Department of Biology

The Department of Biology offers courses of study leading to the Bachelor of Science degree with majors in biology, and biology-secondary education. In addition to courses, the department offers advisement for application to a variety of graduate and professional programs, e.g., in biology, medicine, dentistry, veterinary medicine, pharmacy, physical therapy, occupational therapy, physician assistant, and respiratory therapy. Students should consult their academic advisor for assistance in choosing courses that both comply with degree requirements for a major in Biology and meet the admission requirements for the graduate career or professional program in which they have interest.

MAJOR IN BIOLOGY

Curriculum Requirement

Principles of Biology I & II are required for a student to progress to any 3300-4000 level biology course.

Core Curriculum Requirements 60 Hours

All baccalaureate degree programs at NGCSU require the satisfactory completion of at least 60 semester credit hours comprising the six areas of the core curriculum. A complete description of Areas A-E of the core curriculum can be found on page 105. Individual degree programs may specify exceptions and/or particular courses that must be taken within each Area A-E of the core curriculum. Those exceptions and/or course requirements and Area F of the core curriculum, are shown below.

Area A  no exceptions
Area B  no exceptions
Area C  no exceptions
Area D  no exceptions
Area E  no exceptions

Students may not take the following courses in area D:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1107K</td>
<td>Principles of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 1108K</td>
<td>Principles of Biology II</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1211</td>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1211L</td>
<td>Principles of Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1212</td>
<td>Principles of Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1212L</td>
<td>Principles of Chemistry Laboratory II</td>
<td>1</td>
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</table>

Area F. Biology Major 18 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1107K</td>
<td>Principles of Biology I (with lab)</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 1108K</td>
<td>Principles of Biology II (with lab)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1211</td>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 1211L</td>
<td>Principles of Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 1212</td>
<td>Principles of Chemistry II</td>
<td>3</td>
</tr>
</tbody>
</table>
Three hours of lower division courses from biology, physics, geology, mathematics not taken as part of Area A or D, foreign language not taken as part of Area B, and computer science.

ADVANCED PLACEMENT
Students completing Advanced Placement Biology and scoring four or higher on the examination may enroll in courses for which Principles of Biology I and Principles of Biology II are prerequisites.

COURSES IN THE BIOLOGY MAJOR: 40 hours
Take one course from each of the following categories:

**Botany:**
- BIOL 3321 General Botany 4 hours
- BIOL 3322 Plant Diversity 4 hours

**Zoology:**
- BIOL 3325 Invertebrate Zoology 4 hours
- BIOL 3326 Vertebrate Zoology 4 hours

**Microbiology:**
- BIOL 2280 Medical Microbiology 4 hours
- BIOL 3390 General Microbiology 4 hours

Take these courses:
- BIOL 3220 Genetics 4 hours
- BIOL 3230 Ecology 4 hours
- BIOL 3240 Cell Biology 4 hours
- BIOL 3350 Physiology 4 hours
- BIOL 4450 Evolutionary Biology 3 hours

Take 9 semester hours from the following elective courses:
- BIOL 3331 Ecology Field Study 1 hour
- BIOL 4310 Plant Taxonomy 4 hours
- BIOL 4311 Botany Field Study 1 hour
- BIOL 4327 Wildlife Ecology 4 hours
- BIOL 4380 Environmental Microbiology 4 hours
- BIOL 4435 Immunology 3 hours
- BIOL 4440 Limnology 4 hours
- BIOL 4460 Marine Biology 3 hours
- BIOL 4461 Marine Field Study 1 hour
- BIOL 4470 Human Histology 4 hours
- BIOL 4471 Histology Laboratory Techniques 1 hour
- BIOL 4480 Developmental Biology 4 hours
- BIOL 4510 Animal Behavior 3 hours
- BIOL 4520 Herpetology 4 hours
- BIOL 4540 Biotechnology 4 hours
- BIOL 4550 Experimental Biology 4 hours
- BIOL 4700 Biology Seminar 1 hour
- BIOL 4710 Biogeography 3 hours
- BIOL 4760 Bioinformatics 4 hours
*BIOL 4800-4807 Independent Study 1 hour each

* When based upon student research, a maximum of 4 independent study hours may be included in the 9 biology elective hours required in the major. With permission of the biology department head, up to 4 additional hours of independent study may be included in the 9 biology elective hours required in the major if these additional hours are substituted for a 4000 level course.

