Biology Curriculum

The major consists of 40 credits in biology which must include BIOL 132-Organism Function and Diversity, BIOL 210-Introduction to Ecology and Evolution, BIOL 260-The Research Process, BIOL 340-Cellular Biology, BIOL 341-General Genetics, and BIOL 451-Seminar. Students must also complete a course designated Research Intensive (RI) by the department. RI courses include a substantial research component. The following is a current list of approved RI courses:

- BIOL 302-Developmental Biology
- BIOL 311-Plant Ecology
- BIOL 412-Endocrinology
- BIOL 427-Ornithology
- BIOL 430-Molecular Biology of the Gene
- BIOL 432-Virology
- BIOL 491-Special Problems in Biology (individual, faculty-mentored research)

In addition to an RI course, all majors must take one other upper-level laboratory course. They may apply up to seven credits of BIOL 481/Biol 491 toward the biology major (BIOL 481-1 credit, BIOL 491-up to 6 credits). Finally, students must earn a grade of C- or better in any course that serves as a prerequisite for any course that counts in the biology major.

Certain courses offered by the department do not count toward the 40 biology credits needed to fulfill the major: BIOL 121-Biological Concepts, BIOL 125-Phage Hunters I, BIOL 127-Human Biology, BIOL 128-Current Topics in Biology, BIOL 203-Science in Perspective, and BIOL 499-Internship.

1BIOL 481-Readings is a 1-credit required preparatory course for BIOL 491.

Degree Planning for Biology Majors

Students planning to major in biology should take BIOL 121 & 132 or BIOL 125 & 126 (Phage Hunters I & II) and CHEM 111 & 112 (General Chemistry I & II) in the first year. These course sequences are prerequisites for BIOL 210 and BIOL 340 and most other upper-level courses. Students must earn a C- or better in each of these introductory courses before they can proceed further in the biology major.

During the second year, the required courses BIOL 210 (Fall or Spring Semester), BIOL 260 (Fall or Spring Semester), BIOL 340 (Fall Semester Only), and BIOL 341 (Spring Semester Only) should
be taken. Again, students must earn a grade of C- or better in each of these courses before they can take any upper-level courses for which they serve as prerequisites.

Students are strongly urged to take additional chemistry, physics, statistics, computer science, geology, and/or mathematics courses to broaden their backgrounds, build their quantitative and analytical skills, and enhance their understanding of biology. Additionally, other disciplines within the College of Arts and Sciences offer courses which can contribute further to biology students’ intellectual development and career preparation. Such courses include: EESC-Aquatic Ecology, GEOL 201-Paleonology, MATH 115-Introduction to Mathematical Modeling, PHIL 244-Philosophy of Science, and PSYC 339-Health Psychology.

A number of General Education requirements can be fulfilled with courses which are either part of the biology major or frequently taken by biology majors. For example, BIOL 260, MATH 121 & 122 (Calculus I & II), Math 200 (Introduction to Statistics), and CPSC 110 (Introduction to Computer Science) all satisfy the Quantitative Reasoning requirement of the General Education curriculum. BIOL 491, BIOL 499, courses with significant international field trip experiences (such as BIOL 424-Tropical Ecology) and BIOL 000-Biology Service Learning all fulfill Experiential Learning. In addition, Biological Sciences faculty frequently sponsor URES 197-Undergraduate Research, which also satisfies Experiential Learning. BIOL 121 & 132 or BIOL 125 & 126 fulfill the Natural Science requirement.

Furthermore, the biology major program offers students opportunities to complete the university’s Across-The-Curriculum (ATC) degree requirements. BIOL 451 is a Speaking Intensive Course, and several other biology courses meet the Writing Intensive requirement including BIOL 125-Phage Hunters I, BIOL 311-Plant Ecology, BIOL 322-Animal Ecology (alternating years), BIOL 331-Histology, BIOL 385-Human Physiology, and BIOL 432-Virology.

University and Departmental Honors

The department both supports the University Honors Program and sponsors its own Honors in Biology Program. Students need not be a participant in the University Honors Program to seek Honors in Biology and vice versa. University Honors courses include BIOL 125 & 126, BIOL 311, BIOL 432-Virology, and BIOL 443-The Biology and Biochemistry of Proteins. Additionally, University Honors students may complete the independent scholarship component of the University Honors program through BIOL 481/491. Students wishing to pursue Honors in Biology should consult the Departmental Honors Handbook.

Individual Study

BIOL 481/491 offer students opportunities to pursue study outside the classroom through individual research mentored by a faculty member. Deep engagement with an independent (or
small group) research project provides exceptional preparation for graduate study and professional school. To become involved, students must secure the sponsorship of a qualified faculty member and request approval from the department. Faculty areas of interest and expertise for individual study courses are as follows:

- Dr. Dianne Baker: identifying neuroendocrine pathways mediating growth patterns, development, and life history decisions in animals.
- Dr. Rosemary Barra: biology of cancer, effects of chemotherapy and immunotherapy on cell proliferation.
- Dr. Andrew Dolby: behavioral and physiological ecology of birds.
- Dr. Steve Fuller: plant ecology and physiology, phytoplankton ecology and distribution.
- Dr. Steve Gallik: cellular response to external mechanical stress, regulation of intracellular tension development.
- Dr. Theresa Grana: nematode diversity using a combination of DNA analysis and advanced imaging techniques.
- Dr. Alan Griffith: plant ecology, conservation biology of plants, biodiversity issues.
- Dr. Joella Killian: entomology, invertebrate zoology, insect and spider behavior, water quality studies.
- Dr. Lynn Lewis: microbiology, virology, mechanisms of pathogenicity, microbial physiology and ecology.
- Dr. Deborah O’Dell: developmental mechanisms in the nervous system, development of neural control of reproduction in honey bees.
- Dr. Abbie Tomba: parasite-host and predator-prey interactions in stream communities, anti-predator responses in crayfish.
- Dr. Werner Wieland: natural history, systematics and evolution of fishes and other lower vertebrates, freshwater turtle ecology and distribution.
- Dr. Deborah Zies: studies on the molecular mechanisms involved in the development of the human genomic disorder Smith-Magenis Syndrome.