BIOLOGY (BI)

BI-101 Concepts of Biology
LASC Categories: LAB, NSP
Unifying principles in biology; diversity and evolution of plant and animal life at cellular and organismic levels. Three lecture hours and a two-hour laboratory per week. Not open to Biology Majors.
Fall and Spring and every year. 4 Credits

BI-103 The Human Animal
LASC Categories: NSP
A general survey of the structure and function of human body systems from the biochemical and cellular basis of life to evolution of the human body and the organization of organs and organ systems, including the biological basis of selected disease states. Not open to Biology Majors.
Every year. 3 Credits

BI-104 The Human Animal Laboratory
LASC Categories: NSP, LAB
Prerequisites or Corequisite: BI-103
This course is the lab to accompany The Human Animal, a general survey of the structure and function of human body systems from the biochemical and cellular basis of life to evolution of the human body and the organization of organs and organ systems, including the biological basis of selected disease states.
Every year. 1 Credit

BI-109 Writing in the Natural Sciences
LASC Categories: WR2, NSP
Prerequisites: EN-101.
Builds upon the writing skills gained in EN-101 to introduce students to the various genres of writing in the natural sciences. Students will develop literature research skills, learn how to craft and explain an experimental proposal, and practice written, graphical, and oral presentation of data and scientific concepts to academic and lay audiences.
Spring only and every year. 3 Credits

BI-111 Social Biology
LASC Categories: HBS, NSP
This course considers the interface between current biological technologies and the social, cultural, legal, and moral postures of modern man.
Every 2-3 years. 3 Credits

BI-112 Diseases and Mankind
LASC Categories: GP, NSP
Diseases of ancient and modern man; the impact on history, religion, science, art and philosophy.
Every 2-3 years. 3 Credits

BI-114 Plants and Human Affairs
LASC Categories: GP, NSP
Man's dependence upon plants and their influence on civilization and its art, religions, literature, folklore, medicine, and human behavior.
Every 2-3 years. 3 Credits

BI-116 Animal Biology
LASC Categories: LAB, NSP
Survey of animal kingdom with emphasis on animal diversity, morphology, life histories, ecological evolutionary relation- ships. No credit for Biology major. Three lecture hours and two laboratory hours per week. Not open to Biology majors.
Every year. 4 Credits

BI-117 Humans and the Environment
LASC Categories: LAB, NSP
A survey of Anthropologic environmental impacts and the underlying mechanisms involved. Three lecture hours and three laboratory hours per week. Not open to Biology or Environmental Science majors.
Every 2-3 years. 4 Credits

BI-118 Dinosaurs
LASC Categories: NSP, LAB
A survey of dinosaurs; their evolution, anatomy, diversity and impact on evolutionary biology. discussions of the changing views of dinosaurs in the media and public consciousness. Three hours lecture and two hors lab.
Every 2-3 years. 4 Credits

BI-125 Women in Science
LASC Categories: HBS, NSP, DAC
Examines issues related to gender in science and technology. Includes historical and recent contributions to science made by women.
Every 2-3 years. 3 Credits

BI-130 Field Biology
LASC Categories: GP, NSP, LAB
Study-Abroad Field Biology course for non-Biology majors. Course explores the intersection of human activities and environmental preservation, with a basic introduction to topics in organismal biology, biodiversity and biogeography.
Spring only and every year. 4 Credits

BI-140 Introduction to Organismal Biology
LASC Categories: LAB, NSP
Evolution, ecology, anatomy, physiology and diversity of organisms. Three hours lecture and three hours lab each week. Intended for STEM Majors.
Fall and Spring and every year. 4 Credits

BI-141 Intro to Cellular and Molecular Biology
LASC Categories: NSP, LAB
Prerequisites: CH-120 with a C- or above. CH-121 is a recommended course that can be completed concurrently or previously.
Cellular and molecular concepts in biology. Emphasis on the structures and functions of macromolecules and organelles. Introduction to cellular transport, signaling, metabolism, cell division, and gene expression. Three lecture hours and three laboratory hours per week. Intended for STEM Majors/Minors.
Fall and Spring and every year. 4 Credits

BI-161 Human Anatomy and Physiology I
LASC Categories: NLL
Considers human cellular biology, tissues, integumentary, nervous, endocrine, skeletal, muscular systems. Three hours of lecture and a three-hour laboratory per week.
Fall and Spring and every year. 4 Credits

