BIOLOGY (BIOLOGY)

BIOLOGY 1020 BioQuest: Foundations for College Success 1 Credit
This course provides an opportunity for new students to learn about the biology program, staff, and resources available at UW-Platteville. Designed to help first-year biology students make a successful transition to college life, students will be given opportunities to develop skills to excel in and beyond college. Topics include: time management, learning styles, study and test-taking skills, responsibility and professionalism, the importance of biology-related experiences and jobs before graduation, use of electronic academic tools, curriculum requirements and registration issues, balance in life, and effective communication.
Components: Class
GE: Entry Level requirement
Prereqs/Coreqs: P. Biology or related major

BIOLOGY 1150 Concepts of Biology 5 Credits
The fundamental features of living organisms; cell and tissue structure, growth, basic physiological processes, reproduction and inheritance, classification, ecology, and evolution. Not required nor counted toward a major or a minor in biology.
Components: Laboratory, Class
GE: Natural Science

BIOLOGY 1350 General Botany 5 Credits
Structures and functions of principal groups of plants and plant like organisms; their ecological and phylogenetic relationships.
Components: Discussion, Laboratory, Class
GE: Natural Science

BIOLOGY 1410 Heredity 3 Credits
Principles of heredity with applications to plant, animal and human inheritance; current advances in genetics and their bearing on the life sciences. Lecture and may also include demonstrations, discussion and field trips.
Components: Class

BIOLOGY 1650 The Unity of Life 5 Credits
This course is a dynamic exploration of Biology from the biochemical level through the individual organism. In this exploration students will investigate the interactions of the internal workings of the cell, the cells themselves, tissues and organ systems in the physiology of organisms from single celled bacteria through multi-cellular plants and animals.
Components: Discussion, Laboratory, Class
GE: Natural Science
Prereqs/Coreqs: P. Biology or related major and MATH 15 with a grade of "C" or better or mathematics proficiency level of 15 or above and English 10 or 1040 with a grade of "C" or better or an English placement level of English 1130

BIOLOGY 1710 Animal Biology 5 Credits
General biological principles - structure and function of cells, histology, embryology, heredity, ecology, and evolution; survey of the animal kingdom; and structure and function of the vertebrate body. Lecture, lab, and may also include demonstrations, discussion and field trips.
Components: Class, Laboratory
GE: Natural Science

BIOLOGY 1750 The Diversity of Life 5 Credits
In this course the ecological and evolutionary connections between all living organisms will e explored and the following questions will be addressed: 1) Why are there so many species and how did there get to be so many? 2) How does fitness unify and diversify life? 3) How do organisms reproduce? and 4) What is the biological future of life? Organismal through ecosystem level processes will be explored.
Components: Laboratory, Class, Discussion
GE: Natural Science
Prereqs/Coreqs: P. Biology or related major and MATH 15 with a grade of "C" or better or mathematics proficiency level of 15 or above and English 10 or 1040 with a grade of "C" or better or an English placement level of English 1130

BIOLOGY 1840 Biology of Human Sexuality and Reproduction 3 Credits
This course focuses on the biological aspects of human sexuality and reproduction. In addition, the following topics will be discussed from a biological perspective: birth control, sexually transmitted diseases, birth defects, abortion, differences between the sexes, and the manipulation of the human reproductive process by science. Lecture and may also include demonstrations, discussion and field trips.
Components: Class

BIOLOGY 1900 Introduction to Environmental Science 3 Credits
The principles underlying the proper management of our resources: water, soils, minerals, forests, wildlife and human. The current and past attitudes relating to the resources with the interaction and complexities of humans' interests. This meets the statutory requirement for Conservation of Natural Resources required for State certification for teachers of science and social sciences. Lecture and may also include demonstrations, discussion and field trips. A student may not earn credit for both BIOLOGY 1900 and BIOLOGY 1910.
Components: Class

