School of Science & Engineering

Phone: (845) 257-3728
Location: Resnick Engineering Hall, Room 115
Web: www.newpaltz.edu/sse

» Chemistry
» Computer Science
» Electrical and Computer Engineering
» Environmental Geochemical Sciences
» Environmental Studies
» Geological Sciences
» Mathematics
» Physics

School of Science & Engineering: Chemistry

Phone: (845) 257-3790
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.

Recent national surveys have identified trends in the evolving growth areas of businesses that use chemistry. These suggest that combining chemistry courses with experience in related areas provides a good background for future career choices. The Chemistry Department can identify courses that provide the chemistry major with knowledge of small business operations, environmental monitoring and materials development. Check cross listings in the schedule of classes and speak with your major advisor for further information.

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 64251 and 22201 in the fall semester of their freshman year.

Chemistry Program:

School of Science & Engineering: Chemistry > Major

Major in Chemistry (General Degree) 54 credits

Required chemistry courses.....35 credits

CHE201 General Chemistry I (4)
CHE202 General Chemistry II (4)
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)
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
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, Systematic Inquiry, GE3: NSCI
Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following college: Science/Engineering; May not be enrolled in one of the following majors: Chemistry, Biology, Physics, Geology, 7-12:Biology, Adolescence Ed: Biology, 7-12: Chemistry
Prerequisites: Math Placement Level 3

CHE104 Chemistry for the Consumer
Introduction to fundamental principles of chemistry. Description of the behavior of chemicals found about the home: water, foods, drugs, soaps and detergents, plastics, fibers, fuels, poisons, fertilizers, metals, other common substances. Metric measurement. Not for science majors.

Attributes: GE2: PHBS w/out lab, GE2A: PHBS w/out lab, Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following major: Chemistry
Prerequisites: Math Placement Level 3

CHE182 Chemistry in Art
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: Systematic Inquiry, GE2A: PHBS w/out lab, GE2: PHBS w/out lab, Liberal Arts, GE3: NSCI
Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following college: Science/Engineering; May not be enrolled in the following major: Chemistry
Prerequisites: Math Placement Level 3
Projected Offerings: Fall 2007

CHE193 Chemistry 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

CHE199 Modular Course
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

CHE201 General Chemistry I
Principles governing chemical change in relation to the atomicity of matter, atomic structure and the periodic system of the elements.

Attributes: Systematic Inquiry, GE3: NSCI, Liberal Arts, GE2A: PHBS w/out lab, GE2: PHBS w/out lab
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: Undergraduate level MAT152 Minimum Grade of C- or Math Placement Level 4

Corequisites: CHE211
Projected Offerings: Fall 2007

CHE202 General Chemistry II
Kinetics, thermodynamics, equilibria and electrochemistry.

Attributes: Systematic Inquiry, GE2: PHBS w/out lab, Liberal Arts, GE2A: PHBS w/out lab, GE3: NSCI
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: Math Placement Level 4 and CHE201
Corequisites: CHE212
Projected Offerings: Spring 2008

CHE211 General Chemistry I Lab
Laboratory work complements the lecture matierial covered in CHE 201.

CHE293 Chemistry 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

CHE295 Indep Study Chemistry
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
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
Projected Offerings: Fall 2007

CHE306 Organic Chemistry I Lab
Laboratory meets once a week and will provide practical experience in some fundamental techniques of organic chemistry.

Attributes: Liberal Arts
Prerequisites: CHE202
Corequisites: CHE318

CHE309 Organic Chemistry II Lab
Laboratory work will utilize the microscale techniques employed in Organic Chemistry I to the study of organic reactions.

Attributes: Liberal Arts
Prerequisites: CHE202
Corequisites: CHE318

CHE314 Inorganic Chemistry
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 and CHE318
Projected Offerings: Spring 2008

CHE315 Inorganic Chemistry Laboratory
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 and CHE318

CHE318 Organic Chemistry I
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
Corequisites: CHE306
Projected Offerings: Fall 2007

CHE319 Organic Chemistry II
Continuation of Organic Chemistry I.

