Biology (BI)

Courses

BI 110 Natural World Domain Laboratory: 1 semester hour
A laboratory that fulfills the requirement of the Natural World domain for transfer students who have taken a non-laboratory based non-major course before transferring into Mount Mercy. This course is only offered to this group of students. (Offered winter term on a temporary basis as long as needed).

BI 123 Biology Of Human Concern: 4 semester hours
For non-science majors. Study of the broad general principles of biology and of current environmental and ethical problems arising as our knowledge and technological competencies increase. Three hours of lecture and one two-hour lab per week. (Cannot be taken by Biology majors after successful completion of BI 125). This course fulfills the Natural World Domain requirement for non-major students.

BI 125 Foundations of Biology & Scientific Inquiry I: 3 semester hours
An introduction to the unifying principles of modern biology with an emphasis on introductions to the interrelationships of cell physiology and anatomy, biochemistry, genetics, evolution, and development. No prerequisites. Three hours of lecture per week. Biology majors/minors, medical laboratory science majors, outdoor conservation majors and education majors must concurrently enroll in the BI 125 lab. This course fulfills the Natual World Domain requirement when taken with the BI 125 lab.

BI 125L Biostatistics and Scientific Investigation I: 1.5 semester hour
A laboratory course designed to reinforce BI 125 through experimentation, data analysis, inquiry, discussion of readings, and communication. The course will include fundamentals of interpretation of scientific writing, introduction to scientific writing, and the foundations of statistical analysis. Students enrolled in BI 125 are not required to take BI 125L, but students enrolled in the laboratory must take BI 125 concurrently or get permission of the instructor to enroll. (Offered each fall semester).

BI 126 Foundations of Biology & Scientific Inquiry II: 4.5 semester hours
A laboratory course designed to reinforce BI 125 that focuses on additional topics in inheritance, population genetics, speciation and classification, introduction to ecosystems, and evolution of prokaryotes, protistans, and fungi. Additional topics in statistics and scientific communication will also be integral to the course. Prerequisite: A grade of C or better in BI 125 and BI 125L. Three hours lecture and three hours of laboratory per week.

BI 127 Foundations of Biology & Scientific Inquiry III: 4.5 semester hours
The evolution of plants and animals will be surveyed focusing on physiological and anatomical adaptations. Additional topics in statistics and scientific communication will also be integral to the course. Prerequisite: A grade of C or better in BI 125 and the BI 125 lab (C- does not count). Three hours of each lecture and laboratory per week.

BI 150 Basic Microbiology: 4.5 semester hours
Introduction to the study of microorganisms, with special emphasis on medically important bacteria, viruses, and fungi; includes practical applications for control of pathogens, epidemiology and diagnosis, mechanisms of infection and host resistance. Weekly 3 hours lecture and 3 hours laboratory. Prerequisite: A grade of C or above (C- does not count) in BI 125 or permission for instructor, not for major/minor credit in biology or medical technology and may not substitute for BI 315. This course fulfills the Natural World Domain requirement for nursing majors.

BI 210 Biology And Human Culture: 3 semester hours
The course will explore the interaction between culture, evolution, and biology from a variety of perspectives in a seminar format. The customs of different cultures are often determined by and /or affected by biological factors. These will be studied from a proximate and ultimate (evolutionary) standpoint in a comparison of both non-Western and Western culture to better understand and appreciate different cultural practices and beliefs, how they evolved, and what implications they have for the world. Students also will investigate a custom of their choice to ascertain the biological and cultural origins and significance of the custom. This course will not count for major/minor biology credit. Prerequisites: One course selected from a core curriculum writing courses, sophomore standing. This course fulfills the Global Awareness Domain requirement.

BI 225 Global Environmental Issues: 4.5 semester hours
This course examines the human impacts on the global environment in a lecture, discussion and applied approach. Current research will be studied on the causes and effects of environmental change and environmental conservation. Prerequisites: A grade of C or better in BI 125 or BI 123 or equivalent or permission of instructor. Three hours of lecture and one three-hour lab per week.

BI 242 Iowa Natural History: 4.5 semester hours
A survey of the natural history of Iowa focusing on geological forces, plant communities, and animal communities, and the impact of early humans, the first European settlers and present residents. The lab will focus on identification of skills. Weekend field trips will be an important component of the course. Prerequisites: A grade of C or better in BI 125, BI 127, or permission of instructor. Three hours of lecture and one three-hour lab per week.

BI 243 Immunology: 3 semester hours
This course introduces students to the major basic concepts operating in the functioning of the immune system and the immunopathologies that arise due to the hyperfunction, hypofunction, or malfunction of this system. Major topics to be covered include non-specific immunity, specific immunity (cellular and humoral) hypersensitivities, immunologic deficiencies, tolerance, enhancement, immunogenetics, autoimmunity, cancer immunology, and transplantation. This introductory course gives students a basic understanding of the system as well as some basic concepts and terminology on which to build further knowledge in this area. Prerequisites: A grade of C or better in BI 125 and BI 126; or BI 125 and BI 150.

BI 260 Professional Development for the Sciences: 1 semester hour
A seminar course designed to prepare future graduate and professional school science majors during early in their junior year. Students will learn about different career choices, how to prepare for standardized exams, the timing of application, interview skill, post-graduate admissions expectations, cover letters, and how to develop a resume to present.