BIOLOGY 1910 Environmental Science 4 Credits
A contemporary study of the natural world through the human perspective. Emphasis on humans as a modifying force in the biophysical environment, including selected topics in ecological principles, pollution, population biology, and environmental management. This course meets the statutory requirement for Conservation of Natural Resources required for State certification for teachers of science and social sciences. Lecture, lab, and may include demonstrations, discussions, and field trips. A student may not earn credit for both BIOLOGY 1900 and BIOLOGY 1910.
Components: Laboratory, Class
GE: Natural Science

BIOLOGY 2010 Principles of Ecology 4 Credits
The interrelationships between living organisms and their environment, ecosystems concepts, population dynamics, community organization and distribution, and application of ecological principles to humans and their environment. Lecture, lab, and may also include demonstrations, discussion and field trips.
Components: Laboratory, Class
GE: Natural Science
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1710 or BIOLOGY 1350 or BIOLOGY 1750

BIOLOGY 2040 Cell Biology 4 Credits
Organization of cells and their components; analysis of light and electron microscopy of cytoplasmic and nuclear components of the cell and their relation to heredity, physiology, reproduction and development.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and one semester of chemistry

BIOLOGY 2110 Introduction to Genetics 3 Credits
Laws of variation and heredity and their modification by environment, genetic engineering, and chromosome behavior with emphasis on human genetics. Lecture, lab, and may also include demonstrations, discussion and field trips.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1650

BIOLOGY 2130 Plants and Society 3 Credits
A global exploration of plants and their uses by humans from historical, cultural, economic, and botanical perspectives.
Components: Laboratory, Class
GE: International Education
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1350 or BIOLOGY 1650 or BIOLOGY 1750

BIOLOGY 2140 Human Anatomy and Physiology I 5 Credits
Designed as the first of a two-semester sequence, this sequence explores structure (anatomy) and function (physiology) of the human body from a systematic approach. In addition to introductory materials, this semester includes study of the integumentary system, nervous system including special senses, endocrine system and skeletal system. Throughout the semester, systems will be analyzed at the molecular, cellular, tissue, organ and organ system levels. This course is designed for science majors.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1650 or consent of instructor

BIOLOGY 2240 Human Anatomy and Physiology II 5 Credits
Designed as the 2nd of a two-semester sequence, this course continues the exploration of the structure (anatomy) and function (physiology) of the human body from a systematic approach. This semester includes the study of the muscular system, cardiovascular system, lymphatic system, respiratory system, digestive system, urinary system, reproductive system and early development. Throughout the semester systems will be analyzed at the molecular, cellular, tissue, organ and organ system levels. This course is designed for science majors.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 2140 (grade of "C-" or better required)

BIOLOGY 2340 Essentials of Anatomy and Physiology 4 Credits
As a one semester offering, this course is designed to cover the essentials of human anatomy and physiology. It will serve as a basic introduction to the study of the complex interdependence of structure and function from a systematic approach. All primary body systems will be addressed.
Components: Laboratory, Class
GE: Natural Science

BIOLOGY 2420 Fundamentals of Biological Investigations 3 Credits
This course illustrates the process of science from a biological perspective. Students will learn to design, execute, analyze, and present biological research. Through a combination of readings, discussions, projects, lab exercises, and field work students will experience the challenges and rewards of acquiring biological information.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and (ENGLISH 1130 or ENGLISH 1040) and ENGLISH 1230

BIOLOGY 242W Fundamentals of Biological Investigations 3 Credits
A WRITING EMPHASIS COURSE IS DESIGNED TO EFFECTIVELY USE WRITING TO ENHANCE STUDENT LEARNING OF COURSE SPECIFIC CONTENT THROUGH VARIOUS MEANS SUCH AS SELF-REFLECTION, ANALYSIS, PROBLEM SOLVING AND RESEARCH. This course illustrates the process of science from a biological perspective. Students will learn to design, execute, analyze, and present biological research. Through a combination of readings, discussions, projects, lab exercises, and field work students will experience the challenges and rewards of acquiring biological information.
Components: Laboratory, Class
GE: Writing Emphasis
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and (ENGLISH 1130 or ENGLISH 1040) and ENGLISH 1230