Attributes: Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: CHE318 and CHE306
Corequisites: CHE309
Projected Offerings: Spring 2008

CHE321 Physical Chemistry I
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 and PHY202 and MAT252 and MAT341 or (MAT353 and MAT362)
Projected Offerings: Fall 2007

CHE322 Physical Chemistry II
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 and PHY202 and MAT341 or (MAT353 and MAT362)
Projected Offerings: Spring 2008

CHE323 Experimental Physical Chemistry
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: Writing Intensive, Liberal Arts
Prerequisites: CHE321 and ENG160 and ENG180 and CHE303 and CHE322
Projected Offerings: Spring 2008

CHE393 Chemistry 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

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
Familiarization with the modern instruments and techniques used in chemistry.

Attributes: Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: CHE303 and PHY202

CHE461 Biochemistry I
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
Projected Offerings: Fall 2007

CHE463 Biochemistry Lab
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 and CHE319
Corequisites: CHE461

CHE485 Seminars in Chemistry
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: Chemistry, Adol Ed: Chemistry; May not be enrolled in the following classification: Freshman
Projected Offerings: Fall 2007

CHE490 Senior Research in Chemistry
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Chemistry, Adol Ed: Chemistry
Projected Offerings: Spring 2008, Fall 2007

CHE493 Chemistry 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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Chemistry, Adol Ed: Chemistry

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
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: Computer Science

Phone: (845) 257-3990
Location: Faculty Office Building Room N12
Web address: www.newpaltz.edu/compsci

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. Required .....31 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)
CPSEGC0 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
MATCPS1 Calculus I (4)
MATCPS2 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
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 2007

CPS104 Visual Programming
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: GE2: MATH, Liberal Arts
Prerequisites: Undergraduate level MAT050 Minimum Grade of C- or Math Placement Level 3
Projected Offerings: Fall 2007

CPS193 Computer Science Selected Topic
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
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: GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Undergraduate level MAT152 Minimum Grade of C- or Math Placement Level 4
Projected Offerings: Fall 2007

CPS293 Computer Science Selected Topic
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
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-
Projected Offerings: Fall 2007

CPS330 Assembly Language and Computer Architecture
Provides an "under the hood" examination of computer systems. Topics include number systems, machine language, assembly language, linking and loading, instruction set architecture, microarchitecture, memory systems, and high-level languages at the assembly level.

Attributes: Liberal Arts
Prerequisites: Undergraduate level CPS310 Minimum Grade of C-

CPS340 Operating Systems I
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-
Projected Offerings: Fall 2007

CPS341 Operating Systems II
Design and implementation of major components of a modern operating system.

Attributes: Liberal Arts
Prerequisites: Undergraduate level CPS340 Minimum Grade of C-

CPS352 Object Oriented Programming
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-
Projected Offerings: Fall 2007

CPS353 Software Engineering
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-

CPS393 Computer Science Selected Topic
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
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- and Undergraduate level MAT310 Minimum Grade of C- and Undergraduate level MAT363 Minimum Grade of C-
Projected Offerings: Fall 2007

CPS420 Languages and Machines
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- and Undergraduate level MAT363 Minimum Grade of C- and Undergraduate level MAT310 Minimum Grade of C-
Projected Offerings: Fall 2007

CPS430 Compiler Construction
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-

CPS440 Database Principles
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-

CPS450 Design of Programming Languages
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-
Projected Offerings: Fall 2007

CPS455 Declarative Languages
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-

CPS460 Computer Architecture
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- and Undergraduate level EGE230 Minimum Grade of C-

CPS470 Computer Communication Networks
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-

CPS480 Senior Seminar
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 classification: Senior; Must be enrolled in the following major: Computer Science

CPS493 Computer Science 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: 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
No description is available for this course.

