: MATH

Prerequisites

Math Placement Level 4 or (Undergraduate level MAT152 Minimum Grade of C- or Undergraduate level 64152 Minimum Grade of C-)

MAT251 Calculus I (4)

Single-variable calculus: limits, continuity, derivatives, extrema and other applications, mean value theorem, integrals, fundamental theorem of calculus.

Attributes

- Liberal Arts

Prerequisites

Math Placement Level 5 or (Undergraduate level MAT181 Minimum Grade of C- or Undergraduate level 64181 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT252 Calculus II (4)

A continuation of Calculus I. Techniques of integration, applications of the integral, infinite sequences and series, parametric equations, polar coordinates, separable differential equations.

Attributes

- Liberal Arts

Prerequisites

Math Placement Level 6 or (Undergraduate level MAT251 Minimum Grade of C- or Undergraduate level 64251 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT260 Introduction to Proof 1 (3)

Focus on basic principles of logic, set theory, functions, and the development of mathematical reasoning. Introduction to basic techniques in writing proofs.

Attributes

- Liberal Arts

Prerequisites

Math Placement Level 5 or (Undergraduate level MAT181 Minimum Grade of C- or Undergraduate level 64181 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT293 Math Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

MAT295 Indep Study Math

No description is available for this course.

MAT301 Foundations of Mathematics 2 (3)

Builds upon mathematical concepts and skills introduced in 64260 with a primary focus on the clear writing of mathematical arguments. Emphasis on deductive thinking and strategies for proving theorems. Topics include set theory, logic, mathematical induction, recursion.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT251 Minimum Grade of C- or Undergraduate level 64251 Minimum Grade of C-) and (Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-)

MAT302 Introduction to Proof 2 (3)

Continuation of Introduction to Proof 1 for students who will not take MAT321 or MAT364. Set theory, equivalence relations, functions, induction, number theory. Properties of the integers, rationals and reals. Credit will not be given for both this course and MAT303 or MAT304.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-) and (Math Placement Level 6 or Undergraduate level MAT251 Minimum Grade of C- or Undergraduate level 64251 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

MAT303 Foundations of Analysis (3)

Continuation of Introduction to Proof 1 for students who will take MAT321 or MAT364. Particularly intended to prepare students for Intermediate Analysis. Sets of real numbers, infinite unions and intersections, supremum, completeness, countability. Functions on the real numbers. Axioms for the real numbers. Axioms for the real numbers, and their consequences. Credit will not be given for both this course and MAT302.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-) and (Undergraduate level MAT252 Minimum Grade of C- or Undergraduate level 64252 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT304 Foundations of Algebra (3)

Continuation of Introduction to Proof 1 for students who will take MAT321 or MAT364. Particularly intended to prepare students for Introduction to Abstract Algebra. Set theory, functions, equivalence relations, number theory, induction and recursion. Credit will not be given for both this course and MAT302.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-) and (Undergraduate level MAT251 Minimum Grade of C- or Undergraduate level 64251 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

MAT310 Elementary Number Theory (3)

Introductory study of integers. Axiomatic approach to order and divisibility property, prime distributions, modular arithmetics, perfect numbers and other topics.

Attributes

- Liberal Arts
- Writing Intensive

Prerequisites

(Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level 64301 Minimum Grade of C-) or (Undergraduate level MAT302 Minimum Grade of C- or Undergraduate level 64302 Minimum Grade of C-) or (Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level 64303 Minimum Grade of C-) or (Undergraduate level MAT304 Minimum Grade of C- or 64304)

MAT320 Discrete Mathematics for Computing (3)

This course is designed to provide Computer Science and Computer Engineering majors with a working knowledge of discrete mathematics topics they will need in future courses and in later work. Does not count towards the Mathematics major.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following major: Mathematics

