**COLLEGE OF ARTS AND SCIENCES**

The College of Arts and Sciences is, from both historical and functional points of view, the core of the modern university. The College of Arts and Sciences views creativity, inquiry and understanding as among the greatest values in human experience. Thus, it is dedicated to the questioning, creation and transmission of knowledge; to the provision of undergraduate and graduate educational programs that are responsive to the need for an enlightened and productive citizenry; and to the provision of programs and services that enhance the quality of life of the people it serves.

These goals compel a commitment to creativity and inquiry free of bias and based upon the principles of objective scholarship. They require a responsibility to promote and convey those elements of the liberal arts and sciences that must be essential components of the educational goals of all units of the university. The college seeks richness through diversity of its programs and strength through erudition.

In addition to general studies courses, major courses and minor courses, sufficient free electives should be chosen to total at least 120 hours.

As part of ongoing planning and evaluation, the College of Arts and Sciences regularly evaluates student learning outcomes for each degree program.

### AEROSPACE STUDIES MINOR (18 HOURS)

<table>
<thead>
<tr>
<th>Code</th>
<th>Units</th>
<th>Title</th>
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<tbody>
<tr>
<td>AS 3312</td>
<td>3</td>
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<tr>
<td>AS 3313</td>
<td>3</td>
<td>Air Force Leadership Studies II</td>
</tr>
<tr>
<td>AS 4412</td>
<td>3</td>
<td>National Security Affairs/Preparation for Active Duty I</td>
</tr>
<tr>
<td>AS 4413</td>
<td>3</td>
<td>National Security Affairs/Preparation for Active Duty II</td>
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</tbody>
</table>

Select two three-hour courses from upper-level political science (POL) courses, or substitute upper-level courses from history (HIS), geography (GEO), or social science (SOC) courses with the approval of the Department of Aerospace Studies chair.

### ANTHROPOLOGY MINOR (18 HOURS)

<table>
<thead>
<tr>
<th>Code</th>
<th>Units</th>
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<tbody>
<tr>
<td>ANT 3310</td>
<td>3</td>
<td>Cultural Anthropology</td>
</tr>
<tr>
<td>ANT 3311</td>
<td>3</td>
<td>Physical Anthropology</td>
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Select at least 12 hours of additional 3000/4000-level anthropology courses as approved by your faculty adviser.

### ARCHIVAL STUDIES MINOR (18 HOURS)

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>HIS 3360</td>
<td>3</td>
<td>Introduction to Archives: Theory and Issues</td>
</tr>
<tr>
<td>HIS 3362</td>
<td>3</td>
<td>Archival Methods and Practice</td>
</tr>
<tr>
<td>HIS 4472</td>
<td>3</td>
<td>Records Management</td>
</tr>
<tr>
<td>HIS 4473</td>
<td>3</td>
<td>Archives Practicum</td>
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</table>

Select two courses from the following, including at least one at the 4000 level:

- GEO/HIS3316 (3) History of Alabama
- GEO/SOC4406 (3) Urbanism
- HIS 4405 (3) Old South
- HIS 4406 (3) New South
- HIS/POL 4441 (3) American Constitutional Develop.
- HIS 4470 (3) Oral History
- HIS 4471 (3) Local History
- MGT 4471 (3) Organizational Development
- MGT 4474 (3) Business and Society
- POL 4421 (3) Introduction to Public Administration
- SOC 4433 (3) The Community
- SOC 4435 (3) The Sociology of Organizations

### BIOLOGY MAJOR (43 HOURS)

**Specialized General Studies Requirements**

General studies requirements for the biology, environmental science, biomedical sciences, and marine biology programs and the biology major total 64 semester hours. See the General Studies section of this catalog for complete general studies information.

**Area III**

<table>
<thead>
<tr>
<th>Code</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIO 1100</td>
<td>3</td>
<td>Principles of Biology</td>
</tr>
<tr>
<td>BIO L100</td>
<td>1</td>
<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>CHM 1142</td>
<td>3</td>
<td>General Chemistry I</td>
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<td>CHM L142</td>
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<td>General Chemistry I Lab</td>
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<tr>
<td>MTH 1125</td>
<td>4</td>
<td>Calculus I</td>
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**Area V Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Units</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIO 1101</td>
<td>3</td>
<td>Organismal Biology</td>
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<tr>
<td>BIO L101</td>
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<td>Organismal Biology Lab</td>
</tr>
<tr>
<td>CHM 1143</td>
<td>3</td>
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</tr>
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<td>General Chemistry II Lab</td>
</tr>
<tr>
<td>IS 2241</td>
<td>3</td>
<td>Computer Concepts and Apps.</td>
</tr>
<tr>
<td>TROY 1101</td>
<td>1</td>
<td>University Orientation</td>
</tr>
</tbody>
</table>

Select one sequence:

- PHY 2252 (3) General Physics I
- PHY L252 (1) General Physics I Lab
- PHY 2253 (3) General Physics II
- PHY L253 (1) General Physics II Lab
- PHY 2262 (3) Physics I with Calculus
- PHY L262 (1) Physics I with Calculus Lab
- PHY 2263 (3) Physics II with Calculus
- PHY L263 (1) Physics II with Calculus Lab

**Major Requirements**

<table>
<thead>
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<th>Title</th>
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<tbody>
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<td>3</td>
<td>Principles of Cell Biology</td>
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<tr>
<td>BIO L220</td>
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<td>Principles of Cell Biology Lab</td>
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<tr>
<td>BIO 2229</td>
<td>3</td>
<td>General Ecology</td>
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<tr>
<td>BIO L229</td>
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<td>General Ecology Lab</td>
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<tr>
<td>BIO 3320</td>
<td>3</td>
<td>Genetics</td>
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<tr>
<td>BIO L320</td>
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<td>Genetics Lab</td>
</tr>
<tr>
<td>CHM 3342</td>
<td>3</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHM L342</td>
<td>1</td>
<td>Organic Chemistry I Lab</td>
</tr>
<tr>
<td>CHM 3343</td>
<td>3</td>
<td>Organic Chemistry II</td>
</tr>
<tr>
<td>CHM L343</td>
<td>1</td>
<td>Organic Chemistry II Lab</td>
</tr>
<tr>
<td>MTH 2210</td>
<td>3</td>
<td>Applied Statistics</td>
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### BIOLOGY EDUCATION

