

# BIOLOGY (BIOL)

## **BIOL 100 - Introductory Biology Laboratory**

This laboratory activity course is designed to introduce the non-biology major to science as a process. Basic biological concepts and principles are the focal points for the laboratory activities. The scientific process is used throughout the hands on exercises to facilitate the learning experience.

Credits: 1

Term(s) Typically Offered: Offered Fall & Spring Terms

## **BIOL 101 - General Biology**

A principles course in biology, designed for non-biology majors, which emphasizes cellular structure and function, Mendelian and molecular genetics, reproduction, and classic and modern concepts of ecology and evolution.

Credits: 3

Term(s) Typically Offered: Offered Fall & Spring Terms

## **BIOL 105 - Environmental Biology**

A non-biology majors course which provides an introduction to ecological principles and concepts with an examination of the biological basis of contemporary environmental problems.

Credits: 3

Term(s) Typically Offered: Offered Fall & Spring Terms

Thematic Thread(s): Conservation, Technology & Imagination, Institutions & Human Innovations, Transfer Thread Completion Course, United States in Global Context

## **BIOL 110 - The Human Body: Fundamentals of Structure and Physiology**

This one semester lecture course is designed for non-biology majors and provides a basic introduction to the human body and the fundamental anatomy and physiology of each organ system.

Credits: 3

Thematic Thread(s): Conservation, Technology & Imagination, Human Diversity & Well-Being, Transfer Thread Completion Course

## **BIOL 113 - Biology I: Foundations of Ecology, Evolution and Diversity with Lab**

A laboratory and lecture course that covers the principles of evolution, ecology and organismal diversity to prepare students for subsequent courses required of biology majors. BIOL113 and BIOL114 can be completed in any order.

Credits: 4

Enrollment limited to students with department of Biology.

## **BIOL 114 - Biology II: Foundations of Molecules, Genes and Cells with Lab**

A laboratory and lecture course that emphasizes the foundational biological principles in molecular biology, cellular biology and genetics to prepare students for subsequent courses required of biology majors. BIOL113 and BIOL114 can be completed in any order.

Credits: 4

Enrollment limited to students with department of Biology.

## **BIOL 120 - Plants and Society**

Basic structures, functions, and uses of plants. This course, for the non-biology major, will stress many of the economic and practical aspects of plants. It will also offer historical insights concerning the impact plants have had on world exploration, colonization, etc.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Thematic Thread(s): Transfer Thread Completion Course

## **BIOL 139 - Foundations of Academic Discovery**

Foundations of Academic Discovery serves as the entry point to the Rock Integrated Studies Program. With its strong faculty-student interaction, the course promotes intellectual inquiry, critical and creative thinking, and academic excellence. Through varied content, the course introduces students to academic discourse and information literacy while exploring topics such as diversity and inclusion and global awareness. This course will set students along the path to becoming engaged with issues and scholarship important to a 21st century education while they learn about themselves and their place in the world.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with a semester level of Freshman 1 or Freshman 2.

Enrollment limited to students with the ROCK STUDIES 2 STUDENT or ROCK STUDIES STUDENT attributes.

## **BIOL 190 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

## **BIOL 195 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

## **BIOL 198 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

## **BIOL 201 - General Botany with Lab**

Basic biochemical, morphological, and physiological aspects of plant biology as they relate to evolution. Includes a lab.

Prerequisites: (BIOL 101<sup>C</sup> and BIOL 100<sup>C</sup>) or BIOL 104<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 4

Term(s) Typically Offered: Offered Fall & Spring Terms

Enrollment limited to students with department of Biology.

**BIOL 207 - Land Plants and Their Environment/Lab**

This course for non-biology majors surveys the common plants native to Pennsylvania. Includes a lab.

Credits: 3

Term(s) Typically Offered: Offered as Needed

**BIOL 208 - Introduction to Wildlife Management/Lab**

For non-biology majors, this course covers basic ecological principles with emphasis on the taxonomy and life histories of vertebrate animals. Includes a lab.

Credits: 3

Term(s) Typically Offered: Offered as Needed

**BIOL 210 - Medical Microbiology with Lab**

The study of pathogenic microorganisms to include taxonomy, structure, biological activities, host defense mechanisms, disease transmission, and disease states. Includes a lab.