Prerequisites

(Undergraduate level EGC230 Minimum Grade of C- or Undergraduate level 45230 Minimum Grade of C-) or (Undergraduate level CPS310 Minimum Grade of C- or Undergraduate level 25310 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT321 Intermediate Analysis I (3)

A study of the theoretical foundations of elementary calculus: careful treatment of the concepts of limit and least upper bound; sequences of real numbers; continuity; differentiability; integrability; classical theorems of calculus such as the Mean Value Theorem and the Fundamental Theorem of calculus.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT301 Minimum Grade of B- or Undergraduate level 64301 Minimum Grade of B-) and (Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C-) or (Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level 64303 Minimum Grade of C-) or (Undergraduate level MAT304 Minimum Grade of C- or Undergraduate level 64304 Minimum Grade of C-) and Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C- and (Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level 64301 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level 64303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C- or Undergraduate level 64304 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

MAT322 Intermediate Analysis 2 (3)

Series of real numbers; sequences and series of functions; uniform convergence; power series; Taylor Series, additional topics as chosen by the instructor.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT321 Minimum Grade of C- or Undergraduate level 64321 Minimum Grade of C-)

MAT331 Axiomatic Geometry (3)

Geometry from a modern axiomatic standpoint, covering incidence, and betweenness, and emphasizing congruence and transformations.

Attributes

- Liberal Arts
- Writing Intensive

Prerequisites

(Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level 64301 Minimum Grade of C-) or (Undergraduate level MAT302 Minimum Grade of C- or Undergraduate level 64302)

Minimum Grade of C-) or (Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level 64303 Minimum Grade of C-) or (Undergraduate level MAT304 Minimum Grade of C- or Undergraduate level 64304 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT332 Modern Geometry (3)

Euclidean and non-Euclidean geometries. Consistency proofs and Euclidean constructions.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT331 Minimum Grade of C- or Undergraduate level 64331 Minimum Grade of C-)

MAT341 Applied Mathematics 1 (3)

The first of a two-semester sequence in advanced mathematics for scientists and engineers. Topics include partial derivatives, ordinary differential equations, infinite series, and matrix algebra. Does not count towards the Mathematics major, or as an elective in a Math minor which contains MAT353 or MAT359.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following major: Mathematics

Prerequisites

(Undergraduate level MAT252 Minimum Grade of C- or Undergraduate level 64252 Minimum Grade of C-)

Projected Offerings

Fall 2010, Fall 2009

MAT342 Applied Mathematics 2 (3)

The second of a two-semester sequence in advanced mathematics for scientists and engineers. Topics include complex analysis, Laplace and Fourier transforms, vector calculus, ordinary and partial differential equations and special functions of mathematical physics. Counts as an upper-division elective in the Mathematics major.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT341 Minimum Grade of C- or Undergraduate level 64341 Minimum Grade of C-) or (Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C and Undergraduate level MAT359 Minimum Grade of C- or Undergraduate level 64359 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT353 Calculus 3 (4)

Analytic geometry in 3 dimensions, vector-valued functions, multivariate functions, partial derivatives, multiple integrals, applications, line integrals, Green's theorem, divergence, curl.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT252 Minimum Grade of C- or Undergraduate level 64252 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT359 Ordinary Differential Equations (3)

Methods of solution of homogeneous and non-homogeneous linear differential equations. Power series and Laplace transform methods. Non-linear equations of order one. Applications.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT252 Minimum Grade of C- or Undergraduate level 64252 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT362 Linear Algebra (3)

The algebraic structure of Euclidean n-space and finite dimensional vector spaces. Linear transformations, matrices, determinants, linear equations. Norm, inner product, and orthogonality.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C-)and (Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-)

Projected Offerings

Fall 2009, Fall 2010

MAT363 Combinatorics (3)

Counting arguments in different settings and their relation to probability. Functions, relations and, in particular, graphs and trees.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT260 Minimum Grade of C- or Undergraduate level 64260 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT364 Introduction to Abstract Algebra I (3)

Elementary theory of groups and rings, integral domains and fields.