Students seeking Alabama teacher certification should select biology as a first major and education as a second major. Students should consult with their advisers concerning all certification requirements.
Select one botany course with its corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIO 3325</td>
<td>3</td>
<td>Plant Form and Function</td>
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<tr>
<td>BIO L325</td>
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<td>Plant Form and Function Lab</td>
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<tr>
<td>BIO 3326</td>
<td>3</td>
<td>Plant Diversity</td>
</tr>
<tr>
<td>BIO L326</td>
<td>1</td>
<td>Plant Diversity Lab</td>
</tr>
<tr>
<td>BIO 4402</td>
<td>4</td>
<td>Spring Flora</td>
</tr>
<tr>
<td>BIO 4425</td>
<td>4</td>
<td>Field Botany</td>
</tr>
</tbody>
</table>

Select one zoology course with its corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 3307</td>
<td>3</td>
<td>Invertebrate Zoology</td>
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<td>BIO 3308</td>
<td>3</td>
<td>Vertebrate Zoology</td>
</tr>
<tr>
<td>BIO L308</td>
<td>1</td>
<td>Vertebrate Zoology Lab</td>
</tr>
<tr>
<td>BIO 4405</td>
<td>3</td>
<td>Entomology</td>
</tr>
<tr>
<td>BIO L405</td>
<td>1</td>
<td>Entomology Lab</td>
</tr>
<tr>
<td>BIO 4410</td>
<td>3</td>
<td>Animal Behavior</td>
</tr>
<tr>
<td>BIO L410</td>
<td>1</td>
<td>Animal Behavior Lab</td>
</tr>
<tr>
<td>BIO 4420</td>
<td>4</td>
<td>Field Vertebrate Zoology</td>
</tr>
<tr>
<td>BIO 4432</td>
<td>3</td>
<td>Comparative Vertebrate Anatomy</td>
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<tr>
<td>BIO L432</td>
<td>1</td>
<td>Comparative Vertebrate Anatomy Lab</td>
</tr>
<tr>
<td>BIO 4445</td>
<td>3</td>
<td>Ichthyology</td>
</tr>
<tr>
<td>BIO L445</td>
<td>1</td>
<td>Ichthyology Lab</td>
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<tr>
<td>BIO 4446</td>
<td>3</td>
<td>Herpetology</td>
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<tr>
<td>BIO L446</td>
<td>1</td>
<td>Herpetology Lab</td>
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<tr>
<td>BIO 4447</td>
<td>3</td>
<td>Ornithology</td>
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<tr>
<td>BIO L447</td>
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<td>Ornithology Lab</td>
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<tr>
<td>BIO 4448</td>
<td>3</td>
<td>Mammalogy</td>
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<td>BIO L448</td>
<td>1</td>
<td>Mammalogy Lab</td>
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<tr>
<td>BIO 4471</td>
<td>3</td>
<td>Parasitology</td>
</tr>
<tr>
<td>BIO L471</td>
<td>1</td>
<td>Parasitology Lab</td>
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</tbody>
</table>

Select one ecology/environmental course with its corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 2202</td>
<td>3</td>
<td>Principles of Environmental Science</td>
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<tr>
<td>BIO L202</td>
<td>1</td>
<td>Principles of Environmental Science Lab</td>
</tr>
<tr>
<td>BIO 4413</td>
<td>3</td>
<td>Limnology</td>
</tr>
<tr>
<td>BIO L413</td>
<td>1</td>
<td>Limnology Lab</td>
</tr>
<tr>
<td>BIO 4416</td>
<td>3</td>
<td>Microbial Ecology</td>
</tr>
<tr>
<td>BIO L416</td>
<td>1</td>
<td>Microbial Ecology Lab</td>
</tr>
<tr>
<td>BIO 4421</td>
<td>3</td>
<td>Population Ecology</td>
</tr>
<tr>
<td>BIO L421</td>
<td>1</td>
<td>Population Ecology Lab</td>
</tr>
<tr>
<td>BIO 4479</td>
<td>3</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>BIO L479</td>
<td>1</td>
<td>Environmental Assessment Lab</td>
</tr>
</tbody>
</table>

Select one physiology/cell/molecular course with its corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 3347</td>
<td>3</td>
<td>Human Anatomy and Physiology I</td>
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<td>Human Anatomy and Physiology I Lab</td>
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<tr>
<td>BIO 3348</td>
<td>3</td>
<td>Human Anatomy and Physiology II</td>
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<tr>
<td>BIO L348</td>
<td>1</td>
<td>Human Anatomy and Physiology II Lab</td>
</tr>
<tr>
<td>BIO 3382</td>
<td>3</td>
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<td>Immunology Lab</td>
</tr>
<tr>
<td>BIO 3386</td>
<td>3</td>
<td>Hematology</td>
</tr>
<tr>
<td>BIO L386</td>
<td>1</td>
<td>Hematology Lab</td>
</tr>
<tr>
<td>BIO 4414</td>
<td>3</td>
<td>Food Microbiology</td>
</tr>
<tr>
<td>BIO L414</td>
<td>1</td>
<td>Food Microbiology Lab</td>
</tr>
</tbody>
</table>

Select one upper-level adviser-approved biology course and its corresponding lab:

BIOLOGY MINOR (18-20 HOURS)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BIO 1101</td>
<td>3</td>
<td>Organismal Biology</td>
</tr>
<tr>
<td>BIO L101</td>
<td>1</td>
<td>Organismal Biology Lab</td>
</tr>
<tr>
<td>BIO 2229</td>
<td>3</td>
<td>General Ecology</td>
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<tr>
<td>BIO L229</td>
<td>1</td>
<td>General Ecology Lab</td>
</tr>
<tr>
<td>BIO 3320</td>
<td>3</td>
<td>Genetics</td>
</tr>
<tr>
<td>BIO L320</td>
<td>1</td>
<td>Genetics Lab</td>
</tr>
</tbody>
</table>

Select one upper-level adviser-approved biology course and its corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1100</td>
<td>3</td>
<td>Principles of Cell Biology</td>
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<tr>
<td>BIO L101</td>
<td>1</td>
<td>Principles of Cell Biology Lab</td>
</tr>
<tr>
<td>BIO 3372</td>
<td>3</td>
<td>Microbiology</td>
</tr>
<tr>
<td>BIO L372</td>
<td>1</td>
<td>Microbiology Lab</td>
</tr>
</tbody>
</table>

Select two to four additional semester hours of approved upper-level (3300 or above) biology courses with corresponding labs.