Prerequisites: BIOL 101<sup>D</sup> or BIOL 102<sup>D</sup> or BIOL 216<sup>D</sup> or BIOL 110<sup>D</sup> or BIOL 104<sup>D</sup> or BIOL 217<sup>D</sup>

<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Enrollment is limited to students with a major in Biology, Biology (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd)(7-12), Health Science - Public Health, Hlth Sci-P Hlth-Pre PT-SRU 3+3, Hlth Sci-P Hlth-Pre PA-SRU 3+2, Cytotechnology, Histotechnology, Medical Technology or Professional.

**BIOL 212 - General Zoology with Lab**

The anatomy, physiology, ecology, and economic importance of representative animals with emphasis on the understanding of development and the evolutionary blueprint of the animal kingdom. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 4

Term(s) Typically Offered: Offered Fall & Spring Terms

Enrollment limited to students with department of Biology.

**BIOL 216 - Anatomy and Physiology I with Lab**

The first of two lecture and laboratory courses for non-biology majors which surveys the normal structure and function of the human body. It is recommended that 216 be taken prior to 217. This course includes a lab.

Credits: 3

Term(s) Typically Offered: Offered Every Term

Enrollment is limited to students with a major in Music Therapy, Biology, Biology (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd)(7-12), Health Science - Public Health, Hlth Sci-P Hlth-Pre PT-SRU 3+3, Therapeutic Recreation Serv, Recreational Therapy, Therapeutic Recreation 3+3 PT, Rec Therapy- Pre PT-SRU 3+3, Rec Therapy-Pre OT-SRU 3+3, Hlth Sci-P Hlth-Pre PA-SRU 3+2, Cytotechnology, Histotechnology, Medical Technology or Professional.

**BIOL 217 - Anatomy and Physiology II with Lab**

The second of two lecture and laboratory courses for non-biology majors which surveys the normal structure and function of the human body. It is recommended that 216 be taken prior to 217. Includes a lab.

Credits: 3

Term(s) Typically Offered: Offered Every Term

Enrollment is limited to students with a major in Music Therapy, Biology, Biology (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd) (7-12), Therapeutic Recreation Serv, Recreational Therapy, Therapeutic Recreation 3+3 PT, Rec Therapy- Pre PT-SRU 3+3, Rec Therapy-Pre OT-SRU 3+3, Cytotechnology, Histotechnology, Medical Technology or Professional.

**BIOL 250 - Genetics with Lab**

An introductory course that covers transmission genetics, molecular genetics, and population genetics, with an emphasis on problem-solving. Examples in both plants and animals (including humans) are considered. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 4

Term(s) Typically Offered: Offered Fall & Spring Terms

Enrollment limited to students with department of Chemistry or Biology.

**BIOL 290 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

**BIOL 295 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

**BIOL 298 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Enrollment limited to students with department of Biology.

**BIOL 300 - Social and Ethical Issues in Genetics**

Advances in genetics have the potential to do much good, but they may also create difficult social and ethical issues that we are unprepared for. This course seeks to provide students of all majors with the necessary framework for arriving at their own conclusions about the proper role of genetic technology, for themselves, their families, and society at large.

Prerequisites: BIOL 101<sup>D</sup> or BIOL 102<sup>D</sup> or BIOL 104<sup>D</sup>

<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Thematic Thread(s): Citizenship & Social Problems, Conservation, Technology & Imagination, Human Diversity & Well-Being, Institutions & Human Innovations, Transfer Thread Completion Course, United States in Global Context

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

**BIOL 301 - Forest Ecology**

This course is offered as part of the Pymatuning Laboratory in conjunction with the University of Pittsburgh. For more information, please contact the Biology department, 724-738-2023.

Prerequisites: BIOL 201<sup>C</sup> and (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 302 - Ecology of Amphibians & Reptiles/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 303 - Behavioral Ecology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 305 - Wetlands and Aquatic Plants/Lab**

This course deals with the identification and quantification of phytoplankton and vascular hydrophytes, with emphasis placed on the productivity of aquatic plants and their importance as indicator organisms. Includes a lab.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup> and CHEM 108<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment is limited to students with a program in Biology, Biology (Pre MED) (7-12), Environmental Geoscience, Envir Geosci (Pre MED) (7-12), Biology, Biology-Prof (Pre MED)(7-12), Environmental Geoscience, Cytotechnology, Environmental Science, Environmental Chemistry, Geology, Histotechnology, Medical Technology or Professional.