Attributes

- Liberal Arts

Prerequisites

Undergraduate level MAT362 Minimum Grade of C- or Undergraduate level 64362 Minimum Grade of C and (Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level 64301 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level 64303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C- or Undergraduate level 64304 Minimum Grade of C-)

Projected Offerings

Spring 2010, Spring 2011

MAT365 Introduction to Abstract Algebra II (3)

Elementary theory of groups and rings, integral domains and fields.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT364 Minimum Grade of C- or Undergraduate level 64364 Minimum Grade of C-)

MAT375 Numerical Methods (3)

Computer solution of mathematical problems; round-off errors and computer arithmetic, solution of equations, interpolation and approximation, numerical differentiation and integration, direct and iterative techniques in matrix algebra.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT362 Minimum Grade of C- or Undergraduate level 64362 Minimum Grade of C-) and (Undergraduate level MAT210 Minimum Grade of C- or Undergraduate level 64210 Minimum Grade of C-)

MAT381 Probability and Statistics I (3)

Introduction to probability theory and statistics. Random variables; distribution functions; expected value and moments; sampling; point estimation; interval estimation; hypothesis testing.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT252 Minimum Grade of C- or Undergraduate level 64252 Minimum Grade of C-)

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

MAT382 Probability and Statistics II (3)

Introduction to probability theory and statistics. Random variables; distribution functions; expected value and moments; sampling; point estimation; interval estimation; hypothesis testing.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT381 Minimum Grade of C- or Undergraduate level 64381 Minimum Grade of C-) and (Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C-)

MAT384 Calculus IV (3)

Fourth semester covering differential and integral calculus. Emphasizes line and surface integral theorems, sequences, and series.

Attributes

- Liberal Arts

Prerequisites

(Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level 64353 Minimum Grade of C-)

MAT393 Math Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

MAT399 Modular Course

No description is available for this course.

MAT483 Actuarial Mathematics (3)

Theories and models of risk, and their applications. Topics may include: annuities, insurance, benefit reserves, multiple life functions, multiple decrement models, and collective risk models.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level MAT381 Minimum Grade of C- or Undergraduate level 64381 Minimum Grade of C-)

MAT488 Partial Differential Equations (3)

Classification of linear second order partial differential equations (PDE), diffusion-type problems, Fourier sine and cosine transforms. Laplace transform solutions, method of characteristics, elliptic-type problems, Green's functions, numerical and approximate methods.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level MAT359 Minimum Grade of C- or Undergraduate level 64359 Minimum Grade of C-)

MAT493 Math Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- May not be enrolled in the following classification: Freshman

MAT494 Research in Mathematics (1)

Individual research in Mathematics under faculty supervision. Interested students should contact the department or approach a particular professor.

Restrictions

- May not be enrolled in the following classification: Freshman

MAT495 Indep Study Math (1)

No description is available for this course.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

School of Science & Engineering: Mathematics

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School of Science & Engineering: Physics

Phone: (845) 257-3740

Location: Wooster Science Building Room 102

Web address: www.newpaltz.edu/physics

The Physics Department at New Paltz offers students three ways to earn an undergraduate degree in Physics. All students complete a three-year sequence consisting of core and cognate courses. Students can take a fourth year of physics electives, or opt for an approved second major to earn the degree in Physics. Those students in an approved external 3-2 engineering program get the Physics degree from New Paltz upon completion of the requirements for the engineering degree.

Freshmen ready to take Calculus must take MAT251, CPS210, and CHE201 in their first semester in order to be on track for the major. Prospective physics majors are strongly urged to consult with their physics advisor immediately upon admission to the College. Failure to seek early advice can cause delay in completing the requirements. Physics minors, too, will benefit from early advice.

The Department also offers several general interest non-major courses. These courses do not require a background in high school physics, nor do they require knowledge of high level Physics. However, some high school algebra is helpful.