BIOLOGY PROGRAM (55 HOURS)

Specialized General Studies Requirements

**Area III**

<table>
<thead>
<tr>
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<th>Credits</th>
<th>Title</th>
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<tbody>
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<td>BIO 1100</td>
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<td>Principles of Biology</td>
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<tr>
<td>BIO L100</td>
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<td>Principles of Biology Lab</td>
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<tr>
<td>CHM 1142</td>
<td>3</td>
<td>General Chemistry I</td>
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<td>CHM L142</td>
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<td>General Chemistry I Lab</td>
</tr>
<tr>
<td>MTH 1125</td>
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<td>Calculus I</td>
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**Area V Requirements**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>IS 2241</td>
<td>3</td>
<td>Computer Concepts and Apps.</td>
</tr>
<tr>
<td>TROY 1101</td>
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<td>University Orientation</td>
</tr>
<tr>
<td>BIO 1101</td>
<td>3</td>
<td>Organismal Biology</td>
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<tr>
<td>BIO L101</td>
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<td>Organismal Biology Lab</td>
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<tr>
<td>CHM 1143</td>
<td>3</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHM L143</td>
<td>1</td>
<td>General Chemistry II Lab</td>
</tr>
</tbody>
</table>

Select one sequence (physics sequence not required for medical technology concentration):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 2252</td>
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<td>PHY L252</td>
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<td>General Physics I Lab</td>
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<tr>
<td>PHY 2253</td>
<td>3</td>
<td>General Physics II</td>
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<td>PHY L253</td>
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<tr>
<td>PHY 2262</td>
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<td>Physics I with Calculus</td>
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<tr>
<td>PHY L262</td>
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<td>Physics I with Calculus Lab</td>
</tr>
</tbody>
</table>
PHY 2263 (3) Physics II with Calculus  
PHY L263 (1) Physics II with Calculus Lab

Requirements

BIO 2229 (3) General Ecology  
BIO L229 (1) General Ecology Lab  
BIO 3320 (3) Genetics  
BIO L320 (1) Genetics Lab  
CHM 3342 (3) Organic Chemistry I  
CHM L342 (1) Organic Chemistry I Lab  
CHM 3343 (3) Organic Chemistry II  
CHM L343 (1) Organic Chemistry II Lab  
MTH 2210 (3) Applied Statistics

Students in the general biology concentration, ecology and field biology concentration, or medical technology concentration select:

BIO 2220 (3) Principles of Cell Biology  
BIO L220 (1) Principles of Cell Biology Lab

Students in the biomedical sciences concentration or food safety concentration, select:

BIO 3372 (3) Microbiology  
BIO L372 (1) Microbiology Lab

Select one of the five concentrations shown below (biomedical sciences, food safety, general biology, ecology and field biology, or medical technology):

Biomedical Sciences Concentration:

BIO 3347 (3) Human Anatomy and Physiology I  
BIO L347 (1) Human Anatomy and Physiology I Lab  
BIO 3348 (3) Human Anatomy and Physiology II  
BIO L348 (1) Human Anatomy and Physiology II Lab  
BIO 3372 (3) Microbiology  
BIO L372 (1) Microbiology Lab  
BIO 4482 (3) Molecular Biology  
BIO L482 (1) Molecular Biology Lab

Select 16 hours (four lectures with labs) from the courses listed below. With the adviser’s approval, one upper level botany, ecology or zoology course with its corresponding laboratory course may be taken.

Get 3382 (3) Immunology  
BIO L382 (1) Immunology Lab  
BIO 4416 (3) Microbial Ecology  
BIO L416 (1) Microbial Ecology Lab  
BIO 4471 (3) Parasitology  
BIO L471 (1) Parasitology Lab  
BIO 4478 (3) Cell Biology  
BIO L478 (1) Cell Biology Lab  
BIO 4482 (3) Molecular Biology  
BIO L482 (1) Molecular Biology Lab  
BIO 4488/4489/4490 (1-8) Internship in the Biological or Environmental Sciences  
CHM 4455 (3) Instrumental Analysis  
CHM L455 (1) Instrumental Analysis Lab  
MGT 3372 (3) Hospitality Management  
MGT 4465 (3) Food and Beverage Service

Food Safety Concentration:

BIO 3372 (3) Microbiology  
BIO L372 (1) Microbiology Lab  
BIO 4414 (3) Food Microbiology  
BIO L414 (1) Food Microbiology Lab  
BIO 4451 (3) Toxicology  
BIO L451 (1) Toxicology Lab  
BIO 4418 (3) Food Laws and Regulations  
CHM 3352 (3) Biochemistry  
CHM L352 (1) Biochemistry Lab  
MGT 4466 (3) Restaurant Management  
NSG 2211 (3) Human Nutrition

Select seven or more hours from the courses listed below. Lectures and their corresponding labs must be taken together.

BIO 3382 (3) Immunology  
BIO L382 (1) Immunology Lab  
BIO 4416 (3) Microbial Ecology  
BIO L416 (1) Microbial Ecology Lab  
BIO 4471 (3) Parasitology  
BIO L471 (1) Parasitology Lab  
BIO 4478 (3) Cell Biology  
BIO L478 (1) Cell Biology Lab  
BIO 4482 (3) Molecular Biology  
BIO L482 (1) Molecular Biology Lab  
BIO 4488/4489/4490 (1-8) Internship in the Biological or Environmental Sciences  
CHM 4455 (3) Instrumental Analysis  
CHM L455 (1) Instrumental Analysis Lab  
MGT 3372 (3) Hospitality Management  
MGT 4465 (3) Food and Beverage Service

General Biology Concentration:

Select one botany course with its corresponding lab:

BIO 3325 (3) Plant Form and Function  
BIO L325 (1) Plant Form and Function Lab  
BIO 3326 (3) Plant Diversity  
BIO L326 (1) Plant Diversity Lab  
BIO 4402 (4) Spring Flora  
BIO 4425 (4) Field Botany

Select one zoology course with its corresponding lab:

BIO 3307 (3) Invertebrate Zoology  
BIO L307 (1) Invertebrate Zoology Lab  
BIO 3308 (3) Vertebrate Zoology  
BIO L308 (1) Vertebrate Zoology Lab  
BIO 4405 (3) Entomology  
BIO L405 (1) Entomology Lab  
BIO 4410 (3) Animal Behavior  
BIO L410 (1) Animal Behavior Lab  
BIO 4420 (4) Field Vertebrate Zoology  
BIO 4432 (3) Comparative Vertebrate Anatomy  
BIO L432 (1) Comparative Vertebrate Anatomy Lab  
BIO 4445 (3) Ichthyology  
BIO L445 (1) Ichthyology Lab  
BIO 4446 (3) Herpetology  
BIO L446 (1) Herpetology Lab  
BIO 4447 (3) Ornithology  
BIO L447 (1) Ornithology Lab
Select one ecology/environmental course with its corresponding lab:
- BIO 4413 (3) Limnology
- BIO L413 (1) Limnology Lab
- BIO 4416 (3) Microbial Ecology
- BIO L416 (1) Microbial Ecology Lab
- BIO 4421 (3) Population Ecology
- BIO L421 (1) Population Ecology Lab
- BIO 4479 (3) Environmental Assessment
- BIO L479 (1) Environmental Assessment Lab