BIOLOGY 2450 Fungi, Algae and Bryophytes 4 Credits
This course covers the major groups of living algae, fungi, fungal-like protists, and bryophytes. Although classic concepts of taxonomy, evolution, morphology, and ecological and economic importances will be included in this diversity survey course, the material will be presented from a community ecology approach: which organisms would be located in a particular environment and why? Lectures will be standard lecture as well as discussion format. Labs will include a variety of essential techniques for studying these diverse organisms, such as microscopy, use of identification keys, field sampling, collection/processing, and culturing.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1350 or (BIOLOGY 1650 and BIOLOGY 1750). C: SPEECH 1010, BIOLOGY 3450 recommended

BIOLOGY 2510 General Survey of Microbiology 4 Credits
Survey of micro-organisms and their activities; emphasis on structure, taxonomy, function, ecology, nutrition, physiology, pathology and genetics. Survey of applied microbiology: agricultural, medical, industrial, environmental and food. The laboratory is an introduction to standard techniques and procedures in general microbiology. Lecture, lab, and may also include demonstrations, discussion and field trips.
Components: Laboratory, Class
Prereqs/Coreqs: P. (CHEMSTRY 1050 or CHEMSTRY 1140 or CHEMSTRY 1450) and (BIOLOGY 1150 or BIOLOGY 1650 or BIOLOGY 1710)

BIOLOGY 2640 Invertebrate Zoology 5 Credits
Systematic survey of the invertebrates. Both representative and diverse forms will be studied within each group. Includes animal micro-technique procedures.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 or consent of instructor

BIOLOGY 2730 Animal Behavior 3 Credits
A general introduction to the field of animal behavior. Topics include evolution and natural selection, social behavior, communication, reproduction, orientation and navigation, and hormonal mechanisms of behavior. Lecture, lab, and may also include demonstrations, discussions, and field trips.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1710 or BIOLOGY 1750

BIOLOGY 2920 Research Experience 1-3 Credits
Individual specialized study working with a faculty advisor. For freshmen, sophomores, and those students who have yet to complete BIOLOGY 2420. Up to two credits can be counted toward a biology major.
Components: Research

BIOLOGY 2980 Special Topics in Biology 1-3 Credits
Designed to cover topics in biology not ordinarily covered in other classes.
Components: Class

BIOLOGY 3030 Ornithology 4 Credits
Anatomy, physiology, life histories, and ecology of birds. Laboratory study and field trips emphasize identification of local species.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 or consent of instructor

BIOLOGY 3040 Comparative Anatomy of the Vertebrates 5 Credits
Comparative studies of organs and systems of Vertebrata; includes laboratory dissections of shark, necturus, and cat.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and (BIOLOGY 2140 and BIOLOGY 2240) or (BIOLOGY 2340) or consent of instructor

BIOLOGY 3120 Animal Tissue Culture 2 Credits
Preparation of equipment and environment. Growth and maintenance. Media considerations. Various types of culture methods. Applications.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and one college level chemistry course or consent of instructor

BIOLOGY 3130 Amphibians and Reptiles of Wisconsin 3 Credits
Natural history of amphibians and reptiles native to Wisconsin. This experiential learning course uses class time to observe species in their natural habitats and learn about how both the species and their habitats are managed and conserved.
Components: Field Studies
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 or consent of instructor

BIOLOGY 3230 Mammalogy 4 Credits
A review of the mammalian fauna focusing on the major orders and families. Key morphological features, life history, and zoogeographic patterns will be reviewed for major groups. Discussion of current conservation and management issues. Lab includes identification of native Wisconsin mammals and an introduction to standard field and lab techniques for the study of mammals.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 or consent of instructor

BIOLOGY 3240 Microbiology 5 Credits
Classification, morphology, physiology, and genetics of microbes; relation of bacteria to viruses; survey of bacteria found in the environment and their control; principles of immunity and diseases.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and CHEMSTRY 1140 or consent of instructor

BIOLOGY 3330 Genetics 3 Credits
This course explores what genes are, how they are expressed, and how they are passed on from generation to generation. In addition, applications of genetics in relation to mutation, disease, gene therapy, criminalistics and genetic engineering are also explored.
Components: Class
Prereqs/Coreqs: P. BIOLOGY 1650 or consent of instructor