Physics Program:

- Major
- Minor
- Course Descriptions
- 8 Semester Plans
- General Education Courses
- Faculty
- Program Changes

School of Science & Engineering: Physics > Major

Major in Physics 46-58 credits

Required Physics Courses..... 30 credits

PHY201 General Physics I (4)

PHY202 General Physics II (4)

PHY300 Mathematical Physics I (3)

PHY301 Mathematical Physics II (3)

PHY305 Computational Physics (3)

PHY308 Modern Physics I (3)

PHY309 Modern Physics II (3)

PHY310 Modern Physics Laboratory (1)

PHY311 Classical Mechanics (3)
PHY313 Electricity and Magnetism (3)

Required Cognate Courses 16 credits

CHE201 General Chemistry I (4)
CHE210 Computer Science I: Foundations (4)
MAT251 Calculus I (4)
MAT252 Calculus II (4)

Required Option: A, B, or C:

A: Advanced Physics Courses: PHY491 (Physics Senior Project) plus three approved electives.

B: External/Internal 3-2 Engineering Program.

C: Approved Second Major.

School of Science & Engineering: Physics > Minor

Minor in Physics 18 credits

Each minor candidate is expected to complete 18 credits in physics at the 200 level or above with a minimum cumulative average of 2.00 for the courses taken. At least 6 credits must be at the 300 level or above.

Minor in Astronomy 36 credits

The Physics Department also offers an astronomy minor consisting of science cognates, Astronomy 12301, and nine hours of upper-division electives relating to astronomy. The elective courses must be selected with the approval of the minor advisor in conjunction with the Physics Department chair.

Required courses 27 credits

AST301 Astronomy (4)
MAT251 Calculus I (4)
MAT252 Calculus II (4)
CHE201 General Chemistry I (4)
PHY201 General Physics I (4)
PHY202 General Physics II (4)
PHY308 Modern Physics I (3)

Electives 9 credits

Three astronomy-related courses at the 300 or 400 level selected under advisement. Particular courses related to astronomy include: atomic and nuclear physics, optics, quantum physics, relativity and thermodynamics.

Physics > Course Descriptions

PHY100 Physics for the Inquiring Mind (3)

A course in basic physics for non-science majors that stresses conceptual understanding of familiar (and not so familiar) phenomena. Mathematical formalism is held to a minimum, although some elementary algebra is helpful.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Physics

Projected Offerings

Fall 2010, Spring 2011

PHY101 The Scientific World (3)

Science for non-majors. The course emphasizes critical thinking about personal and social needs for science. Specific topics illustrate purpose and thoughts in science: classical physics, quantum physics, astronomy, chemical bonding, geology, weather, living cell, genetics, evolution.

Attributes

- Liberal Arts
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Physics

Prerequisites

Math Placement Level 3 or (Undergraduate level MAT050 Minimum Grade of C- or Undergraduate level 64050 Minimum Grade of C-)

PHY109 Physics of Sound and Music (3)

Nature, transmission, and absorption of sound; speech; hearing; music; noise; musical instruments and amplifying systems; rooms and auditoriums; sources of noise and noise pollution; noise codes; control of noise; and practical means of noise reduction.

Attributes

- Liberal Arts
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Physics

PHY199 Modular Course

No description is available for this course.

PHY201 General Physics 1(4) (3 hr. lec., 3 hr. lab/rec.) (3)

Basic principles of mechanics, wave motion, and thermodynamics using vector analysis and calculus. Primarily for students majoring in physics, engineering, mathematics, and chemistry; students majoring in biology and geology should consult their advisor if they wish to take this course in preference to PHY221.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

Math Placement Level 6

Corequisites

PHY211

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

PHY202 General Physics II (4) (3 hr. lec., 3 hr. lab/rec.) (3)

Basic principles of electricity, magnetism, and optics using vector analysis and calculus. Primarily for students majoring in physics, engineering, mathematics, and chemistry; students majoring in biology and geology should consult their advisor if they wish to take this course in preference to PHY222.