Select one physiology/cell/molecular course with its corresponding lab:
- BIO 3347 (3) Human Anatomy and Physiology I
- BIO L347 (1) Human Anatomy and Physiology I Lab
- BIO 3348 (3) Human Anatomy and Physiology II
- BIO L348 (1) Human Anatomy and Physiology II Lab
- BIO 3382 (3) Immunology
- BIO L382 (1) Immunology Lab
- BIO 3386 (3) Hematology
- BIO L386 (1) Hematology Lab
- BIO 4414 (3) Food Microbiology
- BIO L414 (1) Food Microbiology Lab
- BIO 4430 (3) Applied Genetics
- BIO L430 (1) Applied Genetics Lab
- BIO 4433 (3) Embryology
- BIO L433 (1) Embryology Lab
- BIO 4451 (3) Toxicology
- BIO L451 (1) Toxicology Lab
- BIO 4478 (3) Cell Biology
- BIO L478 (1) Cell Biology Lab
- BIO 4480 (3) Histology
- BIO L480 (1) Histology Lab
- BIO 4482 (3) Molecular Biology
- BIO L482 (1) Molecular Biology Lab

Select 16 additional semester hours (four courses with labs) from the four above categories (botany, zoology, ecology/environmental, and physiology/cell/molecular). Guided Independent Research (BIO 4491/4492) or Guided Independent Study (BIO 4493/4494) may be taken for up to six of these credits. BIO 4491 and 4493 may be mixed and taken in any sequence for up to six credits. However, the two course sequences of BIO 4491/4492 and BIO 4493/4494 may not be taken for more than six credits regardless of the mix. The 16 hours chosen should be based on the student’s future plans (employment, graduate school, or professional school).

Ecology and Field Biology Concentration:
- BIO 4420 (4) Field Vertebrate Zoology
- BIO 4421 (3) Population Ecology
- BIO L421 (1) Population Ecology Lab
- BIO 4425 (4) Field Botany

Select 12 hours (three courses with labs) from the three categories below. At least one course must be taken from each of the three categories.

Zoology
- BIO 3307 (3) Invertebrate Zoology
- BIO L307 (1) Invertebrate Zoology Lab
- BIO 4405 (2) Entomology
- BIO L405 (2) Entomology Lab

Botany
- BIO 3325 (3) Plant Form and Function
- BIO L325 (1) Plant Form and Function Lab
- BIO 3326 (3) Plant Diversity
- BIO L326 (1) Plant Diversity Lab

Ecology
- BIO 4413 (3) Limnology
- BIO L413 (1) Limnology Lab
- BIO 4479 (3) Environmental Assessment
- BIO L479 (1) Environmental Assessment Lab
- MB 4406 (4) Marsh Ecology

Select an additional eight hours of adviser-approved BIO or MB courses.

Medical Technology Concentration:

Students must complete 29 semester hours on the Troy Campus prior to applying for an internship.

Lectures and their corresponding labs must be taken together.

- BIO 3347 (3) Human Anatomy and Physiology I
- BIO L347 (1) Human Anatomy and Physiology I Lab
- BIO 3348 (3) Human Anatomy and Physiology II
- BIO L348 (1) Human Anatomy and Physiology II Lab
- BIO 3372 (3) Microbiology
- BIO L372 (1) Microbiology Lab
- BIO 3382 (3) Immunology
- BIO L382 (1) Immunology Lab

Select one course with its corresponding lab:
- BIO 3386 (3) Hematology
- BIO L386 (1) Hematology Lab
- BIO 4471 (3) Parasitology
- BIO L471 (1) Parasitology Lab

In addition to the above courses, including core courses, students must complete 33 semester hours of hospital internship MT 4400-4413 courses.

**BIOLOGY, PREPROFESSIONAL MAJOR (55 HOURS)**

**Specialized General Studies Requirements**

**Area III (12 Hours)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Description</th>
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</thead>
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<tr>
<td>BIO 1100</td>
<td>3</td>
<td>Principles of Biology</td>
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<tr>
<td>BIO L100</td>
<td>1</td>
<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>CHM 1142</td>
<td>3</td>
<td>General Chemistry I</td>
</tr>
</tbody>
</table>
CHM L142 (1) General Chemistry I Lab
MTH 1125 (4) Calculus I

**Area V Requirements (20 Hours)**
- BIO 1101 (3) Organismal Biology
- BIO L101 (1) Organismal Biology Lab
- CHM 1143 (3) General Chemistry II
- CHM L143 (1) General Chemistry II Lab
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation

Select one sequence (physics sequence not required for medical technology concentration):
- PHY 2252 (3) General Physics I
- PHY L252 (1) General Physics I Lab
- PHY 2253 (3) General Physics II
- PHY L253 (1) General Physics II Lab
  or
- PHY 2262 (3) Physics I with Calculus
- PHY L262 (1) Physics I with Calculus Lab
- PHY 2263 (3) Physics II with Calculus
- PHY L263 (1) Physics II with Calculus Lab

**Requirements for the major**

*Lectures and their corresponding labs must be taken together.*
- BIO 2229 (3) General Ecology
- BIO L229 (1) General Ecology Lab
- BIO 3320 (3) Genetics
- BIO L320 (1) Genetics Lab
- BIO 3372 (3) Microbiology
- BIO L372 (1) Microbiology Lab
- CHM 3342 (3) Organic Chemistry I
- CHM L342 (1) Organic Chemistry I Lab
- CHM 3343 (3) Organic Chemistry II
- CHM L343 (1) Organic Chemistry II Lab
- MTH 2210 (3) Applied Statistics

Select 32 semester hours from the courses listed below:
- BIO 3347 (3) Human Anatomy and Physiology I
- BIO L347 (1) Human Anatomy and Physiology I Lab
- BIO 3348 (3) Human Anatomy and Physiology II
- BIO L348 (1) Human Anatomy and Physiology II Lab
- BIO 3382 (3) Immunology
- BIO L382 (1) Immunology Lab
- BIO 3386 (3) Hematology
- BIO L386 (1) Hematology Lab
- BIO 4414 (3) Food Microbiology
- BIO L414 (1) Food Microbiology Lab
- BIO 4416 (3) Environmental Microbiology
- BIO L416 (1) Environmental Microbiology Lab
- BIO 4430 (3) Applied Genetics
- BIO L430 (1) Applied Genetics Lab
- BIO 4432 (3) Comparative Vertebrate Anatomy
- BIO L432 (1) Comparative Vertebrate Anatomy Lab
- BIO 4433 (3) Embryology
- BIO L433 (1) Embryology Lab
- CHM 3352 (3) Biochemistry
- CHM L3352 (1) Biochemistry Lab

**CHEMISTRY EDUCATION**

Students seeking Alabama teacher certification should select chemistry as a first major and education as a second major. Students should consult with their advisers concerning all certification requirements. CHM 3352 is required for Alabama teacher certification.

