

# BIOLOGY (BIOLOGY)

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For up-to-date information on when online courses from the Distance Campus are typically offered, see <https://www.uwplatt.edu/department/professional-program-support/course-offerings> (<https://www.uwplatt.edu/department/professional-program-support/course-offerings/>).

## **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

**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 1230 Global Public Health 3 Credits**

Study of the history, values, and functions of global human health.

**Components:** Class

**GE:** Global Studies (former Int Ed), International Education

## **BIOLOGY 1350 General Botany 5 Credits**

Structures and functions of principal groups of plants and plant like organisms; their ecological and phylogenetic relationships.

**Components:** Class, Laboratory, Discussion

**GE:** Natural Science

## **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 1040 with a grade of "C" or better or an English placement level of ENGLISH 1130

## **BIOLOGY 1750 The Diversity of Life 5 Credits**

In this course the ecological and evolutionary connections between all living organisms will be explored and the following questions will be addressed: 1) Why are there so many species and how did they 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:** Discussion, Class, Laboratory

**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 1040 with a grade of "C" or better or an English placement level of ENGLISH 1130

## **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 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:** Class, Laboratory

**Prereqs/Coreqs:** P. BIOLOGY 1650 and one semester of chemistry

**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:** Global Studies (former Int Ed), 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:** Laboratory, Class

**Prereqs/Coreqs:** P. BIOLOGY 1650 and BIOLOGY 1750 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)

**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 1750 and C: BIOLOGY 1650 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 1750

**BIOLOGY 2920 Independent Research 1-3 Credits**

Individual specialized study working with a faculty advisor. For freshmen, sophomores, and those students who have yet to complete BIOLOGY 2420.

**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:** Laboratory, Class

**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 2240 or BIOLOGY 2340 or ANSCI 3100) 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 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. Junior standing 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:** Laboratory, Class

**Prereqs/Coreqs:** P. (BIOLOGY 1650 or CHEMISTRY 3130 or GEOLOGY 1140 or GEOLOGY 3130 or SCSCI 2230) and (CHEMISTRY 1050 or CHEMISTRY 1140 or CHEMISTRY 1240 or CHEMISTRY 1450) 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:** Laboratory, Class

**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:** C: BIOLOGY 3330 and BIOLOGY 3450 or consent of instructor

**BIOLOGY 3530 Biotechnology 3 Credits**

Survey of careers and topics within Biotechnology. Class examines recombinant DNA technology, regenerative medicine, genetically modified organisms and bioremediation among others. Laboratory support class topics with relevant experimentation. Significant interaction with industry experts.

**Components:** Laboratory, Class

**Prereqs/Coreqs:** P: BIOLOGY 1650

**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:** Laboratory, Class

**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 one college level chemistry course or consent of instructor

**BIOLOGY 3630 Epidemiology: Host, Agent, and Environment 3 Credits**

The study of the patterns, causes, and effects of health and disease conditions in human and animal populations.

**Components:** Class

**Prereqs/Coreqs:** P: Junior standing 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:** Laboratory, Class

**Prereqs/Coreqs:** P: BIOLOGY 1650 and 1750 or BIOLOGY 1350 or consent of instructor; recommended: BIOLOGY 3450

**BIOLOGY 3710 Exotic Animal Care and Outreach I 1 Credit**

The UW-Platteville Animal House provides students with an opportunity to care for exotic invertebrate and vertebrate animals and share the biology and natural history of these animals at outreach events throughout the region. Students will learn and practice proper care for all animals in our collection, perform enrichment activities with a focal species, and participate in outreach activities throughout the semester. Time spent on the course includes a one-hour weekly meeting, animal care duties, and planning/participating in outreach events.