**BIOL 306 - Freshwater Biomonitoring/Lab**

This course covers the identification and quantification of fish, zooplankton, and benthos organisms, with emphasis placed on the productivity of aquatic animals and their importance as indicator organisms. Includes a lab.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup> and CHEM 108<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

**BIOL 307 - Vertebrate Ecology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 308 - Aquatic Ecosystem Management / Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 310 - Plant Systematics with Lab**

Evolutionary trends in floristic morphology are used to examine family relationships among the major groups of vascular plants. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 311 - Entomology/Lab**

Insects, including their taxonomy, structure, function, ecology, and economic importance.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 313 - Herpetology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 314 - Medical Parasitology with Lab**

A lecture and laboratory course which emphasizes the parasites of medical importance.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and (BIOL 210<sup>C</sup> or BIOL 212<sup>C</sup>)  
<sup>C</sup> Requires minimum grade of C.

Credits: 1

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 316 - Medical Immunology with Lab**

A lecture and laboratory course which emphasized immunological principles of medical importance.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and (BIOL 210<sup>C</sup> or BIOL 250<sup>C</sup>)  
<sup>C</sup> Requires minimum grade of C.

Credits: 1

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 317 - Ecology and Fungi**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms Even

**BIOL 319 - Medical Virology with a Lab**

A lecture and laboratory course which discusses viruses of medical importance. Lecture content will focus on the life cycle, pathology and treatment of clinically relevant viruses. Laboratory content may teach students about topics such as, but not limited to, calculating viral load, detecting lysogens, detecting viruses by ELISA and immunity in lysogens.

Prerequisites: (BIOL 104<sup>C</sup> or (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>)) and (BIOL 210<sup>C</sup> or BIOL 250<sup>C</sup>)  
<sup>C</sup> Requires minimum grade of C.

Credits: 1

Term(s) Typically Offered: Offered Spring Terms

Enrollment limited to students with a semester level of Junior 1, Junior 2, Senior 1, Senior 2 or Sophomore 2.

Enrollment limited to students with department of Biology.

**BIOL 320 - Ornithology/Lab**

Anatomy, physiology, taxonomy, ecology, and behavior of birds. Two weekend field trips are required. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 321 - Wildlife Management/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 322 - Conservation Biology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Thematic Thread(s): Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 323 - Stream Ecology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 325 - Biometry with Lab**

An introduction to statistical techniques and experimental design as applied to biological problems. Descriptive methods, tests of significance, linear regression, correlation, analysis of variance and covariance, and non-parametric techniques are included. Use of PC and/or mainframe computer is required. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment is limited to students with a major in Geography - Envir Studies Educ, Biology, Biology (Pre MEd) (7-12), Environmental Geoscience, Envir Geosci (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd)(7-12), Environmental Geoscience, Biology-Logan Chiropractic 3+3, Environmental Science, Geology or Professional.

**BIOL 326 - Field Methods in Biogeography/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 327 - Limnology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 330 - Microbiology/Lab**

A consideration of the structure, metabolism, growth, and genetics of microorganisms with emphasis placed on the bacteria and viruses. Includes a lab.

Prerequisites: BIOL 250<sup>C</sup> and (CHEM 200<sup>D</sup> or CHEM 201<sup>D</sup>) and ((BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>)

<sup>C</sup> Requires minimum grade of C.

<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Chemistry or Biology.

**BIOL 331 - Mammology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 335 - Cell Biology/Lab**

Lecture and laboratory investigations related to cellular structure and function. Topics include consideration of extracellular matrix, cell surface, internalization, intracellular signaling and routing, cell-cell communication, renewal, and development. Includes a lab.

Prerequisites: BIOL 250<sup>C</sup> and (CHEM 200<sup>D</sup> or CHEM 201<sup>D</sup>) and ((BIOL 100<sup>D</sup> and BIOL 101<sup>D</sup>) or BIOL 104<sup>D</sup>)

<sup>C</sup> Requires minimum grade of C.