Attributes

- Liberal Arts

- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

Math Placement Level 6

Corequisites

PHY212

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

PHY203 General Physics I Workshop

Problem-solving course to be taken concurrently with PHY201 gives students an opportunity to solve additional problems, preview sample exams or review exams, and ask questions about lecture material.

Restrictions

- Must be enrolled in the following level: Undergraduate

Corequisites

PHY201

PHY204 General Physics II Workshop

Problem-solving course to be taken concurrently with PHY202 gives students an opportunity to solve additional problems, preview sample exams or review exams, and ask questions about lecture materials.

Restrictions

- Must be enrolled in the following level: Undergraduate

Corequisites

PHY202

PHY205 Exploring the Solar System (3)

Introduction to solar system including history of astronomy, laws of mechanics and gravitation, motions of heavenly bodies, telescopes, space exploration and descriptions of sun, planets, moons, asteroids, comets and meteors. Planetarium demonstrations, sky viewing with telescopes and computer simulations. No science preparation required. Limited use of algebra. No prerequisite.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Physics

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

PHY206 Exploring the Universe (3)

Introduction to the universe beyond the solar system. Distance to stars, classes of stars, structure of stars, stellar evolution, white dwarfs, neutron stars, black holes, pulsars, quasars, radio astronomy, the Milky Way, galaxies, relativity and cosmology. Planetarium demonstrations, sky viewing with telescopes and computer simulation. No science preparation required. Limited use of Algebra.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following major: Physics

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

PHY211 General Physics 1 Lab (1)

No description is available for this course.

Corequisites

PHY201

PHY212 General Physics 2 Lab (1)

No description is available for this course.

Corequisites

PHY202

PHY221 Fundamental Physics 1(4) (3 hr. lec., 3 hr. lab/rec.) (3)

An algebra-based introduction to particle mechanics, rigid-body and continuous matter motion, fluid mechanics, wave motion, structure of matter and thermo-dynamic principles.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

Math Placement Level 4

Corequisites

PHY231

Projected Offerings

Fall 2009, Fall 2010

PHY222 Fundamental Physics II (4) (3 hr. lec., 3 hr. lab/rec.) (3)

An algebra-based introduction to electricity, magnetism, electromagnetic waves, optics, relativity, quanta, Bohr atom, complex atom, ions and molecules, solid state, nucleus, nuclear transformation, and elementary particles.

Attributes

- Liberal Arts
- GE3: NSCI
- GE2: PHBS w/out lab
- GE2A: PHBS w/out lab
- Systematic Inquiry

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY221 or 75221)

Corequisites

PHY232

Projected Offerings

Spring 2010, Spring 2011

PHY223 Fundamental Physics I Workshop

Problem-solving course to be taken concurrently with PHY221 gives students an opportunity to solve additional problems, preview sample exams or review exams, and ask questions about lecture material.

Restrictions

- Must be enrolled in the following level: Undergraduate

Corequisites

PHY221

PHY224 Fundamental Physics II Workshop

Problem-solving course to be taken concurrently with PHY222 gives students an opportunity to solve additional problems, preview sample exams or review exams, and ask questions about lecture material.

Restrictions

- Must be enrolled in the following level: Undergraduate

Corequisites

PHY222

PHY231 Fundamentals Physics 1 Lab (1)

No description is available for this course.

Corequisites

PHY221

PHY232 Fundamentals Physics 2 Lab (1)

No description is available for this course.