**Components:** Laboratory

**BIOLOGY 3720 Exotic Animal Care and Outreach II 2 Credits**

The UW-Platteville Animal House provides students with an opportunity to care for exotic invertebrate and vertebrate animals and share the biology and natural history of these animals at outreach events throughout the region. This course is intended for students that have taken at least one semester of BIOL 3710. Students are assigned leadership positions based on their interests and past experience. In addition to the responsibilities shared by all students associated with the Animal House, leaders are required to oversee a critical aspect of Animal House organization, such as monitoring for signs of improper animal care, scheduling times for animal care, maintaining social media presence, and arranging outreach events.

**Components:** Laboratory

**Prereqs/Coreqs:** P: BIOLOGY 3710 or consent of instructor

**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 (CHEMISTRY 1050 or CHEMISTRY 1140 or CHEMISTRY 1240 or CHEMISTRY 1450) 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.

**Components:** Independent Study

**BIOLOGY 4010 Workshop in Biology 1 Credit**

Offers current research students the opportunity to learn about research-related skills in a collaborative environment. We discuss conducting research, ethics, presentation and communication skills, funding, and transitioning these skills into future careers, including job/graduate applications and resumes/CV. Students are required to share their research in an open discussion format with their colleagues and are expected to work together to brainstorm and provide feedback to one another.

**Components:** Class

**Prereqs/Coreqs:** C: BIOLOGY 2920, BIOLOGY 4920 OR BIOLOGY 4970

**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:** Discussion, Laboratory, Class

**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 ANSCI 3110 and BIOLOGY 2420 CHEMISTRY 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 1350 or (BIOLOGY 1650 and BIOLOGY 1750); recommended: BIOLOGY 2450

**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:** Laboratory, Class

**Prereqs/Coreqs:** P: BIOLOGY 1650 and BIOLOGY 1750 and BIOLOGY 2420 and (BIOLOGY 2140 or BIOLOGY 2340) and (CHEMISTRY 1050 or CHEMISTRY 1140 or CHEMISTRY 1240 or CHEMISTRY 1450) 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:** Laboratory, Class

**Prereqs/Coreqs:** P: BIOLOGY 1650 and BIOLOGY 1750 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 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 three courses from: BIOLOGY 1750, 2040, 2240, 2420, 2920, 3120, 3240, 3330, 3530, 3620, 4040, 4920, or CHEMISTRY 3130, 3270, 3540, 4000, 4630, or ANSCI 3070, 4980, or SCSCI 4240, 4390, 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. ENVHORT/SCSCI 1240 and BIOLOGY 1350 (or BIOLOGY 1650) and Junior Standing or Consent of Instructor

**BIOLOGY 4540 Introductory Human Pathology 4 Credits**

This course is a team-oriented exploration of disease in the human body. This course is designed to be an intense, student-driven study of general and systemic pathology. After covering the primary disease processes (General Pathology) the students will collaborate in small groups to work through a variety of cases. The lab portion of the course will also include an introduction to clinical thinking and the diagnostic process. Students will learn basic patient history taking, and the interpretation of physical exam findings and diagnostic tests. This course involves utilizing these learned clinical skills on simulated patients. Integrated into this course is the creation of a decision-making tree related to a specific chief complaint (i.e. chest pain). Guest lectures by area clinicians are also part of the course. Students interested in a health care career (pre-medicine, pre-PA, pre-nursing, etc.) will benefit the most from this class.

**Components:** Laboratory, Class

**Prereqs/Coreqs:** P. BIOLOGY 2240 or BIOLOGY 2340 or consent of instructor

**BIOLOGY 4660 Biology Internship Experience 1-8 Credits**

Intended for students to earn credit for formal structured internships with cooperating agencies, industries, organizations, or institutions. Requires a learning contract that is agreed upon by the student, faculty advisor and cooperating partner. The nature of the position, the number of credits, participant responsibilities and student assessment will be determined on a case-to-case basis.

**Components:** Field Studies

**Prereqs/Coreqs:** P. Approval by biology department chair and faculty advisor

**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 or consent of instructor

**BIOLOGY 4920 Advanced Independent Research in Biology 1-3 Credits**

Individual specialized study working with a faculty advisor.

**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 P/C: BIOLOGY 4010

**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