BIOLOGY 3450 Ecology and Evolution 3 Credits
Ecology and evolution will be considered from the perspectives of individual organisms, populations, communities, and ecosystems in an effort to illustrate the relationships between these concepts and the importance of how they both shape our world. Students will be introduced to the history, major principles, theories, dynamics, and approaches of ecology and evolution. (Fall, Spring)
Components: Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 or consent of instructor

BIOLOGY 3460 Ecological Methods and Research 3 Credits
This class supplements BIOLOGY 3450 Ecology and Evolution and further explores the major principles, techniques, and approaches in ecology. This course will explore ecology in the field and laboratory with the goal of enabling students to plan, execute, and scrutinize ecological research and appreciate how science and research fit into ecology.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420; C: BIOLOGY 3450 or consent of instructor

BIOLOGY 3470 Systematics and Evolutionary Analysis 3 Credits
This course explores the analytical techniques used by modern evolutionary biologists to investigate both quantitative and qualitative patterns in nature. Students practice these techniques in a laboratory that is primarily computer-based, but also includes several weeks of paleontological field work. Topics covered include: (1) the philosophy and algorithms of phylogenetic systematics; (2) microevolutionary processes, and; (3) concepts relevant to macroevolution including speciation, extinction, and the fossil record.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 3330 and BIOLOGY 3450 or consent of instructor

BIOLOGY 3530 Biotechnology 3 Credits
Genetic elements that control gene expression. Procedures for creating and isolating cloned genes. Genetic engineering and uses of recombinant DNA.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and one college level chemistry course or consent of instructor

BIOLOGY 3550 Morphology and Evolution of Vascular Plants 4 Credits
This broad course covers the structure or form (morphology) of the adult plant, its tissues, development and reproductive details, as well as the ecology, evolutionary history, and taxonomy of the group in which it is classified. Focus will be given to all phyla of extant vascular plants and major groups of extinct vascular plants, presenting the organisms from an evolutionary perspective.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1350 or (BIOLOGY 1650 and BIOLOGY 1750)

BIOLOGY 3620 Immunology 2 Credits
The basic concepts of immunology. The normal and abnormal immune response.
Components: Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and one college level chemistry course or consent of instructor

BIOLOGY 3650 Plant Communities of Wisconsin 4 Credits
This course provides an introduction to the major plant communities of Wisconsin and neighboring states. It emphasizes the identification, biogeographic distribution, interrelationships, conservation and management of the major regional plant communities as well as their key plant species. Two extended weekend field trips are required.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and 1750 or BIOLOGY 1350 or consent of instructor; recommended: BIOLOGY 3450

BIOLOGY 3750 Freshwater Biology 4 Credits
Examination of the physical components and biological communities of lakes, streams, and wetlands and the relationships between them. Integration of fieldwork, scientific literature, and laboratory analyses.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and (CHEMSTRY 1050 or CHEMSTRY 1140) or consent of instructor, BIOLOGY 3450 recommended

BIOLOGY 3920 Personalized Learning Experience 1-3 Credits
Alternative learning experiences that fall in between independent research and the traditional classroom. This involves working with a faculty/staff advisor to determine objectives, expectations, and assessments. Up to two credits can be counted toward a biology major.
Components: Independent Study

BIOLOGY 4010 Workshop in Biology 1 Credit
Varying topics. Does not count toward major or minor in Biology or minor in Biotechnology.
Components: Class

BIOLOGY 4040 Molecular Biology 5 Credits
Detailed structural analysis of the biological molecules DNA, RNA, and proteins in relation to cellular processes. Exploration of experimental approaches that explain the molecular basis for all life activities.
Components: Laboratory, Class, Discussion
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and BIOLOGY 2040 and BIOLOGY 3330 and one semester of chemistry or consent of instructor

BIOLOGY 4130 Mammalian Endocrinology 3 Credits
The structural and functional classification of hormones, principles of hormone action, and the regulation of body functions by the endocrine system with emphasis on homeostasis.
Components: Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 or AGSCI 4110 and BIOLOGY 2420 CHEMSTRY 1240 or consent of instructor