**CHEMISTRY MAJOR (37 HOURS)**

**Specialized General Studies Requirements**

**Area III**
- BIO 1100 (3) Principles of Biology
- BIO L100 (1) Principles of Biology Lab
- CHM 1142 (3) General Chemistry I
- CHM L142 (1) General Chemistry I Lab
- MTH 1125 (4) Calculus I

**Area V Requirements**
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation

Select one series:
- PHY 2252 (3) General Physics I
- PHY L252 (1) General Physics I Lab
- PHY 2253 (3) General Physics II
- PHY L253 (1) General Physics II Lab
  or
- PHY 2262 (3) Physics I with Calculus
- PHY L262 (1) Physics I with Calculus Lab
- PHY 2263 (3) Physics II with Calculus
- PHY L263 (1) Physics II with Calculus Lab

**Chemistry Core (34 Hours)**
- CHM 1143 (3) General Chemistry II
- CHM L143 (1) General Chemistry II Lab
- CHM 2242 (3) Analytical Chemistry
- CHM L242 (1) Analytical Chemistry Lab
- CHM 3342 (3) Organic Chemistry I
- CHM L342 (1) Organic Chemistry I Lab
- CHM 3343 (3) Organic Chemistry II
- CHM L343 (1) Organic Chemistry II Lab
- CHM 3344 (3) Advanced Inorganic Chemistry
- CHM 4444 (3) Instrumental Analysis
Select three hours of chemistry electives:

- CHM 3352 (3) Biochemistry
- CHM L352 (1) Biochemistry Lab
- CHM L382 (1) Physical Chemistry II Lab
- CHM 4400 (3) Special Topics
- CHM 4403 (3) Advanced Organic Chemistry
- CHM L444 (1) Advanced Inorganic Chemistry Lab
- CHM 4491/2 (1-3) Guided Independent Research
- CHM 4493/4 (1-3) Guided Independent Study
- CHM 4499 (1) Senior Research Seminar

Select one series:

- PHY 2252 (3) General Physics I
- PHY L252 (1) General Physics I Lab
- PHY 2253 (3) General Physics II
- PHY L253 (1) General Physics II Lab

or

- PHY 2262 (3) Physics with Calculus I
- PHY L262 (1) Physics with Calculus I Lab
- PHY 2263 (3) Physics with Calculus II
- PHY L263 (1) Physics with Calculus II Lab

Select five hours of chemistry electives:

- CHM 3352 (3) Biochemistry
- CHM L352 (1) Biochemistry Lab
- CHM L382 (1) Physical Chemistry II Lab
- CHM 4400 (3) Special Topics
- CHM 4403 (3) Advanced Organic Chemistry
- CHM L444 (1) Advanced Inorganic Chemistry Lab
- CHM 4491/2 (1-3) Guided Independent Research
- CHM 4493/4 (1-3) Guided Independent Study
- CHM 4499 (1) Senior Research Seminar

COMPREHENSIVE GENERAL SCIENCE PROGRAM (46 HOURS)

- Select one series:
  - PHY 2252 (3) General Physics I
  - PHY L252 (1) General Physics I Lab
  - PHY 2253 (3) General Physics II
  - PHY L253 (1) General Physics II Lab

or
  - PHY 2262 (3) Physics with Calculus I
  - PHY L262 (1) Physics with Calculus I Lab
  - PHY 2263 (3) Physics with Calculus II
  - PHY L263 (1) Physics with Calculus II Lab

Required Courses

- BIO 3320 (3) Genetics
- BIO L320 (1) Genetics Lab
- CHM 3342 (3) Organic Chemistry I
- CHM L342 (1) Organic Chemistry I Lab
- MTH 2210 (3) Applied Statistics
- PHY 4410 (3) Modern Physics
Select one of the following concentrations:

**Biology Concentration:**
- BIO 2229  (3) General Ecology
- BIO L229 (1) General Ecology Lab
- BIO 3347  (3) Anatomy & Physiology I
- BIO L347 (1) Anatomy & Physiology I Lab
- BIO 3348  (3) Anatomy & Physiology II
- BIO L348 (1) Anatomy & Physiology II Lab
- BIO 3372   (3) Microbiology
- BIO L372 (1) Microbiology Lab

Select one botany course with corresponding lab (four hours).

Select one zoology course with corresponding lab (four hours).

**Chemistry Concentration:**
- CHM 2242   (3) Analytical Chemistry
- CHM L242   (1) Analytical Chemistry Lab
- CHM 3343   (3) Organic Chemistry II
- CHM L343 (1) Organic Chemistry II Lab
- CHM 3352   (3) Biochemistry
- CHM L352 (1) Biochemistry Lab
- CHM 3381   (3) Physical Chemistry I
- CHM L381 (1) Physical Chemistry I Lab

Select a minimum of eight semester hours of coursework from the following:
- CHM 3382   (3) Physical Chemistry II
- CHM L382 (1) Physical Chemistry II Lab
- CHM 4403   (3) Advanced Organic Chemistry
- CHM 4444 (3) Advanced Inorganic Chemistry
- CHM L444 (1) Advanced Inorganic Chemistry Lab
- CHM 4445 (3) Instrumental Analysis
- CHM L445 (1) Instrumental Analysis Lab

**Physics Concentration:**
- PHY 4411  (3) Advanced Modern Physics
- PHY 4459  (3) Optics
- PHY L459 (1) Optics lab
- PHY 4420 (3) Mechanics
- PHY 4430 (3) Electromagnetic Fields
- PHY 4495 (3) Topics in Physics

Select eight hours of upper level physics or chemistry courses approved by the academic adviser.

**COMPUTER SCIENCE MINOR (18 HOURS)**
- CS 2250 (3) Computer Science I
- CS 2255 (3) Computer Science II

Select 12 semester hours of computer science courses with at least one course being at the 4000 level.

**COMPUTER SCIENCE PROGRAM (48 HOURS)**

**Specialized General Studies Requirements**

**Area III**
- MTH 1125 (4) Calculus I, in lieu of MTH 1110

Select a four hour course/lab combination from the following:
(Students must complete an eight hour sequence in chemistry or physics. Also see Area V Requirements.)
- CHM 1142 (3) General Chemistry I
- CHM L142 (1) General Chemistry I Lab
- PHY 2252 (3) General Physics I
- PHY L252 (1) General Physics I Lab

Select remaining Area III courses as shown in the General Studies section of this catalog.