<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Chemistry or Biology.

**BIOL 340 - Vertebrate Anatomy with Lab**

A comparative study of the adult structure of the organs and systems of representative vertebrates. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 343 - Embryology with Lab**

Developmental processes of vertebrate embryology. A comparative study of gaetogenesis, fertilization, cleavage, gastrulation, organogenesis, and embionic adaptations. Includes a lab.

Prerequisites: ((BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>) and BIOL 212<sup>C</sup>  
 and BIOL 340<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 350 - Evolution**

Stresses evolution as a process. Evidence of early theories, population genetics and ecology, modern synthetic theory, speciation, phylogeny, and the major features characteristic of organic evolution are included.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup>  
 and BIOL 212<sup>C</sup> and BIOL 250<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 356 - Field Ecology / Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 357 - Environmental Microbiology with Lab**

The interactions of microorganisms with their environment and with other organisms in nutrient cycles and environmental bioremediation, and the effects of microbial activity on plants and animals. Includes a lab.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup> and CHEM 108<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 4

Term(s) Typically Offered: Offered Fall Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment is limited to students with a major in Biology, Biology (Pre MEd) (7-12), Environmental Geoscience, Envir Geosci (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd)(7-12), Environmental Geoscience, Cytotechnology, Environmental Science, Geology, Histotechnology, Medical Technology or Professional.

**BIOL 360 - Field Botany**

A field course covering the flora of western Pennsylvania. Students will be expected to identify in the field approximately 225 vascular plants.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 361 - Flora of Western Pennsylvania**

A field class with a lecture component. The primary focus of the class is to enhance student understanding of the taxonomy and ecology of species that compose our flora in western Pennsylvania. Organisms that will be covered include: flowering plants (woody angiosperms and common wildflowers), conifers, ferns & fern allies, bryophytes, lichens, and some representative fungi and macroalgae in our flora. Terminology associated with general plant/fungal/algal structure as well as life cycles of these aforementioned organisms will be described. Students will be introduced to both terrestrial and aquatic ecosystems and the habitats that select species require.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

**BIOL 370 - Molecular Biology with Lab**

A lecture and laboratory study of the structure and function of biological macromolecules and of the functions of living cells at the molecular level. Topics include macromolecular structures, gene expression and regulation, and manipulations of genetic material. Includes a lab.

Prerequisites: ((BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup>) and BIOL 250<sup>C</sup>  
 and (CHEM 200<sup>D</sup> or CHEM 201<sup>D</sup>)  
<sup>C</sup> Requires minimum grade of C.  
<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Chemistry or Biology.

**BIOL 371 - Vertebrate Field Zoology**

Taxonomy, life histories, and ecological relationships of representative vertebrates are stressed. Several field trips are required.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 373 - Ichthyology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 375 - Ecology of Fish / Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offerings Vary

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 390 - Experimental**

A unique and specifically focused course within the general purview of a department which intends to offer it on a "one time only" basis and not as a permanent part of the department's curriculum.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 395 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 398 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 400 - Disease Ecology**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Summer Terms

**BIOL 401 - Ecology with Lab**

Emphasis is placed on the structure, composition, and dynamics of ecosystems. Lab work primarily consists of field studies.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup> and CHEM 108<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Fall & Summer Terms

Thematic Thread(s): Transfer Thread Completion Course

Students with a semester level of Freshman 1, Freshman 2, Sophomore 1 or Sophomore 2 may **not** enroll.

Enrollment is limited to students with a major in Biology, Biology (Pre MEd) (7-12), Environmental Geoscience, Envir Geosci (Pre MEd) (7-12), Biology, Biology-Prof (Pre MEd)(7-12), Environmental Geoscience, Cytotechnology, Environmental Science, Environmental Chemistry, Geology, Histotechnology, Medical Technology or Professional.

**BIOL 402 - Biogeography/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>  
<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

**BIOL 405 - Animal Physiological Ecology with Lab**

The adaptations of animals to deal with specialized environmental situations are studied at levels ranging from biochemical to organismal. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup> and CHEM 107<sup>D</sup> and CHEM 108<sup>D</sup>  
<sup>C</sup> Requires minimum grade of C.  
<sup>D</sup> Requires minimum grade of D.