BI-162 Human Anatomy and Physiology II
LASC Categories: LAB, NSP
Prerequisites: BI-161.
Considers digestive, respiratory, cardiovascular, urinary, immune and lymphatic systems; water and electrolyte balance, reproduction and embryology. Three lecture hours and three laboratory hours per week.
Fall and Spring and every year. 4 Credits

BI-193 First Year Seminar Biology
LASC Categories: FYS
Introductory level course covering topics of special interest to first year students. Offered only as a First Year Seminar.
Every year. 3 Credits

BI-199 Selected Topics: Biological Sciences
Each topic is a lecture and/or a laborotory course in a selected area of the biological sciences presented by a departmental instructor, Topics will be announced in advance.
Every 2-3 years. 1-4 Credits

BI-200 Human Biology
LASC Categories: NLL
Prerequisites: BI-140 and BI-141 or PB-200 with a grade of C- or above
A systemic approach to the study of human biology. The course will emphasize structure/function relationships and homestatic mechanisms. Three hour lecture and three hour lab.
Fall and Spring and every year. 4 Credits

BI-202 Principles of Ecology
LASC Categories: NLL, WAC
Prerequisites: BI-140, EN-102, MA-150 or MA-180, or MA-190, or MA-200 with a grade of C- or above.
Basic ecological theory relating to organism-environment interactions; population dynamics, and ecosystems. Three hours of lecture and a three-hour laboratory per week.
Fall and Spring and every year. 4 Credits

BI-203 Genetics
LASC Categories: NLL, QAC
Prerequisites: BI-141 with a grade of C- or above. Must have a minimum math placement exam score of 3.
Introductory genetics with examples of human inheritance and recent developments in genetic engineering. Three hours of lecture and a three-hour laboratory per week.
Fall and Spring and every year. 4 Credits

BI-204 Microbiology
LASC Categories: NLL
Prerequisites: BI-141 and CH-121 with a grade of C- or above.
The cytology, metabolism, and genetics of bacteria. Immune responses and control of microorganisms are stressed. Three lectures and a three-hour laboratory per week. (Prerequisites: Introductory chemistry and biology courses)
Fall and Spring and every year. 4 Credits

BI-205 Research Techniques and Experimental Design
Prerequisites: BI-141, and MA-150.
Investigations in experimental design and research methodologies required for the Honors program in Biology (or Biotechnology).
Spring only and every year. 2 Credits

BI-206 Medical Microbiology
LASC Categories: NSP, LAB
Prerequisites: BI-161 and either CH-112 or CH-120 and CH-121.
A study of growth and control of pathogenic microorganisms with emphasis on infectious disease transmission, immune responses, prevention and treatment. Three lecture and three laboratory hours per week.
Fall and Spring and every year. 4 Credits

BI-207 Public Health Microbiology
Prerequisites: BI-161 and CH-112.
Growth and control of pathogenic microorganisms with emphasis on infectious disease transmission, immune responses, prevention and treatment for Public Health Majors.
Every year. 3 Credits

BI-211 Pre-Medical Seminar: Preparing for a Career in Medicine
A seminar that will introduce pre-medical, pre-dental, and pre-veterinary students to the the requirements for admission to graduate programs in these areas. Students will develop personal plans for working toward these requirements, will interact with a variety of healthcare professionals to gain knowledge about different careers and determine which is the best fit for them, and will discuss current ethical and policy issues related to healthcare. Open only to Biology, Biotechnology, and Chemistry students with a declared Pre-Medical Concentration who have an overall GPA of at least 3.2 and a Biology/Chemistry/Math/Physics GPA of at least 3.2.
Fall only and every year. 1 Credit

BI-212 Concepts of Microbiology
Prerequisites: BI-206: Medical Microbiology (with a B- or higher) CH-121: General Chemistry II Only for students who transfer into the Biology or Biotechnology major and have taken BI-206: Medical Microbiology prior to switching their major.
This course introduces students to fundamental concepts in microbiology that are not emphasized in a medically-focused microbiology course, including the myriad positive and negative ways that microorganisms affect our lives and impact the world around us, microbial physiology and genetics, microbial contributions to biotechnology, microbial diversity, and evolutionary relationships and genetic exchange between microbes.
Other or on demand and other or on demand. 2 Credits

BI-215 Neuroscience
LASC Categories: NLL
Prerequisites: BI-161 and BI-162
Structural and functional organization of the human nervous system with a focus on clinical applications. Three lecture hours and three laboratory hours per week.
Fall only and every year. 4 Credits