Restrictions: May not be enrolled in the following classification: Freshman

School of Science & Engineering: Electrical and Computer Engineering

Phone: (845) 257-3720
Location: Resnick Engineering Hall Room 103
Web address: www.engr.newpaltz.edu

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
41160 Freshman Composition I (3)
41180 Freshman Composition II (3)
OR
41205 General Honors English I (3)
41206 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 preengineering 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: Date 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:

		Total Credits	Design Credits	Eng/Sci Credits
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 I[1]	3	3.0	0
EGEEGE9	Senior Design Project II[1]	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]	3 or 4	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:

		Total Credits	Total Credits	Eng/Sci Credits
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:		Total Credits	Total Credits	Eng/Sci Credits
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
EGC401	VLSI Design	1	1.0	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 preengineering 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:

		Total Credits	Design Credits	Eng/Sci Credits
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	3 or 4	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:		Total Credits	Design Credits	Eng/Sci Credits
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:		Total Credits	Design Credits	Eng/Sci Credits
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)

EGC208 Digital Logic Laboratory
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: Electrical Engineering, Computer Engineering, Undeclared-Engineering, Computer Science
Prerequisites: EGC230
Projected Offerings: Spring 2008, Fall 2007

EGC230 Digital Logic Fundamentals
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: Electrical Engineering, Computer Engineering, Undeclared-Engineering, Computer Science
Projected Offerings: Fall 2007

EGC295 Indep Study Comptr Engin
No description is available for this course.

EGC308 Microprocessor Laboratory
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: Electrical Engineering, Undeclared-Engineering, Computer Engineering
Prerequisites: EGC331
Projected Offerings: Spring 2008, Fall 2007

EGC331 Microprocessor System Design
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: Electrical Engineering, Computer Engineering, Undeclared-Engineering
Prerequisites: EGC230
Projected Offerings: Spring 2008, Fall 2007

EGC401 VLSI Design Laboratory
Software and hardware used in VLSI design. Applications to N-MOS and CMOS.

Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Corequisites: EGC435
Projected Offerings: Spring 2008

EGC412 Data Communications
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGC331

EGC416 Embedded Systems
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGC331

EGC423 Digital Integrated Circuits
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGE321 and EGC230

EGC432 Introduction to Computer Architecture
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGC331
Projected Offerings: Fall 2007

EGC435 VLSI Design
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGC230 and EGE321
Projected Offerings: Spring 2008

EGC450 Digital Systems Design
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGC230

EGC493 Comp Eng Select Topics
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

EGC494 Fieldwork Computer Engin
No description is available for this course.

Restrictions: May not be enrolled in the following classification: Freshman

EGC495 Indep Study Comptr Engin
No description is available for this course.

Restrictions: May not be enrolled in the following classification: Freshman

Engineering-Electrical > Course Descriptions

EGE193 Engineering 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

EGE209 Circuits Laboratory
Laboratory exercises covering the material of 40210 Circuit Analysis. Corequisite: 40210.

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: Spring 2008, Fall 2007

EGE250 Circuit Analysis
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: Electrical Engineering, Computer Engineering, Undeclared-Engineering

EGE293 Engineering 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
Prerequisites: PHY202

EGE295 Indep Study Elec Engineering
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

EGE302 Antenna Laboratory
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE445
Projected Offerings: Spring 2008

EGE303 Microwave Fundamentals Laboratory
Measurement of VSWR and wavelength in waveguides, stub tuners and matching, calibration of altenuators, time domain reflectometry and frequency domain network analyzer measurement. Prerequisite/Corequisite: 40342.

Restrictions: Must be enrolled in the following level: Undergraduate; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGE342

EGE304 Control Laboratory
Transient response and frequency response measurements to characterize control system devices and components. Laboratory study of open-loop and csed-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: Electrical Engineering, Computer Engineering
Corequisites: EGE316
Projected Offerings: Fall 2007

EGE305 Communication Laboratory
AM communication circuits. FM communication. SSB communication circuits. RF power transmitting. Phase-locked 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: Electrical Engineering, Computer Engineering
Prerequisites: EGE312

EGE306 Microwaves Circuits Laboratory
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: Electrical Engineering, Computer Engineering

EGE311 Signals and Systems
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE250 and MAT359
Projected Offerings: Spring 2008

EGE312 Communication Systems
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE311
Projected Offerings: Spring 2008

EGE316 Control Systems I
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE311
Projected Offerings: Fall 2007

EGE317 Digital Control Systems
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE311

EGE320 Electronics I
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE250
Projected Offerings: Spring 2008, Fall 2007