**Area V Requirements**
- CS 2250 (3) Computer Science I
- MTH 1126 (4) Calculus II
- TROY 1101 (1) University Orientation

Select a four hour course/lab combination from the following:
(Students must complete an eight hour sequence in chemistry or physics. Also see Area III.)
- CHM 1143 (3) General Chemistry II
- CHM L143 (1) General Chemistry II Lab
- PHY 2253 (3) General Physics II
- PHY L253 (1) General Physics II Lab

**Required Courses**
- CS 2255 (3) Computer Science II
- CS 3310 (3) Foundations of Computer Science
- CS 3323 (3) Data Structures
- CS 3329 (3) Analysis of Algorithms
- CS 3332 (3) Software Engineering I
- CS 3360 (3) Concepts of Object-Oriented Programming I
- CS 3365 (3) Introduction to Computer Organization and Architectures
- CS 3370 (3) Nature of Programming Languages
- CS 3372 (3) Formal Languages and the Theory of Computation
- CS 4420 (3) Introduction to Database Systems
- CS 4445 (3) Data Communication and Networking
- CS 4448 (3) Operating Systems
- MTH 2210 (3) Applied Statistics
- MTH 2215 (3) Applied Discrete Mathematics

Select two of the following:
- CS 3320 (3) Business Systems Programming
- CS 3325 (3) Operations Research
- CS 3331 (3) Fundamentals of Artificial Intelligence
- CS 3361 (3) Concepts of Objected Oriented Programming II
- CS 4401 (3) Advanced Artificial Intelligence
- CS 4443 (3) Web Based Software Development
- CS 4447 (3) Systems Analysis and Design
- CS 4451 (3) Computer Security and Reliability
- CS 4461 (3) Software Engineering II
CS 4462 (3) Special Topics in Object-Oriented Technology
CS 4495 (3) Special Topics in Computer Science

COMPUTER SCIENCE, APPLIED MAJOR (36 HOURS)

Specialized General Studies Requirements

Area III
MTH 2201 (3) Business Calculus
Select additional Area III requirements as shown in the General Studies section of this catalog.

Area V Requirements
IS 2241 (3) Computer Concepts and Applications
MTH 2215 (3) Applied Discrete Mathematics
TROY 1101 (1) University Orientation

Major Requirements
CS 2250 (3) Computer Science I
CS 2255 (3) Computer Science II
CS 2265 (3) Advanced Programming I
CS 3330 (3) Data Structures and Algorithms
CS 4420 (3) Introduction to Database Systems
CS 4443 (3) Web-Based Software Development
CS 4445 (3) Data Communications and Networking
CS 4447 (3) Systems Analysis and Design
CS 4448 (3) Operating Systems

Select three of the following:
CS 3320 (3) Business Systems Programming
CS 3332 (3) Software Engineering I
CS 3347 (3) Advanced Programming II
CS 4449 (3) Applied Networking
CS 4451 (3) Computer Security
CS 4495 (3) Special Topics in Computer Science

COMPUTER SCIENCE A.S. DEGREE (60 HOURS)

Associate of Science Degree
See the academic regulations section of this catalog for additional information regarding associate degrees.

General Studies Requirements

Area I
ENG 1101 (3) Composition and Modern English I
ENG 1102 (3) Composition and Modern English II

Area II
Select one of the following:
ENG 2205 (3) World Literature before 1660
ENG 2206 (3) World Literature after 1660
ENG 2211 (3) American Literature before 1875
ENG 2212 (3) American Literature after 1875
ENG 2244 (3) British Literature before 1785
ENG 2245 (3) British Literature after 1785

Select one of the following:
ART 1133 (2) Visual Arts
DRA 2200 (2) Introduction to Drama
MUS 1131 (2) Music Appreciation

Area III
MTH 1125 (4) Calculus I
Select one science course and corresponding lab:
BIO 1100 (3) Principles of Biology
BIO L100 (1) Principles of Biology Lab
SCI 2233 (3) Physical Science
SCI L233 (1) Physical Science Lab
SCI 2234 (3) Earth and Space Science
SCI L234 (1) Earth and Space Science Lab

Area IV
Select one of the following:
HIS 1101 (3) Western Civilization I
HIS 1102 (3) Western Civilization II
HIS 1111 (3) U.S. to 1877
HIS 1112 (3) U.S. since 1877
HIS 1122 (3) World History to 1500
HIS 1123 (3) World History from 1500

Area V
IS 2241 (3) Computer Concepts and Applications
TROY 1101 (1) University Orientation

Additional requirements
CS 2250 (3) Computer Science I
CS 2255 (3) Computer Science II
CS 3310 (3) Foundations of Computer Science
CS 3323 (3) Data Structures
CS 3329 (3) Analysis of Algorithms
CS 3332 (3) Software Engineering I
CS 3365 (3) Introduction to Computer Organization and Architectures
MTH 2215 (3) Applied Discrete Mathematics

Select 10 hours of free electives.

CRIMINAL JUSTICE MAJOR (36 HOURS)

Criminal justice majors are encouraged to take two semesters of Spanish or another foreign language as part of their general studies requirements.

Select one of the following:
CJ 1101 (3) Introduction to Criminal Justice
CJ 2221 (3) Survey of Law Enforcement
CJ 2231 (3) Survey of Corrections
CJ 2241 (3) Survey of Law and Criminal Procedure
CJ 3345 (3) Criminology
CJ 3352 (3) Constitutional Law
CJ 3375 (3) Introduction to Social Scientific Inquiry
CJ 4499 (3) Senior Seminar
Select A or B below:

A. 12 additional hours of advanced or upper-level criminal justice courses, as approved by the adviser,
or

B. Homeland Security Concentration. Select 12 additional hours from the following as approved by the adviser:

- CJ 3335 (3) Private and Public Security Administration
- CJ 4435 (3) Grant Writing
- CJ 4440 (3) Terrorism
- CJ 4470 (3) Criminal Justice Issues in Homeland Security
- CJ 4472 (3) Cyber Crime
- CJ 4488 (3) Internship (limit 1)
- POL 3364 (3) State and Local Politics
- POL 4422 (3) Public Policy Making

CRIMINAL JUSTICE MINOR (18 HOURS)

- CJ 1101 (3) Introduction to Criminal Justice

Select 15 additional hours of upper-level criminal justice courses as approved by the adviser.