BI-240 Research Experience
Lab and/or field based research on a specific research topic under the supervision of a faculty member. Permisson of instructor required.
Fall and Spring. 1-6 Credits

BI-271 Basic Kinesiology
LASC Categories: NSP
Prerequisites: BI-161.
Structure and function of human skeletal muscles in relation to motion and general body mechanics under normal and stress conditions.
Spring only and every year. 3 Credits

BI-301 Topics in Invertebrate Zoology
LASC Categories: NLL
Prerequisites: BI-140 and BI-202 with a grade of C- or above.
Considers anatomy, taxonomy (including selected articles of the international code of zoological nomenclature), natural history, and evolutionary relationships of selected invertebrate phyla. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-303 Parasitology
LASC Categories: NLL
Prerequisites: BI-140 and either BI-200 or BI-161 and BI-162 with a grade of C- or above.
Basic concepts in symbiology, life cycles, epidemiology, disease development, control and prevention of selected human parasites. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-304 Comparative Vertebrate Anatomy
LASC Categories: NLL
Prerequisites: BI-140 and either BI-200 or BI-161 and BI-162 with a grade of C- or above.
Considers prochordate and chordate taxonomy and phylogeny; systematic morphological comparison of representative chordates to establish homology, analogy, and evolution. Three lecture hours and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-306 Developmental Biology
LASC Categories: NLL
Prerequisites: BI-141 and BI-203 with a grade of C- or above.
Study of developmental patterns, cullular differentiation and cell interactions resulting in cellular diversity, organization, and perpetuation of the germ line. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-307 Human Movement and Perception
Prerequisites: either BI-161 and BI-162, or BI-200 or BI-271.
This course is an introduction to the ecological perspective of human movement (action) and perception in which we will explore the philosophical roots for our contemporary views of human perception, the evolution/development of our sensory/perceptive mechanisms and compare-contrast humans with other perceptive organisms in the Animal Kingdom.
Every 2-3 years. 4 Credits

BI-315 Comparative Neurobiology
LASC Categories: NLL
Prerequisites: BI-161 and BI-162 or BI-200 or PB-200 with a grade of C- or above.
Structural and functional organization of the central and peripheral nervous system. Principles of normal and abnormal transmission, integration, and storage of information in neuronal pathways. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-321 Comparative Physiology
LASC Categories: NLL
Prerequisites: BI-140, BI-141, and either BI-200 or BI-161 and BI-162 with a grade of C- or above.
A comparison of select physiological functions of different animal taxa with mammals used as a reference. Three lecture hours and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-324 Endocrinology
LASC Categories: NLL
Prerequisites: BI-140, BI-141, and BI-200 or BI-161/162 with a grade of C- or above.
The role of endocrine glands in the normal integration of animals; mechanisms of hormone action, function, and interrelationships. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-331 Marine Biology
LASC Categories: NLL
Prerequisites: BI-140 and BI-202 with a grade of C- or above.
Considers the marine environment, its flora and fauna, distribution and production of plankton-nekton-benthos, zoogeography, bioeconomic factors and potential. Three lecture hours and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-333 Topics in Vertebrate Zoology
LASC Categories: NLL
Prerequisites: BI-140 and BI-202 with a grade of C- or above.
Life histories, adaptations, distribution, systematics, and economic importance of selected vertebrates taxa. Each semester will focus on a particular taxon. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-334 Wildlife Biology
Prerequisites: BI-140 and BI-202 with a grade of C- or above.
Theory and Practice of wildlife management. Considers procedures for collection and analysis of field and laboratory data on vertebrate game populations useful to wildlife biologists. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-340 Plant Sciences
LASC Categories: NLL
Prerequisites: BI-140 and BI-202 with a grade of C- or above.
Morphology, anatomy, physiology of flowering plants with studies on life cycles, ecological relationships, biochemical processes and evolution of plant diversity. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-342 Plant Physiology
Prerequisites: BI-141 and either BI-204, or BI-206 and BI-212, with grades of C- or higher.
Fundamentals of plant processes: nutrition, metabolism, growth, development and responses. Three hours of lecture and a three-hour laboratory per week.
Every 2-3 years. 4 Credits

