BIOL Elective from Group III ..................................... 4
BIOL Elective from Group II ................................... 3-4
BIOL Elective from Group I ....................................... 4
BIOL 470 Field Natural History ........................................ 4
BIOL 419 Philosophy of Science ........................................ 3
BIOL 480* Research in Biology ........................................ 2-3
BIOL 481 Senior Thesis .....................................................

The department offers a Bachelor of Arts and a Bachelor of Science degree in biology. The B.A. degree requires 36 semester hours in biology and includes a foreign language component. The B.S. degree requires 44 semester hours in biology and emphasizes coursework in biology and the sciences. Required cognate courses are specified for each degree. The program has flexibility to allow students the choice of elective biology courses of special interest beyond the basic requirements listed below.

PROGRAMS

Biology, B.A.
BIOL 111, 112 General Biology ........................................... 8
BIOL 230 General Ecology ................................................... 4
BIOL 320 Genetics ............................................................... 4
BIOL 419 Philosophy of Science ............................................. 3
BIOL 470 Field Natural History ............................................. 4
BIOL 380 Research Methods ................................................. 2
BIOL 340 Cell & Molecular Biology or
BIOL Elective from Group II or III ........................................ 3-4
BIOL Elective from Group I .................................................. 4
BIOL 480** Research in Biology ............................................. 2-3
BIOL 481 Senior Thesis ..................................................... 1
TOTAL 36

Required Cognates: CHEM 111, 112; MATH 121.

Biology, B.S.
BIOL 111, 112 General Biology* .......................................... 8
BIOL 230 General Ecology ................................................... 4
BIOL 320 Genetics ............................................................... 4
BIOL 340 Cell & Molecular Biology ....................................... 4
BIOL 380 Research Methods ................................................. 2
BIOL 419 Philosophy of Science ............................................. 3
BIOL 470 Field Natural History ............................................. 4
BIOL Elective from Group I .................................................. 4
BIOL Elective from Group II .................................................. 4
BIOL Elective from Group III .................................................. 4
BIOL 480* Research in Biology ............................................. 2-3
BIOL 481 Senior Thesis ..................................................... 1
TOTAL 44

Required Cognates: CHEM 111*, 112*, 331*, 332*; PHYS 121*, 122*; MATH 121*.

PRE-PROFESSIONAL REQUIREMENTS

The entrance requirements for most medical, dental and veterinary medical schools are satisfied by the Biology B.S. degree and its cognate requirements of Chemistry, Physics and Math. Medical schools may require additional math and schools of veterinary medicine often have unique entrance requirements. The pre-professional student must choose a major from the list on page 34 and should consult with his/her pre-professional advisor to develop the best degree plan to satisfy specific pre-professional requirements.

TEACHING CERTIFICATION PROGRAM

The following Life Science major and minor are for teaching certification only. Requirements for certification are listed in the Education section of this bulletin. You must make formal application for admittance to the Teacher Education Program. Applications are available at the Education Department office.

Life Science B.A. or B.S. - Secondary Teaching Area
The student must meet the requirements for a B.A. or B.S. degree in Biology.

Life Science Minor - Secondary Teaching Area

Option II

BIOL 111, 112 General Biology .......................................... 8
BIOL 230 General Ecology ................................................... 4
BIOL 320 Genetics ............................................................... 4
BIOL 419 Philosophy of Science ............................................. 3
BIOL Electives u.d. ......................................................... 5
TOTAL 24

Required Cognates: CHEM 111*, 112*, 331*, 332*; PHYS 121*, 122*; MATH 121*.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101, 102</td>
<td>Anatomy &amp; Physiology I, II</td>
<td>4, 4 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 104, 105</td>
<td>Human Biology I, II</td>
<td>4, 4 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 111, 112</td>
<td>General Biology I, II</td>
<td>4, 4 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 220</td>
<td>Microbiology</td>
<td>4 hours</td>
<td>BIOL 111, 112; or BIOL 101, 102</td>
</tr>
<tr>
<td>BIOL 230</td>
<td>General Ecology</td>
<td>4 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 291</td>
<td>Selected Topics</td>
<td>1-3 hours</td>
<td>BIOL 111, 112; and approval of instructor</td>
</tr>
<tr>
<td>BIOL 310</td>
<td>Invertebrate Zoology</td>
<td>4 hours</td>
<td>BIOL 111, 112</td>
</tr>
<tr>
<td>BIOL 312</td>
<td>Field Ornithology</td>
<td>3 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 314</td>
<td>Systematic Botany</td>
<td>4 hours</td>
<td>BIOL 111, 112</td>
</tr>
<tr>
<td>BIOL 320</td>
<td>Genetics</td>
<td>4 hours</td>
<td>BIOL 111, 112</td>
</tr>
<tr>
<td>BIOL 320</td>
<td>Plant Dynamics</td>
<td>4 hours</td>
<td>BIOL 111, 112; or permission of instructor</td>
</tr>
<tr>
<td>BIOL 330</td>
<td>Research Methods</td>
<td>2 hours</td>
<td>BIOL 111, 112; or any entry level science sequence</td>
</tr>
<tr>
<td>BIOL 340</td>
<td>Philosophy of Science</td>
<td>3 hours</td>
<td>BIOL 111, 112</td>
</tr>
</tbody>
</table>

This course meets the upper division writing component for senior year English. (Spring)
Biology

BIOL 430 Entomology 4 hours
A study of the basic morphology, physiology, ethology and classification of insects and related arthropods. The topics include a discussion of development and insect metamorphosis, insect ecology, a treatment of applied entomology, and introduction to insects of medical and veterinary significance. Laboratory includes collecting techniques, preparatory techniques of museum specimens, and insect microscopy. 3 Lec 3 Lab. (Spring, odd years)

BIOL 440 Mammalogy 4 hours
Prerequisite: BIOL 111, 112
A systematic study of mammals with emphasis on natural history and ecology. 3 Lec 3 Lab. (Fall, odd years)

BIOL 450 Histology 4 hours
Prerequisite: BIOL 111, 112
An investigation of the structure and function of the tissues of the human body. The course is lab intensive and is intended to acquaint the student with the microscopic characteristics of tissues. 2 Lec 6 Lab. (Spring, even years)

BIOL 460 Animal Physiology 4 hours
Prerequisite: BIOL 111, 112; CHEM 111, 112
Emphasis will be placed on mammalian organ systems, but comparative aspects of each system and the interaction of environment and physiology will be discussed. 3 Lec 3 Lab. (Fall, even years)

BIOL 470 Field Natural History 4 hours
Prerequisite: BIOL 111, 112
An intensive advanced level course for students majoring in biology providing the opportunity for first-hand study of life forms in their natural setting. Includes field work in a region of high biological interest. Subjects covered may include ornithology, mammalogy, entomology, systematic botany, herpetology, paleontology, ecology, and marine biology. A student may also take up to two units of BIOL 491 with emphasis on a chosen taxon.
Student may apply to repeat for credit one time with approved research proposal. (Summer) Travel fee.

BIOL 480 Research in Biology 1-3 hours
Prerequisite: BIOL 380 and approval of instructor
A supervised research experience involving the development of a research proposal, data collection, and a written paper. Research proposal may be developed in BIOL 380. May be repeated for a a total of 5 credits. (Offered periodically)

BIOL 481 Senior Thesis 1 hour
Prerequisite: BIOL 480
This course is designed to permit the student to develop a publishable-quality research paper. Instruction consists of writing techniques and guidance in the completion of the project. Students will give several oral progress-reports, a final presentation at the Biology Research Symposium, and a completed Senior Thesis. This course meets the upper division writing component for senior year English. (Spring)