EGE321 Electronics II
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE320
Projected Offerings: Fall 2007

EGE322 Electronics I Laboratory
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: Electrical Engineering, Computer Engineering
Corequisites: EGE320
Projected Offerings: Spring 2008

EGE323 Electronics II Laboratory
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: Electrical Engineering, Computer Engineering
Corequisites: EGE321
Projected Offerings: Spring 2008, Fall 2007

EGE340 Engineering Electromagnetics I
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE250 and EGE353
Projected Offerings: Fall 2007

EGE341 Engineering Electromagnetics II
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE340
Projected Offerings: Spring 2008

EGE342 Microwave Fundamentals
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: Electrical Engineering, Computer Engineering
Prerequisites: EGE341

EGE370 Engineering Statistics
No description is available for this course.

Restrictions: Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: MAT252

EGE393 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

EGE399 Modular Course
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

EGE401 VLSI Design Laboratory
Software and hardware used in VLSI design. Applications to NMOS and CMOS.

Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Corequisites: EGE435

EGE408 Senior Design Project I
First part of a two-semester design project. A written progress report is required at the end of the semester.

Attributes: Writing Intensive, Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Projected Offerings: Spring 2008, Fall 2007

EGE409 Senior Design Project II
Second part of a two-semester design project. Written and oral reports are required at the end of the semester.

Attributes: Writing Intensive, Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGE408
Projected Offerings: Spring 2008, Fall 2007

EGE423 Digital Integrated Circuits
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; May not be enrolled in the following classification: Freshman; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering
Prerequisites: EGE320 and EGC230

EGE435 VLSI Design
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: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Prerequisites: EGC230 and EGE320

EGE436 Microelectronic Technology
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
Projected Offerings: Spring 2008

EGE440 Solid State Devices
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: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Prerequisites: EGE320
Corequisites: EGE320

EGE445 Antenna Systems
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: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Prerequisites: EGE341

EGE450 Microelectronic Technology Lab
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: May not be enrolled in the following level: Undergraduate; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Corequisites: EGE436

EGE451 Electromechanical Energy Conversion
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: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Prerequisites: EGE250
Projected Offerings: Fall 2007

EGE452 Electric Power Systems
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: Electrical Engineering, Computer Engineering; May not be enrolled in the following classification: Freshman
Prerequisites: EGE251
Projected Offerings: Spring 2008

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

EGE494 Fieldwork Engineering
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
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

Engineering-General > Course Descriptions

EGG101 Introduction to Engineering Science
(One 1-hour and one 3-hour session per week.) Various fields of engineering, activities, career opportunities and areas of electical 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 2007

EGG150 Information Technology
No description is available for this course.

EGG193 Engineering 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
Prerequisites: EGG101

EGG293 Engineering 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

EGG295 Indep Study General Engi
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

EGG309 Technical Communications
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: Writing Intensive, Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate; Must be enrolled in one of the following majors: Electrical Engineering, Computer Engineering, Undeclared-Engineering
Prerequisites: ENG160 and ENG180
Projected Offerings: Spring 2008, Fall 2007

EGG350 Fund of Engineering Review
No description is available for this course.

EGG393 Engineering 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

EGG399 Modular Course
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

EGG493 Engineering 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; May not be enrolled in the following classification: Freshman

EGG495 Indep Study Generl Engin
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: 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 (50220), General Chemistry 1 (22201), and Calculus 1 (64251) in their first semester, followed by General Chemistry 2 (22202), Calculus 2 (64252), and Introductory Biology (15210) 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:

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)
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 Science:

Introductory Science and Math..... 11-12 credits
Two of the following:
BIO201 General Biology I or 15210 Introductory Biology (4)
CHE201 General Chemistry I (4)
GLG220 Physical Geology (4)
One of the following:
MAT241 Introduction to Statistics (3)
MAT245 Basic Calculus (4)
MAT251 Calculus I (4)

A total of 6 courses must be completed from the following two categories by all students:

Science/Technical ..... 12-16 credits
Select four courses, at least two of which will NOT be used to satisfy a major requirement:
BIO340 Ecology (4)
BIO561 Endangered Species (3)
BIO593 Biology Selected Topics (4)
22303 Introduction to Analytical Chemistry (4)
CHE318 Organic Chemistry I (4)
CHE319 Organic Chemistry II (4)
CHE509 Spectrometric Identification of Organic Compounds (3)
GEO381 Cartography (4)
GEO382 Remote Sensing (4)
GEO383 Introduction to Geographic Information Systems (3)
GLG339 Natural Resources and Energy (3)
GLG346 Conservation and Environmental Impact (3)

Policy/Politics/Planning ..... 6-7 credits
Select two courses:
ECO304 Public Finance (4)
ECO305 State & Local Public Finance (3)
GEO526 Urban Planning (3)
POL301 State Politics (3)
POL310 Public Management (3)
POL316 American Public Policies (3)
POL318 Local Politics (3)
SOC317 Environmental Sociology (3)
SOC432 Social Policy (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 Studies > Course Descriptions

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

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 (50220) should be taken in the fall semester of the freshman year, followed by Historical Geology (50301) in the spring. General Chemistry I (22201), General Chemistry II (22202) and Calculus I (64251) 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 (50220) followed by Historical Geology (50301).

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 (50491) 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 â 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 GLG0-level geology course by advisement:
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 â 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 500-level geology course by advisement:
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.

Geology > Course Descriptions

GLG100 The Planet Earth
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: GE2: PHBS w/out lab, Liberal Arts, GE2A: PHBS w/out lab

GLG110 The Evolving Earth
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 GLG0100, The Planet Earth, the two courses may be taken independently of each other.

Attributes: GE2: PHBS w/out lab, GE2A: PHBS w/out lab, Liberal Arts

GLG120 Weather and Environment
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: Systematic Inquiry, GE2A: PHBS w/out lab, Liberal Arts, GE2: PHBS w/out lab, GE3: NSCI
Projected Offerings: Spring 2008

GLG193 Geological Selected Topic
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
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: Systematic Inquiry, GE2: PHBS w/out lab, GE2A: PHBS w/out lab, Liberal Arts, GE3: NSCI
Projected Offerings: Fall 2007

GLG220 Physical Geology
Basic concepts of geology. Minerals, rocks, and rock-forming processes. Geologic time and age dating. Erosion, streams, groundwater, glaciers, geologic structures, earthquakes, plate tectonics, geologic and other geologic processes. Laboratory study of minerals, rocks and maps. Field trips. Recommended sequential course is GLG301 Historical Geology.

Attributes: Systematic Inquiry, GE2: PHBS w/out lab, GE2A: PHBS w/out lab, Liberal Arts, GE3: NSCI
Projected Offerings: Spring 2008, Fall 2007

GLG293 Geological Selected Topic
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
No description is available for this course.

Corequisites: GLG220

GLG301 Historical Geology
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: GE2: PHBS w/out lab, Liberal Arts, GE2A: PHBS w/out lab
Prerequisites: GLG220
Projected Offerings: Spring 2008

GLG305 Paleontology
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 BIO210
Projected Offerings: Fall 2007

GLG311 Mineralogy and Crystallography
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 and GLG220
Projected Offerings: Fall 2007

GLG313 Optical Mineralogy
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 2007

GLG314 Petrology
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 and GLG311 and GLG313
Projected Offerings: Spring 2008

GLG331 Stratigraphy-Sedimentation
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
Prerequisites: GLG301 or GLG305 and Math Placement Level 5
Projected Offerings: Spring 2008

GLG334 Principles of Oceanography
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
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: Writing Intensive, Liberal Arts
Prerequisites: ENG160 and ENG180 and GLG331 and Math Placement Level 5
Projected Offerings: Fall 2007

GLG339 Natural Resources and Energy
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 2008

GLG346 Conservation and Environmental Impact
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: Writing Intensive, Liberal Arts
Prerequisites: ENG160 and ENG180 and GLG205
Projected Offerings: Fall 2007

GLG370 Introduction to Environmental Science
A survey course covering the broad scope of environmental science and engineering, including air pollution, water pollution, water qualify control, environmental chrmistry, global atmospheric change, solid waste management and resource reconvery. Case studies and outside speakers.