BI-354 Systematics and Evolution
LASC Categories: LAB, NLL
Prerequisites: BI-140 and BI-203.
Introduction to the use of morphological and molecular data to trace the evolutionary history of living things. Historical overview of the fields of taxonomy and systematics. Evolution of genes and genomes. Algorithmic and criteria-based methods for the development of phylogenetic hypotheses. Course includes lectures and projects based on computer applications. Lecture and computer laboratory.
Every 2-3 years. 4 Credits

BI-360 Animal Behavior
LASC Categories: NLL
Prerequisites: BI-202 or PB-200 with a grade of C- or above.
Survey of ethology and behavioral ecology from an historical and evolutionary perspective. Laboratory involves observation, recording and analysis of animal behavior. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-371 Advanced Topics in Cell and Molecular Biology
LASC Categories: NLL
Prerequisites: BI-141 and BI-203 or BI/CH-410 with a grade of C- or above.
Examination of current topics in cell and molecular biology, including mechanisms that regulate gene expression and protein function, organization of cellular components into functional pathways, and modern experimental techniques.
Every 2-3 years. 4 Credits

BI-372 Immunology
LASC Categories: NLL
Prerequisites: BI-141 and either BI-204, or BI-206 and BI-212, with grades of C- or higher.
Introduction to cellular defense mechanisms in health and disease; antigen-antibody reactions, human immune responses. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-375 Virology
LASC Categories: NLL
Prerequisites: BI-141 and either BI-204, or BI-206 and BI-212, with grades of C- or higher.
Physical structure and replication schemes of viruses; role of viruses in human disease, research and commercial applications. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-380 Biodiversity and Conservation Biology
LASC Categories: LAB, NLL
Prerequisites: BI-140, BI-141, BI-202, and BI-203 with a grade of C- or above.
A theoretical and quantitative approach to species, genetic, ecosystem and community diversity in the context of modern conservation biology principles. Three lecture hours and three laboratory hours per week.
Every 2-3 years. 4 Credits

BI-398 Cancer Biology
Prerequisites: BI-141 and BI-203 with a grade of C- or above.
Cellular and molecular basis of cancer, including cancer genetics, biochemical pathways related to cancer, and modern traetment approaches.
Every 2-3 years. 4 Credits

BI-401 Selected Topics: Biological Sciences
Each topic is a lecture and/or laboratory course in a selected area of the biological sciences presented by a departmental instructor and/or guest lecturers when appropriate. Topic to be announced in advance.
Every 2-3 years. 1-4 Credits

BI-402 Independent Study: Biology
Advanced semi-independent study (by qualified upper-level biology majors) of an approved biological problem. Faculty supervision required. (May not be used for major requirements.) Consent of department and instructor. Junior/Senior standing required.
Fall and Spring. 1-6 Credits

BI-403 Internship: Biology
Intended for qualified, upper-level biology majors. Faculty advisor required. (May not be used for major requirements.) Consent of department. Junior/Senior standing required.
Fall and Spring. 1-6 Credits

BI-404 Biology Seminar
LASC Categories: CAP
Prerequisites: BI-202, BI-203, BI-204, BI-200 or BI-161 BI-162 with a grade of C- or above. Senior Standing also required
Preparation and presentation of biological topics, chosen with the advice and consent of a faculty advisor.
Fall and Spring and every year. 2 Credits

BI-408 Directed Study: Biology
Directed study offers students, who because of unusual circumstances may be unable to register for a course when offered, the opportunity to complete an existing course with an established syllabus under the direction and with agreement from a faculty member.
Other or on demand. 1-3 Credits

BI-410 Biochemistry I
LASC Categories: NLL
Prerequisites: CH 201 with a grade of C- or above.
The chemistry of proteins, nucleic acids, carbohydrates, and lipids; enzymes, biological oxidations; and correlations in intermediary metabolism. Three hours of lecture and a three-hour laboratory per week. [Cross listed as CH410.]
Fall and Spring and every year. 4 Credits

BI-430 Field Biology for Majors
Prerequisites: BI-202 with a minimum grade of C-.
Study-Abroad Field Biology course for Biology majors. Course explores the intersection of human activities and environmental preservation, with an in-depth discussion of topics in organismal biology, ecology, biodiversity and biogeography.
Spring only and every year. 4 Credits

BI-440 Advanced Research Experience for Undergraduates
Prerequisites: BI-205 along with 3 Biology courses at WSU. Consent of instructor required. Junior/Senior standing required.
Advanced lab and/or field based research on a specific research topic under the supervision of a faculty member.
Fall and Spring. 1-6 Credits