Corequisites

PHY222

PHY293 Physics Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

PHY295 Indep Study Physics (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

PHY299 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

PHY300 Mathematical Physics I (3)

A study of the differential equations, linear algebra, and vector calculus in the context of the physical problems in which they arise. Computational techniques are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(MAT252 or 64252)

PHY301 Mathematical Physics II (3)

A continuation of Mathematical Physics I. Fourier series, partial differential equations, and complex analysis, all discussed in the context of the physical problems in which they arise. Computer techniques are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY300 or 75300)

PHY305 Computational Physics (3)

Introduction to numerical techniques -- root finding, integration, matrix manipulations, differential equations. Numerical simulations -- oscillations, space flight, electric fields, linear and non-linear waves, crystal growth.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(MAT341 or 64341) and (PHY202 or 75202)

Projected Offerings

Fall 2010

PHY306 Mechanics 1 (3)

This is the first of a two-semester sequence comprising a traditional classical mechanics course. Topics include one-dimensional motion, energy and momentum conservation, central forces, Lagrangian and Hamiltonian formulations, systems of particles, and accelerated coordinated systems.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 75202)

Corequisites

MAT341

Projected Offerings

Spring 2010, Spring 2011

PHY307 Mechanics 2 (3)

This is the second of a two-semester sequence comprising a traditional classical mechanics course. Topics include Langrange and Hamiltonian formulations; gravitation, central force problems, and planetary motion; systems of particles; accelerated coordinate systems.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY306 or 75306)

Projected Offerings

Fall 2009, Fall 2010

PHY308 Modern Physics I (3)

An introduction to the physics of atoms, starting with the origin of the quantum theory. Extensive discussion of the hydrogen atom. Other topics chosen from solid state physics, statistical physics, and nuclear physics if time permits. Computational techniques are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 75202)

Projected Offerings

Spring 2010, Spring 2011

PHY309 Modern Physics II (3)

A continuation of Modern Physics I, covering special relativity and other topics chosen from atomic physics, nuclear physics, statistical physics, and solid state physics. Computational techniques are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY308 or 75308)

Projected Offerings

Fall 2010

PHY310 Modern Physics Laboratory (1)

A laboratory course demonstrating the principles of Modern Physics PHY309. Required for Physics majors.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 75202)

Projected Offerings

Fall 2009, Fall 2010

PHY311 Classical Mechanics (3)

An intermediate level course in Newtonian mechanics. Linear and angular motion, conservation laws, Lagrangian and Hamiltonian formulations. Computational methods are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY300 or 75300)

PHY313 Electricity and Magnetism (3)

Laws of electricity and magnetism and their applications using vector analysis and computational techniques. Differential forms of Maxwell's equations.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 65202) and (MAT341 or 64341)

Projected Offerings

Fall 2009, Fall 2010

PHY314 Relativity (1)

This is a short course in Special Relativity covering the following aspects: experiments leading up to the theory, relative nature of time and distance measurements, constancy of the speed of light, Lorentz transformations, length contraction, time dilation, simultaneity, momentum and energy relations, mass-energy equivalence, and relativistic Doppler effect.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY202 or 75202)

PHY315 Engineering Mechanics (4)

A study of static and dynamic force systems. Vector and conventional techniques are used in problem solving. Properties of force systems, free body analysis, properties of area and mass, friction, kinematics and kinetics of particles and rigid bodies, energy and momentum method. Both English and SI units are used.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(MAT252 or 64252) and (PHY201 or 75201)

Projected Offerings

Fall 2010

PHY322 Optics (3)

Geometrical and physical optics including thick lenses, polarization, coherence, interference and diffraction; propagation in crystals; non-linear optics; photon statistics; radiation pressure; electro-optics; gas crystals; semi-conductor laser.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(PHY302 or 75302) and (MAT342 or 64342)

Projected Offerings

Spring 2010, Spring 2011

PHY331 Quantum Physics (3)

Origin of Planck's quantum hypothesis and its later development through the deBroglie wave-particle duality to the modern quantum mechanics of Schroedinger and Heisenberg. Principles of correspondence, complementarity, and uncertainty. Application of quantum mechanics to basic problems such as the time-independent Schroedinger Equ., hydrogen atom and spin phenomena.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate

Prerequisites

(MAT341 or 64341) and (PHY313 or 75313)

Projected Offerings

Spring 2010, Spring 2011

PHY340 Introduction to Astrophysics (4)

Introduction for science majors. Spherical trigonometry, planetary motions, solar system, formation of stars, H-R diagram, binaries, brightness scale, distance ladder, Doppler effect, stellar masses, parallax, proper motion, radial motion, mass-luminosity, black-body radiation, spectroscopy, telescopes dense stars, black holes, galaxies, relativity and cosmology.

Attributes

- Liberal Arts

Restrictions

- May not be enrolled in the following classification: Freshman

Prerequisites

(Undergraduate level PHY202 or Undergraduate level 75202)

PHY393 Physics Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

PHY399 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate

PHY402 Fluid Mechanics (3)

Fundamental physical characteristics, fluid statics; kinematics; flow of incompressible, compressible, and real fluids. Theory of models as applied to physical systems and development of several models of fluids.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(PHY202 or 75202) and (MAT341 or 64341)

PHY411 Quantum Physics I (3)

An upper level quantum mechanics course for students who have completed the physics core. The course begins with the postulates of quantum mechanics, continues with a detailed discussion of one-dimensional problems, and ends with a rigorous treatment of the hydrogen atom. Computer techniques are used where appropriate.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(MAT341 or 64341) and (PHY313 or 75313) and (PHY308 or 75308)

PHY412 Quantum Physics II (3)

A continuation of PHY411. Spin, angular momentum, WKB methods, perturbation theory, scattering theory, Dirac equation.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(PHY411 or 75411)

PHY422 Thermo Physics (3)

Basic laws of thermodynamics. Conditions of equilibrium equations of state, Euler equation. Gibbs-Duhem relations, thermodynamic potentials, and the Nernst Theorem.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(MAT342 or 64342)

Projected Offerings

Spring 2010, Spring 2011

PHY424 Advanced Laboratory (2)

Selected experiments (5-8) picked from various areas -- mechanics, optics, quantum mechanics, electronics, fluid mechanics, solid state physics, and nuclear physics. Emphasis on individual work.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(PHY331 or 75331)

PHY429 Solid State Physics (3)

Crystals: Binding, symmetries, diffraction, reciprocal lattice, defects. Lattice dynamics: Phonons, modes, specific heat, thermal conduction. Metals: Free electron theory, band theory, superconductivity. Semiconductors: Fermi-Dirac Statistics, transport, band shapes, p-n junction, electronic devices.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(PHY308 or 75308)

PHY432 Atomic and Nuclear Physics (3)

Elementary quantum mechanics applied to multielectron atoms, identical particles, magnetic effects and nuclear systems. Quantum nature of elementary particles. Selections from quantum statistics, solid state physics, superconductivity and magnetic properties of solids according to class interest.

Attributes

- Liberal Arts

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Prerequisites

(PHY308 or 75308)

PHY491 Physics Senior Project (3-6) (3)

Project may be either experimental or theoretical physics by arrangement with a physics faculty advisor. Plan must be approved in the prior semester by chairperson.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

Projected Offerings

Fall 2009, Spring 2010, Fall 2010, Spring 2011

PHY492 Physics Senior Project Continuation (1-3) (3)

Continuation of senior project. Student must have completed PHY491 and have approval of chairperson.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

PHY493 Physics Selected Topic (3)

Selected topic course descriptions may change from semester to semester. Please consult the Schedule of Classes for more information regarding this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

PHY494 Fieldwork in Physics

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

PHY495 Indep Study Physics (1)

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

PHY499 Modular Course

No description is available for this course.

Restrictions

- Must be enrolled in the following level: Undergraduate
- May not be enrolled in the following classification: Freshman

School of Science & Engineering: Physics > Faculty

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