Attributes: Liberal Arts
Prerequisites: CHE202 and GLG220

GLG393 Geological Selected Topic
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.

GLG434 Environmental Surveying Geology
Field-oriented course, includes nonlegal 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 and Math Placement Level 5

GLG435 Field Geology
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

GLG475 Geology Research Project 1
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
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
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 CHE475 or BIO475

GLG481 Field Excursion (1-3)
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: Spring 2008

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
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)
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
Projected Offerings: Fall 2007

GLG493 Geological 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: 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
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: Mathematics

Phone: (845) 257-3532
Location: Faculty Office Building Room E-2
Web address: www.newpaltz.edu/math

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

Majors in Mathematics 53 credits

Required Mathematics Courses..... 33 credits
MATCPS1 Calculus I (4)
MATCPS2 Calculus II (4)
MAT260 Foundations of Mathematics I (3)
MAT301 Foundations of Mathematics II (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 ..... 12 credits
A total of 12 credits in mathematics or computer science courses at the 300 level or above.

Required Cognate Courses ..... 8 credits
(8 count for GE Natural Science)

Of the five 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 (15201 & 15202) (4 + 4),
General Chemistry I and II (22201 & 22202) (4 + 4),
Physical and Historical Geology (GLG220 & GLG301) (4 + 4).

All first time undergraduate students entering the College receive a Math Placement Level (MPL) as part of the admissions process. The level is determined by previously taken mathematics courses and SAT Math scores. College courses express math prerequisites in terms of the MPL. Students can raise their MPL by taking specific math courses or by taking Mathematics Placement Exams offered by the Math Department. You are encouraged to review the material in the sample exams posted below before taking an exam.

School of Science & Engineering: Mathematics > Minor

Minor in Mathematics 20 credits

Required Courses* ..... 11 credits
MAT251 Calculus I (4)
MAT252 Calculus II (4)
MAT260 Foundations of Mathematics I (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.

MAT140 Mathematics for Elementary School Teachers 1
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: GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Math Placement Level 3
Projected Offerings: Fall 2007

MAT151 College Mathematics
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: GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Math Placement Level 2
Projected Offerings: Fall 2007

MAT152 College Algebra
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: GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Math Placement Level 3
Projected Offerings: Fall 2007

MAT181 Precalculus
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: Systematic Inquiry, Liberal Arts, GE3: MATH, GE2A: MATH, GE2: MATH
Prerequisites: Math Placement Level 4 or MAT152
Projected Offerings: Spring 2008

MAT182 Graphs and Optimization
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.

Attributes: Systematic Inquiry, GE2A: MATH, GE3: MATH, Liberal Arts, GE2: MATH
Prerequisites: Math Placement Level 3 or MAT151
Projected Offerings: Fall 2007, Spring 2008

MAT183 Introduction to Mathematical Modeling
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.

Attributes: Systematic Inquiry, GE3: MATH, GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Math Placement Level 3 or MAT151
Projected Offerings: Fall 2007

MAT184 Elements of Geometry
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.

Attributes: Systematic Inquiry, GE2: MATH, Liberal Arts, GE3: MATH, GE2A: MATH
Prerequisites: Math Placement Level 3 or MAT151
Projected Offerings: Spring 2008

MAT185 Stats and Public Policy
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.

Attributes: Liberal Arts, Information Literacy, Systematic Inquiry, GE2A: MATH, GE3: MATH
Prerequisites: Math Placement Level 3 or MAT151

MAT193 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.

MAT240 Mathematics for Elementary School Teachers 2
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: Systematic Inquiry, GE3: MATH, GE2: MATH, Liberal Arts, GE2A: MATH
Restrictions: Must be enrolled in the following major: Elementary Education
Prerequisites: Math Placement Level 3 and Undergraduate level MAT140 Minimum Grade of C
Projected Offerings: Fall 2007, Spring 2008

MAT241 Introduction to Statistics
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 64381 or 64382.