EARTH AND SPACE STUDIES MINOR (18 HOURS)

- SCI 3335 (3) Physical Geology
- SCI L335 (1) Physical Geology Lab
- SCI 3336 (3) Astronomy
- SCI 3340 (3) Marine Science
- SCI L340 (1) Marine Science Lab
- SCI 3350 (3) Weather and Climate
- SCI L350 (1) Weather and Science Lab
- SCI 4403 (3) Conservation

ENGLISH MAJOR (36 HOURS)

Area V Requirements

- ENG 2211 (3) American Literature before 1875
- ENG 2212 (3) American Literature after 1875
- ENG 2244 (3) British Literature before 1785
- ENG 2245 (3) British Literature after 1785
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation

Major Requirements

- ENG 3341 (3) Advanced Grammar
- ENG 4495 (3) Senior Seminar

Select an additional 30 hours of upper division courses, at least nine of which are at the 4000 level or above.

Professional Writing Emphasis:

Students at the Montgomery Campus may select the Professional Writing Emphasis. In addition to ENG 3341, the following courses are required:

- ENG 2260 (3) Introduction to Technical and Professional Writing
- ENG 3345 (3) Technical and Professional Editing
- ENG 3365 (3) Advanced Technical and Professional Writing
- ENG 3366 (3) Professional Document Design

ENGLISH MINOR (18 HOURS)

- ENG 3341 (3) Advanced Grammar

Select one sequence:

- ENG 2211 (3) American Literature before 1875
- ENG 2212 (3) American Literature after 1875
- ENG 2244 (3) British Literature before 1785
- ENG 2245 (3) British Literature after 1785

Select an additional nine hours of upper division English courses.

ENGLISH MINOR, CREATIVE WRITING (18 HOURS)

- ENG 3351 (3) Introduction to Creative Writing

Select an additional 15 hours from the following:

- ENG 3352 (3) Advanced Creative Writing I
- ENG 3353 (3) Advanced Creative Writing II
- ENG 3354 (3) Advanced Nonfiction Writing
- ENG 3355 (3) Verse Writing
- ENG 3356 (3) Forms and Theory of Fiction
- ENG 4420 (3) Selected Topics in Creative Writing
- ENG 4427 (3) Contemporary American Literature
- ENG 4489 (3) Internship

ENGLISH MINOR, PROFESSIONAL WRITING EMPHASIS (18 HOURS)

- ENG 2260 (3) Introduction to Technical and Professional Writing
- ENG 3345 (3) Technical and Professional Editing
- ENG 3365 (3) Advanced Technical and Professional Writing
- ENG 3366 (3) Professional Document Design

Select an additional six hours from the following:

- ENG 3320 (3) Introduction to Linguistics
- ENG 3351 (3) Creative Writing I
- ENG 3352 (3) Creative Writing II
- ENG 4400 (3) Selected Topics
- ENG 4405 (3) History of the English Language
- ENG 4419 (3) Advanced Writing
- ENG 4488 (3) Seminar in Professional Writing Portfolio Design
- ENG 4490 (3) Professional Writing Internship
Students seeking Alabama teacher certification should complete the English major and the required courses for language arts, in addition to selecting education as a second major. Students should consult their advisers concerning all certification requirements.

### Specialized General Studies Requirements

See the general studies section of this catalog for additional information.

#### Area II

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<th>Course</th>
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<th>Description</th>
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<tr>
<td>COM 2241</td>
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<td>Fundamentals of Speech</td>
</tr>
<tr>
<td>DRA 2200</td>
<td>2</td>
<td>Introduction to Drama</td>
</tr>
<tr>
<td>ENG 2205</td>
<td>3</td>
<td>World Literature before 1660</td>
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<tr>
<td>ENG 2206</td>
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<td>World Literature after 1660</td>
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Select one of the following:

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<tbody>
<tr>
<td>ART 1133</td>
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<td>Visual Arts</td>
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<tr>
<td>MUS 1131</td>
<td>2</td>
<td>Music Appreciation</td>
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#### Area V Requirements

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<tr>
<td>ENG 2211</td>
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<tr>
<td>IS 2241</td>
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<td>Computer Concepts and Apps.</td>
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<tr>
<td>COM 1101</td>
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<td>Introduction to Communication</td>
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<td>TROY 1101</td>
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<td>University Orientation</td>
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**Required Courses for Language Arts**

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<tr>
<td>COM 3342</td>
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<tr>
<td>COM 4441</td>
<td>2</td>
<td>Oral Interpretation</td>
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<td>DRA 4451</td>
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<td>Directing I</td>
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<td>Advanced Grammar</td>
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<tr>
<td>ENG 3371</td>
<td>3</td>
<td>Literature for Young Adults</td>
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<td>ENG 4405</td>
<td>3</td>
<td>History of the English Language</td>
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<tr>
<td>ENG 4478</td>
<td>3</td>
<td>Theory and Practice of Composition: Writing and Learning Across the Curriculum</td>
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<td>JRN 3326</td>
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<td>Advising Student Publications</td>
</tr>
</tbody>
</table>

Select 12 hours of upper division English electives, six of which must be at the 4000 level, three of which may be upper-level creative writing.

### ENVIRONMENTAL SCIENCE PROGRAM (55 HOURS)

#### Specialized General Studies Requirements

**Area III**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIO 1100</td>
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<td>Principles of Biology</td>
</tr>
<tr>
<td>BIO L100</td>
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<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>CHM 1142</td>
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<td>General Chemistry I</td>
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<td>CHM L142</td>
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**Area V Requirements**

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<tbody>
<tr>
<td>IS 2241</td>
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<td>TROY 1101</td>
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<td>University Orientation</td>
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<tr>
<td>BIO 1101</td>
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<td>Organismal Biology</td>
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<td>BIO L101</td>
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</tbody>
</table>

Select one sequence (physics sequence not required for medical technology concentration):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 2252</td>
<td>3</td>
<td>General Physics I</td>
</tr>
<tr>
<td>PHY L252</td>
<td>1</td>
<td>General Physics I Lab</td>
</tr>
<tr>
<td>PHY 2253</td>
<td>3</td>
<td>General Physics II</td>
</tr>
<tr>
<td>PHY L253</td>
<td>1</td>
<td>General Physics II Lab</td>
</tr>
<tr>
<td>PHY 2262</td>
<td>3</td>
<td>Physics I with Calculus</td>
</tr>
<tr>
<td>PHY L262</td>
<td>1</td>
<td>Physics I with Calculus Lab</td>
</tr>
<tr>
<td>PHY 2263</td>
<td>3</td>
<td>Physics II with Calculus</td>
</tr>
<tr>
<td>PHY L263</td>
<td>1</td>
<td>Physics II with Calculus Lab</td>
</tr>
</tbody>
</table>