OTHER REQUIREMENTS

PHYS 1111 and 1112 Introductory Physics I and II with labs 8 hours
CHEM 1212L Principles of Chemistry Laboratory II 1 hour
CHEM 3441K Organic Chemistry I 4 hours
CHEM 3442K Organic Chemistry II 4 hours
or CHEM 4841K Biochemistry 4 hours

Basic Physical Education requirements 3 hours
Military Science requirements (for military students only) 12 hours
U.S. and Georgia Constitution and History requirement

Regents' Skills Test or exemption (must be taken during first semester)

ELECTIVES: To bring the total number of credit hours to at least 120 semester hours exclusive of the Basic Physical Education requirement.

EXIT REQUIREMENTS: To assist the department in assessing the biology program, graduating seniors will be required to take an undergraduate assessment test in biology and complete exit questionnaires.

BIOLOGY MINOR
Principles of Biology I and II, Genetics, Ecology, and a minimum of 3 hours of 3000-4000 level biology courses.

BACHELOR OF SCIENCE IN BIOLOGY - SECONDARY EDUCATION CERTIFICATION (a 137-hour program)

Core Curriculum Requirements 60 hours

All baccalaureate degree programs at NGCSU require the satisfactory completion of at least 60 semester credit hours comprising the six areas of the core curriculum. A complete description of Areas A-E of the core curriculum can be found on page 105. Course requirements for Area A-E of the core curriculum and biology component (Area F) of the biology-secondary education degree are shown on next page.
COURSES FOR THE BIOLOGY MAJOR - SECONDARY EDUCATION CERTIFICATION
(76 hours)

Courses for the biology-secondary education certification degree include those for biology majors (40 hours) and those for professional education certification (36 hours). Courses for the biology major are listed on pages 108. Candidates for the Biology-Secondary Education Certification Degree are required to take CHEM 1211 / 1211L and CHEM 1212 / 1212L, but are not required to take Organic or Biochemistry. Courses for the secondary education concentration required for certification are listed below.

Professional Education (courses required for certification) 36 hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EDUC 2110</td>
<td>Investigating Critical &amp; Contemporary Issues in Education</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2120</td>
<td>Exploring Socio Cultural Perspectives on Diversity</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 2130</td>
<td>Exploring Teaching and Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3002</td>
<td>Educational Assessment</td>
<td>2</td>
</tr>
<tr>
<td>EDUC 3003/L</td>
<td>Classroom Management</td>
<td>3</td>
</tr>
<tr>
<td>LART 3106</td>
<td>Teaching Reading in the Content Areas</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 3540</td>
<td>Applied Classroom Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 4000</td>
<td>Curriculum</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 4101</td>
<td>Methods and Materials</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 4103</td>
<td>Internship, Planning</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 4104</td>
<td>Internship, Classroom Performance</td>
<td>3</td>
</tr>
<tr>
<td>EDUC 4105</td>
<td>Internship, Professionalism</td>
<td>3</td>
</tr>
</tbody>
</table>

EXIT REQUIREMENTS: To qualify for institutional recommendation for a Georgia teaching license in the desired field, students must successfully complete the appropriate GACE II tests. Graduating seniors will be required to complete ETS exit exams and exit questionnaires to assist the department in assessing the biology program.

OTHER REQUIREMENTS & ELECTIVES: Same as for the major in biology, (i.e., 1 hour CHEM 1212L).

FOR COURSES OFFERED IN THE DEPARTMENT OF BIOLOGY SEE COURSE DESCRIPTIONS Pages 249-394

Number series indicate hours of lecture per week, hours of laboratory per week, and course credit hours; e.g. 3-2-4 means 3 hours of lecture per week, 2 hours of lab per week (1 two-hour lab), and 4 semester hours course credit.