CHEM 243), Cell Culture/Hybridoma Laboratory (BIOL/CHEM 244), Micropropagation (PLANT 102), and Seminar in Molecular Biology/Biotechnology (BIOL/CHEM 248).

Admission to the program requires a bachelor's degree with an overall GPA and science GPA of 3.0 or better. Upper-division courses in genetics (minimum 3 units), biochemistry with a laboratory (minimum 5 units), and microbiology with a laboratory (minimum 4 units) are also prerequisites for entrance into the program. Consult with the Biotechnology Program coordinator for determining recommended or equivalent courses.

Upper-Division Course Numbers

Biology Department upper-division course numbers provide information on course level and scheduling. Courses with higher numbers have more prerequisites. Courses with numbers less than 120 are not intended for use on biology majors. Numbers in the range 120 to 149 are third year courses requiring only lower-division prerequisites; 150 to 169 courses require some part of the upper-division core as prerequisite; and course numbers 170 or greater are more specialized fourth year courses. For schedule planning, in general: **odd numbered upper-division courses are generally offered in the fall; even numbered courses are generally offered in the spring;** course numbers ending in zero are offered both fall and spring; and courses offered irregularly end with a nine.

COURSES

Biology (BIOL)

10. Life Science (3)
Not open to students with credit in BIOSC 1A. How living things work and why they work that way. Biology from chemical and physical foundations to ecological and evolutionary processes. Biology and its relationship to human affairs. G.E. Breadth B2. (2 lecture, 2 lab hours)

15. An Ecological Approach to Life Science (5)
Concurrent enrollment in GEOL 15, N SCI 15, S SCI 15 required. Portion of *Humans and the Natural Environment* Cluster. An introduction to biological concepts and investigational methods in the natural environment. Lecture, lab, and fieldwork.

See *Humans and the Natural Environment*, Natural Science—Interdisciplinary Courses section. G.E. Breadth B2. (HNE program field trip fee, $300)

100. Nature Study (3)
Not allowable for credit for biological or physical science majors or minors. Prerequisite: a college level biology course. Evaluation of natural science programs at the elementary level; optional opportunities in developing K-9 environmental study material or designing environmental awareness topics for adult groups; emphasis on life science programs dealing with the interaction of man and the biosphere. (2 lecture, 3 lab hours)

110. Human Ecology (3)
The study of the relationships between humans and their environment, both natural and manmade; emphasis on scientific understanding of root causes of current environmental problems.

189T. Topics in Biology (1-4; max total 6)
Prerequisite: permission of instructor. Investigation of selected areas in the field of biology. (Lecture and/or laboratory)

190. Independent Study (1-3; max total 6)
See *Academic Placement — Independent Study.* Approved for ***SP*** grading.

Biological Science Core (BIOSC)

1A. Introductory Biology (4)
Course one of two-semester sequence required of all biology majors. Thematic introduction to the unifying concepts of life science: chemical basis of life; cellular processes; energy metabolism; genetics; evolution. G.E. Breadth B2. (3 lecture, 3 lab hours)

1B. Introductory Biology (5)
Prerequisite: BIOSC 1A. Course two of a two-semester sequence required of all biology majors. Continuation of thematic introduction to the unifying concepts of life science: classification and diversity of life; survey of the living organisms; physiology; ecology and environmental biology. (3 lecture, 6 lab hours)*

130. General Ecology (3)
Prerequisites: BIOSC 1A and 1B; PSYCH 42 or MATH 101. MATH 70 or equivalent recommended. Required of all biology majors. The structure, function, organization, and regulation of populations, communities, and ecosystems. The role of evolution in environmental relationships. (2 lecture, 3 lab or field hours)*

140A-B. Genetics and Cellular Biology (3-4)
Prerequisites: BIOSC 1A, 1B and CHEM 8 or 128A. Two-semester sequence required of all biology majors. Fundamentals of inheritance and cellular biology for both prokaryotic and eukaryotic systems, including an introduction to the underlying molecular mechanisms. BIOSC 140A and either CHEM 150 or 155 are prerequisites to BIOSC 140B. (A: 3 lecture hours; B: 3 lecture, 3 lab hours)

180. Evolution (3)
Prerequisites: senior standing or permission of instructor; BIOSC 130, 140A-B. Required of all biology majors. Evolutionary processes and patterns. Satisfies the senior major requirement for the B.S. in Biology.

Botany (BOT)

10. Plant Biology (3)
Not open to students with credit in BIOSC 1B. Structure, function, and development of plants. G.E. Breadth B2. (2 lecture, 2 lab hours)

* Late afternoon, Saturday and/or overnight field trips may be required.