Biology

Bruyninckx, Rubino, Starnes.

Major: Biology courses – 161; 185; 221; 231; 301; 302; 471 (culminating experience); four others, two of which must be at the 300 level, but not to include 307, 308, 309, 357, 370, or 380.
Cognate courses – Chemistry 161 or equivalent; Che 185.
Comprehensive evaluation with passing grade. Total of 8.50 major course credits, plus 2 cognates = 11.50.
No more than 1 credit of any combination of Bio 308, 309 and 380 can count towards graduation.

Minor: Biology courses – 161 or equivalent; 185; any three others, but not to include 301, 302, 307, 308, 309, 370, or 380. Total of 5 minor courses.

All courses (except 301, 302) include an integrated laboratory experience.

Bio 160. Special Topics.
Bio 161. Ecology and Evolution. An introduction to the scientific study of life with an emphasis on evolution, ecology and classical genetics. The nature and practice of science will be examined throughout the course. For prospective pre-health-profession students and natural science majors. Partially satisfies the Natural World LADR. This class is open only to first-year students. Other students, and students with prior credit for Bio 165, require the permission of the instructor.
Bio 165. Concepts of Biology. An historical approach to explore the development of primary topics in modern biology such as mechanisms of inheritance and diversification of life on Earth via the process of evolution. The nature and practice of science will be examined throughout the course. Does not require college-level chemistry. Partially satisfies Natural World LADR. Not open to students with prior credit in Bio 161 or equivalent.
Bio 185. Cell and Molecular Biology. An introduction to the scientific study of life with an emphasis on the structure, function and molecular biology of the cell. For prospective natural science majors and pre-health profession students. Prerequisite: 161.
Bio 214. Tropical Biology. Examines tropical biology in Central America: coral reefs, barrier islands, mangrove swamps, and moist forests in Belize, and the Mayan temples in Tikal, Guatemala. Additional fee charged. Prerequisite: Sophomore standing.
Bio 221. Genetics. A survey of molecular, organismal, and population genetics. Laboratory work illustrates basic genetic principles and modern laboratory techniques. Prerequisites: 185. Prerequisite/corequisite: Che 161 or equivalent.
Bio 226. Aquatic Biology. A study of the ecology and evolution of the organisms that live in freshwater ecosystems, emphasizing ecological relationships and the importance of water resources to life on Earth. Students will visit local and regional wetlands, creeks, streams, rivers and lakes. Field studies will emphasize aquatic collecting techniques, identification of organisms and environmental research methods. Prerequisites: an introductory course in biology or chemistry is helpful but not required. Offered Spring Term alternate years
Bio 231. Biodiversity. An introduction to the biological diversity of earth. Topics covered include analysis of the form and function of the major taxonomic groups: protists, fungi, plants, and animals, the origin of life, the evolutionary history of life on earth, and principles of biological classification. Prerequisite: 185.

Bio 234. Plant Taxonomy. Identification of higher plants with emphasis on the native flora; emphasis on the use of keys, principles of classification, field work, and herbarium methods. Prerequisite: 161.
Bio 260. Special Topics.
Bio 301. Junior Seminar. Preparation of an Independent Study proposal including a bibliography, literature review and an oral presentation. Prerequisites: 4 courses in biology or junior standing. Graded Pass/Fail. 0.25 unit.
Bio 302. Senior Seminar. Oral presentation and discussion of primary literature research articles; presentation of the results of student Independent study projects. Prerequisite: 4 courses in biology or senior standing. Graded Pass/Fail. 0.25 unit.
Bio 307. Directed Study. .50 unit.
Bio 308. Directed Research. Field or laboratory research performed under the direction of a professor. Prerequisite: permission of directing professor. Graded Pass/Fail. .25 unit.
Bio 309. Directed Research. Field or laboratory research performed under the direction of a professor. Prerequisite: permission of directing professor. Graded Pass/Fail. 0.5 unit.
Bio 312. Conservation Biology. Study of the conservation of genetic, species, and ecosystem diversity. Synthesis of perspectives from population and community ecology, population genetics, biogeography, economics, and sociology. Prerequisite: 231.
Bio 313. Plant Anatomy and Physiology. Study of vascular plant structure and function as adaptations to the terrestrial environment. Lectures, discussions, laboratories, and field trips. Prerequisite: 231.
Bio 314. Molecular Biology. A detailed survey of gene structure, function, regulation, and replication as well as the experimental techniques used to understand these phenomena. Prerequisite: 221.
Bio 315. Ecology. Study of interactions of organisms and their environments; emphasis on energy flow, nutrient cycling, and equilibrium processes in ecosystems. Lectures, field projects, preparation of scientific reports, and laboratories. Prerequisite: 161.
Bio 317. Vertebrate Biology. A study of the biology of the vertebrates, including the evolutionary history, ecology, behavior, and structure and function of the major vertebrate groups. Lab includes dissection of representative vertebrates and field studies with local vertebrate species. Prerequisite: 231. Offered alternate years.
Bio 318. Research Methods in Biology. Techniques for conducting investigations in the biological sciences: scientific reasoning, literature reviews, design of experiments, analysis of data (including statistical analysis), oral and written presentation of results and the preparation of research proposals. Prerequisite: 231.
Bio 328. Immunology. Introduction of both theories and techniques in the field of immunology. Prerequisite: 221.
Bio 333. Microbiology. A study of the structure and function of bacteria and related organisms. Prerequisite: 221.
Bio 336. Cell Biology. A study of the evolution, structure, and functioning of cells. Topics include membranes, bioenergetics, intracellular sorting, the cytoskeleton, cell communication, and cellular mechanisms of development. Laboratory emphasis on the methodology of cell biology. Prerequisite: 221.
Bio 357. Internship. Off-campus supervised experience in biology.
Bio 360. Special Topics.
Bio 370. Directed Study.
Bio 380. Directed Research. Field or laboratory research performed under the direction of a professor. Prerequisite: Permission of directing professor. Graded Pass/Fail.

Bio 465. Capstone Seminar. Course content will reflect the topic for the annual Capstone. Open to all juniors and seniors and may be repeated once for credit. Students may enroll in only one Capstone seminar in a given term.

Bio 471. Senior Thesis. Individual investigation of a topic of special relevance to a student's interest in the biological sciences; may take the form of a laboratory or field scientific investigation, library research, or practical experience in the biological sciences resulting in written and oral reports. Prerequisite: Five courses in biology, senior standing, and permission of the directing professor.

Bio 499. Comprehensive Evaluation.