Attributes: Systematic Inquiry, GE2: MATH, Liberal Arts, GE2A: MATH, GE3: MATH
Prerequisites: Math Placement Level 4 or Undergraduate level MAT152 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT245 Basic Calculus
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: GE2: MATH, Liberal Arts, GE2A: MATH
Prerequisites: Undergraduate level MAT152 Minimum Grade of C- or Math Placement Level 4
Projected Offerings: Spring 2008

MAT251 Calculus I
The first of a two-semester sequence introducing the differential and integral calculus of functions of one variable, limits and continuity, differentiation, mean value theorem, extrema, integration, fundamental theorem of the calculus; methods of antidifferentiation, applications.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT181 Minimum Grade of C- or Math Placement Level 5
Projected Offerings: Fall 2007, Spring 2008

MAT252 Calculus II
The second of a two-semester sequence introducing the differential and integral calculus of functions of one variable, limits and continuity, differentiation, mean value theorem, extrema, integration, fundamental theorem of the calculus; methods of antidifferentiation, applications.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT251 Minimum Grade of C- or Math Placement Level 6
Projected Offerings: Fall 2007

MAT260 Introduction to Proof 1
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: Undergraduate level MAT181 Minimum Grade of C- or Math Placement Level 5
Projected Offerings: Fall 2007

MAT293 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.

MAT295 Indep Study Math
No description is available for this course.

MAT301 Foundations of Mathematics 2
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- and Undergraduate level MAT260 Minimum Grade of C-
Projected Offerings: Spring 2008

MAT302 Introduction to Proof 2

Continuation of Introduction to Proof 1 for students who will not take 64321 or 64364. 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 64303 or 64304.

Attributes: Liberal Arts
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: Undergraduate level MAT260 Minimum Grade of C- and Undergraduate level MAT251 Minimum Grade of C-

MAT303 Foundations of Analysis
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- and Undergraduate level MAT252 Minimum Grade of C-

MAT304 Foundations of Algebra
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- and Undergraduate level MAT251 Minimum Grade of C-

MAT310 Elementary Number Theory
Introductory study of integers. Axiomatic approach to order and divisibility property, prime distributions, modular arithmetics, perfect numbers and other topics.

Attributes: Writing Intensive, Liberal Arts
Prerequisites: Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level MAT302 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT320 Discrete Mathematics for Computing
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- and Undergraduate level CPS310 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT321 Intermediate Analysis I
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- and Undergraduate level MAT353 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C-

Projected Offerings: Fall 2007, Spring 2008

MAT322 Intermediate Analysis 2
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-
Projected Offerings: Spring 2008

MAT331 Axiomatic Geometry
Geometry from a modern axiomatic standpoint, covering incidence, and betweenness, and emphasizing congruence and transformations.

Attributes: Writing Intensive, Liberal Arts
Prerequisites: Undergraduate level MAT301 Minimum Grade of C- or Undergraduate level MAT302 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT332 Modern Geometry
Euclidean and non-Euclidean geometries. Consistency proofs and Euclidean constructions.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT331 Minimum Grade of C-

MAT341 Applied Mathematics 1
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 64353 or 64359.

Attributes: Liberal Arts
Restrictions: May not be enrolled in the following major: Mathematics
Prerequisites: Undergraduate level MAT252 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT342 Applied Mathematics 2
The second of a two-semester sequence in advanced mathematics for scientists and engineers. Topics include complex analysis, Laplace and Fourier transforms, vector calculus, orginary 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 MAT353 Minimum Grade of C- and Undergraduate level MAT359 Minimum Grade of C-
Projected Offerings: Spring 2008

MAT353 Calculus 3
Brief introduction to analytic geometry of 3-space. Real-valued functions of more than one variable. Partial derivatives, multiple integrals, line integrals, and applications.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT252 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT359 Ordinary Differential Equations
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-
Projected Offerings: Spring 2008

MAT362 Linear Algebra
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-
Projected Offerings: Fall 2007, Spring 2008

MAT363 Combinatorics
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-
Projected Offerings: Fall 2007

MAT364 Introduction to Abstract Algebra I
Elementary theory of groups and rings, integral domains and fields.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT301 Minimum Grade of B- and Undergraduate level MAT362 Minimum Grade of C- or Undergraduate level MAT303 Minimum Grade of C- or Undergraduate level MAT304 Minimum Grade of C-
Projected Offerings: Fall 2007

MAT365 Introduction to Abstract Algebra II
Elementary theory of groups and rings, integral domains and fields.