Credits: 4

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 410 - Animal Physiology with Lab**

Basic animal physiological processes, including a synthesis that begins at the molecular level and moves to the more complex cellular and organismal levels. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup> and CHEM 201 (may be taken concurrently)<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 411 - Population Biology/Lab**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 412 - Population Biology**

This field course is offered by the University of Pittsburgh to Slippery Rock University students who enroll in the summer program at the Pymatuning Laboratory of Ecology. For more information, please contact the Biology Department, 724-738-2023.

Prerequisites: (BIOL 113<sup>C</sup> or EGEO 202<sup>C</sup>) and BIOL 114<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered as Needed

**BIOL 430 - Pathogenic Microbiology with Lab**

This course examines the role of bacteria in disease processes with emphasis on host-pathogen interactions and mechanisms by which pathogenic bacteria cause disease. General topics to be discussed include pathogenesis, epidemiology, and characteristics of the major pathogenic bacteria, which allow them to produce a disease state in the host. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 250<sup>C</sup> and BIOL 330<sup>D</sup>

<sup>C</sup> Requires minimum grade of C.

<sup>D</sup> Requires minimum grade of D.

Credits: 3

Term(s) Typically Offered: Offered Fall Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 450 - Biology Internship**

This course will permit the biology major to obtain credit for on-the-job experience in such areas as hospitals, greenhouses, nurseries, sewage plants, fish, and game commissions, park service, plant breeders, and seed producers, veterinary medicine, etc.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup> and BIOL 212<sup>C</sup> and BIOL 250<sup>C</sup> and CHEM 107<sup>D</sup> and CHEM 108<sup>D</sup> and CHEM 111<sup>D</sup> and CHEM 112<sup>D</sup> and CHEM 201<sup>D</sup> and CHEM 211<sup>D</sup> and CHEM 202<sup>D</sup> and CHEM 212<sup>D</sup>

<sup>C</sup> Requires minimum grade of C.

<sup>D</sup> Requires minimum grade of D.

Credits: 1-6

Term(s) Typically Offered: Offered Every Term

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 451 - Plant Physiology/Lab**

A lecture-laboratory study of the functional relationships of the plant body including such topics as nutrition, water relations, photosynthesis, photo-periodism, hormones, and growth processes.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup> and CHEM 201<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Odd

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 470 - Histology with Lab**

Microscopic structure and arrangement of tissues in multicellular organisms. Prepared microscopic slides of representative animal organs are studied. Includes a lab.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 212<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 3

Term(s) Typically Offered: Offered Spring Terms Even

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 490 - Independent Study**

Independent research under the guidance of a faculty member. Prerequisite: Permission of the instructor, departmental chairperson, and dean of the college where the study will be conducted. (repeatable up to 6 credits) Independent Study courses give students the opportunity to pursue research and/or studies that are not part of the university's traditional course offerings. Students work one on one or in small groups with faculty guidance and are typically required to submit a final paper or project as determined by the supervising professor.

Credits: 1-3

Term(s) Typically Offered: Offered Fall & Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.



**BIOL 492 - Biology Seminar**

For junior and senior biology majors. Each semester a different area of current research interest is chosen for study.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup> and BIOL 212<sup>C</sup> and BIOL 250<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 1

Term(s) Typically Offered: Offered Fall & Spring Terms

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 495 - Workshop**

A workshop is a program which is usually of short duration, narrow in scope, often non-traditional in content and format, and on a timely topic.

Credits: 1-6

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.

**BIOL 498 - Selected Topics**

A Selected Topics course is a normal, departmental offering which is directly related to the discipline, but because of its specialized nature, may not be able to be offered on a yearly basis by the department.

Prerequisites: (BIOL 100<sup>C</sup> and BIOL 101<sup>C</sup>) or BIOL 104<sup>C</sup> and BIOL 201<sup>C</sup> and BIOL 212<sup>C</sup> and BIOL 250<sup>C</sup>

<sup>C</sup> Requires minimum grade of C.

Credits: 1-3

Term(s) Typically Offered: Offered as Needed

Students with a semester level of Freshman 1, Freshman 2 or Sophomore 1 may **not** enroll.

Enrollment limited to students with department of Biology.