BIOLOGY 4150 Forensic Botany 4 Credits
A survey of the structures of plants, fungi, and algae that can be used as botanical evidence in criminal investigation. Discussion of current literature, legal issues and future trends. Laboratory includes microtechnique, sample collection and preservation techniques, and testing methods.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1150 or BIOLOGY 1350 or BIOLOGY 1650 and BIOLOGY 1750 or consent of instructor; recommended: BIOLOGY 2450 and BIOLOGY 3550

BIOLOGY 4240 Advanced Physiology 5 Credits
In depth study of physiologic processes from molecular to organismic level. Approached from a topical format, emphasizing recent advancements.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and BIOLOGY 2140 or BIOLOGY 2340 and CHEMSTRY 1240 or consent of instructor

BIOLOGY 4340 Mammalian Histology 4 Credits
The organization of cells and their products to form tissues and organs; morphological and functional comparisons of tissue organization of representatives from the class Mammalia.
Components: Class, Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 or consent of instructor

BIOLOGY 4410 Topics in Biology 1-3 Credits
Presentations of biological topics.
Components: Laboratory, Class
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 or consent of instructor

BIOLOGY 4440 Human Gross Anatomy 4 Credits
There is nothing more fascinating than learning about the human body. Its structure, organization and physiology are of interest from a personal health and clinical standpoint. This course will provide the opportunity for advanced students to engage in an intense study of human gross anatomy. This course will have a significant lab component where students will apply concepts of anatomy and physiology to the prosected human cadaver.
Components: Laboratory
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and (BIOLOGY 2140 and BIOLOGY 2240) or BIOLOGY 2340 or consent of instructor

BIOLOGY 4520 Biotechnology Seminar 2 Credits
Selected topics from among recent advances in biotechnology.
Components: Seminar
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and BIOLOGY 3530 or consent of instructor

BIOLOGY 4530 Plant Pathology 3 Credits
This course covers the major aspects of plant disease including abiotic and biotic causes, disease and symptom recognition, how disease occurs, and methods and techniques for prevention and control.
Components: Laboratory, Class
Cross Offering: SCSCI 4530
Prereqs/Coreqs: P. BIOLOGY 1350 (or BIOLOGY 1650 and BIOLOGY 1750) BIOLOGY 2420 or consent of instructor

BIOLOGY 4660 Biology Internship Experience 1-8 Credits
Enhancement of the educational experience through placement of a student with a cooperating agency, business, industry, or institution. The nature of the assignment, type of experience, number of credits, and evaluation procedure to be stipulated in a statement of agreement (learning contract) between the student and department. Does not count toward a major or a minor in biology.
Components: Field Studies

BIOLOGY 4710 Selected Regional Habitats 1-3 Credits
Offers a first-hand introduction to the flora and fauna of selected unusual habitats in the form of an interim field trip. Up to three credits can be counted toward a biology major.
Components: Field Studies
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 or consent of instructor

BIOLOGY 4920 Independent Research in Biology 1-3 Credits
Individual specialized study.
Components: Independent Study
Prereqs/Coreqs: P. BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and approval of the biology department chairperson and faculty advisor before registration

BIOLOGY 4970 Senior Thesis 1 Credit
This course provides students a unique, "capstone" opportunity to conduct research in collaboration with their peers and integrate knowledge from the different areas of biology. With assistance from a faculty coordinator, students from all areas of biology will work together to complete their individual independent research projects. Students will produce a manuscript-quality report and make a formal presentation on their research.
Components: Class
Prereqs/Coreqs: P. Biology major with senior standing and BIOLOGY 4920

BIOLOGY 4990 Capstone Course: From Atoms to Ecosystems - The Study of Life 1 Credit
This course is an exciting opportunity for students to integrate knowledge from the different areas of biology and associated disciplines to an interrelated whole, the study of life. In this endeavor, students will be applying their knowledge to current scientific and bioethical issues in biology. Students will also explore and reflect on what it means to be a biologist.
Components: Class
Prereqs/Coreqs: P. Biology major with senior standing