Attributes: Liberal Arts
Prerequisites: Undergraduate level MAT364 Minimum Grade of C-
Projected Offerings: Spring 2008

MAT375 Numerical Methods
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- and Undergraduate level CPS210 Minimum Grade of C-

MAT381 Probability and Statistics I
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-

Projected Offerings: Spring 2008

MAT382 Probability and Statistics II
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- and Undergraduate level MAT353 Minimum Grade of C-
Projected Offerings: Spring 2008

MAT384 Calculus IV
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-

MAT393 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.

MAT399 Modular Course
No description is available for this course.

MAT483 Actuarial Mathematics
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-
Projected Offerings: Spring 2008

MAT488 Partial Differential Equations
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-

MAT493 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: May not be enrolled in the following classification: Freshman

MAT494 Fieldwork in Math
No description is available for this course.

Restrictions: May not be enrolled in the following classification: Freshman

MAT495 Indep Study Math
No description is available for this course.

Restrictions: May not be enrolled in the following classification: Freshman

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 64251, 25210, and 22201 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
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, Systematic Inquiry, GE3: NSCI, GE2A: PHBS w/out lab, GE2: 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-
Projected Offerings: Spring 2008, Fall 2007

PHY101 The Scientific World
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, GE2A: PHBS w/out lab, GE2: 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-

PHY109 Physics of Sound and Music
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.)
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, GE2: PHBS w/out lab, Systematic Inquiry, GE3: NSCI, GE2A: PHBS w/out lab
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: (MAT251)
Projected Offerings: Spring 2008

PHY202 General Physics II (4) (3 hr. lec., 3 hr. lab/rec.)
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, Systematic Inquiry, GE2: PHBS w/out lab, GE2A: PHBS w/out lab, GE3: NSCI
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: (PHY201 and MAT252)
Projected Offerings: Spring 2008

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

PHY221 Fundamental Physics 1(4) (3 hr. lec., 3 hr. lab/rec.)
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, Systematic Inquiry, GE2A: PHBS w/out lab, GE3: NSCI, GE2: PHBS w/out lab
Restrictions: Must be enrolled in the following level: Undergraduate
Prerequisites: (MAT152)
Projected Offerings: Fall 2007

PHY222 Fundamental Physics II (4) (3 hr. lec., 3 hr. lab/rec.)
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)
Projected Offerings: Spring 2008

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

PHY293 Physics 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

PHY295 Indep Study Physics
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
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)

PHY301 Mathematical Physics II
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)

PHY305 Computational Physics
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 and PHY202)
Projected Offerings: Fall 2007

PHY306 Mechanics 1
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)
Corequisites: MAT341
Projected Offerings: Fall 2007

PHY307 Mechanics 2
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)
Projected Offerings: Spring 2008

PHY308 Modern Physics I
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)

PHY309 Modern Physics II
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)

PHY310 Modern Physics Laboratory
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)

PHY311 Classical Mechanics
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)

PHY313 Electricity and Magnetism
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 and MAT341)
Projected Offerings: Fall 2007

PHY314 Relativity
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)

PHY315 Engineering Mechanics
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 and PHY201)
Projected Offerings: Fall 2007

PHY322 Optics
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 and MAT342)
Projected Offerings: Spring 2008

PHY331 Quantum Physics
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 and PHY313)
Projected Offerings: Spring 2008

PHY393 Physics 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

PHY399 Modular Course
No description is available for this course.

Restrictions: Must be enrolled in the following level: Undergraduate

PHY402 Fluid Mechanics
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 and MAT341)

PHY411 Quantum Physics I
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 and PHY313 and PHY308)

PHY412 Quantum Physics II
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)

PHY422 Thermodynamics
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)
Projected Offerings: Spring 2008

PHY424 Advanced Laboratory
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)

PHY429 Solid State Physics
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)

PHY432 Atomic and Nuclear Physics
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)

PHY491 Physics Senior Project (3-6)
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: Spring 2008

PHY492 Physics Senior Project Continuation (1-3)
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
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
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