BI 273 Human Anatomy: 4.5 semester hours
A lecture and laboratory course designed to give basic information for understanding normal structure and development of the human body. A regional approach to anatomy is used, complimented with dissection and examination of preserved human cadavers, practical applications, and discussions of basic concepts. Three hours of lecture and one three-hour lab per week, plus 45 hours of supervised dissection per term. Prerequisite: A grade of C or better in BI 125 for Biology majors, and a D- or better for other majors.

BI 274 Human Physiology: 3 semester hours
A lecture course designed to introduce students to the physiological systems of the human body. Emphasis is given to the interactive nature of these systems that result in normal physiological function. The medical implication of abnormalities and failure of these systems is also briefly covered. Three hours of lecture per week. A non-required option is BI 274, Basic Human Physiology Lab in which Biology majors may concurrently enroll. Prerequisite: A grade of C or better in BI 125 for Biology and Medical Technology major, and a grade of D- or better for other majors.

BI 274L Human Physiology Laboratory: 1.5 semester hour
A laboratory course designed to provide demonstrations, experiments, and discussion to reinforce and supplement BI 274. Biology majors, especially those who intend to pursue medically-oriented programs, graduate programs, or education should take this laboratory concurrently with BI 274. Students enrolled in BI 274 are not required to take the laboratory, but students enrolled in the laboratory must take BI 274 concurrently or get permission from the instructor to enroll. This course is a three-hour weekly laboratory. (Offered each spring semester).

BI 303 Genetics: 4.5 semester hours
This class is an exploration of the three main branches of heredity: transmission (classical), molecular, and population genetics. Transmission genetics examines how genes and genetic traits are passed from generation to generation. Molecular genetics probes the structure, function, and regulation of genes, while population genetics investigates through mathematical models and the distribution and behavior of genes in populations. Three hours of each lecture and laboratory each week. Prerequisites: A grade of a C or better in BI 125 and BI 126, or BI 125 and or BI 127.

BI 305 Evolution: 3 semester hours
Analysis of the theory of evolution, evidences of organic evolution provided by the various subdisciplines of biology and its mechanism and results. Three hours per week. Prerequisites: A grade of C or better in BI 125 and BI 126; or BI 125 and BI 127 or permission of instructor.

BI 310 Ecology: 4.5 semester hours
This course explores a study of the relationships of organisms to each other and to their environment from an evolutionary perspective. Aquatic and terrestrial ecosystems will be studied form the perspective of the individual, the population, and the community. Three hours of each lecture and laboratory per week. Prerequisite: A grade of C or better in BI 126 or BI 127 or permission of the instructor. Statistics is recommended as is senior status.

BI 315 General Microbiology: 4.5 semester hours
This course studies the major fields of microbiology with an emphasis on bacteria and viruses. Topics include bacterial cell structure, metabolism, genetics, ecology and pathogenesis. Three hours of each lecture and laboratory per week. Prerequisites: A grade of C or better in BI 125, BI 126, CH 111, and CH 112.

BI 355 Exercise Physiology and Biomechanics: 3 semester hours
This course is designed to introduce fundamentals of exercise physiology and biomechanics. Topics explored include: application of basic physiology knowledge to athletic training and exercise, review of nutrition for athletes, and concepts of physics as they relate to movement. Prerequisites: PH 151, BI 274 or permission of instructor. Recommend BI 273 and either a course in Evolution or a basic background.

BI 357 Animal Behavior: 4.5 semester hours
This course is a comparative study of the evolution of animal behavior centering on the principles and mechanisms of behavior. Three hours lecture and one three-hour lab per week. Prerequisites: A grade of C or better in BI 125 and BI 126, or PS 101 or permission of instructor.

BI 370 Cell and Molecular Biology: 5 semester hours
This course studies the cell structure and functions common to all eukaryotic organisms including: metabolism, organelle activity, gene expression, cell growth and division, and cell communication. The laboratory component will include learning to use various equipment and protocols scientists use to manipulate and visualize DNA, RNA, and protein in and from cells for research experiments. Three hours of lecture and an aditional four hours of laboratory per week. Prerequisites: A grade of a C or better in BI 125 and BI 127 or permission of instructor.

BI 405 Directed Readings in Biology: 3 semester hours
A course initiated by a student, a group of students, or an instructor based upon a topic of interest or a special need. The course will involve readings on the topic, discussion, and projects based upon the topic. Library research and internet research may also be a component along with written summaries of research and/or projects. Under ordinary circumstances this course cannot be used as one of the required electives for the biology major or minor. Prerequisites: Junior or Senior status, grades of C or better in appropriate background courses, and permission of instructor.

BI 440 Biology Internship: 3 semester hours
This is a directed educational experiences in employment situations under joint sponsorship by a faculty member and an employer. This course cannot be used as one of the three upper division electives.

BI 445 Independent Study: 3 semester hours
This can be fulfulled by readings and/or research. The course to be designed by the student in consultation with the instructor on a subject of special interest to the student. This course cannot be used as one of the three upper division electives.

BI 450 Independent Research: 3 semester hours
Independent research conducted at Mount Mercy or another recognized institution or research facility. Students will be responsible for collection, analysis, and presentation of original data. Presentation will be in both oral and written format, with the oral portion to be given at a recognized state or national scientific meeting. This course cannot be used as one of the three upper division electives.