#### Program Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 2220</td>
<td>3</td>
<td>Principles of Cell Biology</td>
</tr>
<tr>
<td>BIO L220</td>
<td>1</td>
<td>Principles of Cell Biology Lab</td>
</tr>
<tr>
<td>BIO 2229</td>
<td>3</td>
<td>General Ecology</td>
</tr>
<tr>
<td>BIO L229</td>
<td>1</td>
<td>General Ecology Lab</td>
</tr>
<tr>
<td>BIO 3320</td>
<td>3</td>
<td>Genetics</td>
</tr>
<tr>
<td>BIO L320</td>
<td>1</td>
<td>Genetics Lab</td>
</tr>
<tr>
<td>CHM 3342</td>
<td>3</td>
<td>Organic Chemistry I</td>
</tr>
<tr>
<td>CHM L342</td>
<td>1</td>
<td>Organic Chemistry I Lab</td>
</tr>
<tr>
<td>CHM 3343</td>
<td>3</td>
<td>Organic Chemistry II</td>
</tr>
<tr>
<td>CHM L343</td>
<td>1</td>
<td>Organic Chemistry II Lab</td>
</tr>
<tr>
<td>MTH 2210</td>
<td>3</td>
<td>Applied Statistics</td>
</tr>
</tbody>
</table>

**Select 12 hours from the following:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 4451</td>
<td>3</td>
<td>Toxicology</td>
</tr>
<tr>
<td>BIO L451</td>
<td>1</td>
<td>Toxicology Lab</td>
</tr>
<tr>
<td>BIO 4452</td>
<td>3</td>
<td>Industrial Hygiene</td>
</tr>
<tr>
<td>BIO L452</td>
<td>1</td>
<td>Industrial Hygiene Lab</td>
</tr>
<tr>
<td>BIO 4479</td>
<td>3</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>BIO L479</td>
<td>1</td>
<td>Environmental Assessment Lab</td>
</tr>
<tr>
<td>BIO 4420</td>
<td>4</td>
<td>Field Vertebrate Zoology (combined lecture and lab)</td>
</tr>
<tr>
<td>BIO 4425</td>
<td>4</td>
<td>Field Botany or BIO 4402 (combined lecture and lab)</td>
</tr>
<tr>
<td>BIO 4476</td>
<td>1-4</td>
<td>Special Topics (combined lecture and lab)</td>
</tr>
<tr>
<td>BIO 4491</td>
<td>1-4</td>
<td>Guided Independent Research (combined lecture and lab)</td>
</tr>
<tr>
<td>CHM 3350</td>
<td>3</td>
<td>Principles of Physical Chemistry</td>
</tr>
<tr>
<td>CHM L350</td>
<td>1</td>
<td>Principles of Physical Chemistry Lab</td>
</tr>
<tr>
<td>CHM 3352</td>
<td>3</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>CHM L352</td>
<td>1</td>
<td>Biochemistry Lab</td>
</tr>
<tr>
<td>CHM 4445</td>
<td>3</td>
<td>Instrumental Analysis</td>
</tr>
<tr>
<td>CHM L445</td>
<td>1</td>
<td>Instrumental Analysis Lab</td>
</tr>
</tbody>
</table>
Environmental Science Core (32 semester hours):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 2202</td>
<td>3</td>
<td>Principles of Environmental Science</td>
</tr>
<tr>
<td>BIO L202</td>
<td>1</td>
<td>Principles of Environmental Science Lab</td>
</tr>
<tr>
<td>BIO 3328</td>
<td>3</td>
<td>Environmental Pollution and Control</td>
</tr>
<tr>
<td>BIO L328</td>
<td>1</td>
<td>Environmental Pollution and Control Lab</td>
</tr>
<tr>
<td>BIO 4413</td>
<td>3</td>
<td>Limnology</td>
</tr>
<tr>
<td>BIO L413</td>
<td>1</td>
<td>Limnology Lab</td>
</tr>
<tr>
<td>BIO 4451</td>
<td>3</td>
<td>Toxicology</td>
</tr>
<tr>
<td>BIO L451</td>
<td>1</td>
<td>Toxicology Lab</td>
</tr>
<tr>
<td>BIO 4452</td>
<td>3</td>
<td>Industrial Hygiene</td>
</tr>
<tr>
<td>BIO L452</td>
<td>1</td>
<td>Industrial Hygiene Lab</td>
</tr>
<tr>
<td>BIO 4479</td>
<td>3</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>BIO L479</td>
<td>1</td>
<td>Environmental Assessment Lab</td>
</tr>
</tbody>
</table>

Select eight hours of adviser-approved upper-level courses in biology, chemistry or mathematics.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 4488/4489/4490</td>
<td>1-8</td>
<td>Internship in Environmental Science</td>
</tr>
</tbody>
</table>

GENERAL EDUCATION A.A. DEGREE (60 HOURS)

 Associate of Arts Degree

See the academic regulations section of this catalog for additional information regarding associate degrees.

General Studies Requirements

**Area I**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 1101</td>
<td>3</td>
<td>Composition and Modern English I</td>
</tr>
<tr>
<td>ENG 1102</td>
<td>3</td>
<td>Composition and Modern English II</td>
</tr>
</tbody>
</table>

**Area II**

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 1133</td>
<td>2</td>
<td>Visual Arts</td>
</tr>
<tr>
<td>DRA 2200</td>
<td>2</td>
<td>Introduction to Drama</td>
</tr>
<tr>
<td>MUS 1131</td>
<td>2</td>
<td>Music Appreciation</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 2205</td>
<td>3</td>
<td>World Literature before 1660</td>
</tr>
<tr>
<td>ENG 2206</td>
<td>3</td>
<td>World Literature after 1660</td>
</tr>
<tr>
<td>ENG 2211</td>
<td>3</td>
<td>American Literature before 1875</td>
</tr>
<tr>
<td>ENG 2212</td>
<td>3</td>
<td>American Literature after 1875</td>
</tr>
<tr>
<td>ENG 2244</td>
<td>3</td>
<td>British Literature before 1785</td>
</tr>
<tr>
<td>ENG 2245</td>
<td>3</td>
<td>British Literature after 1785</td>
</tr>
</tbody>
</table>

Select six hours of one foreign language.

**Area III**

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTH 1110</td>
<td>3</td>
<td>Finite Mathematics</td>
</tr>
<tr>
<td>MTH 1112</td>
<td>3</td>
<td>Pre-calculus Algebra</td>
</tr>
</tbody>
</table>

Select one science course and corresponding lab:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1100</td>
<td>3</td>
<td>Principles of Biology</td>
</tr>
<tr>
<td>BIO L100</td>
<td>1</td>
<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>SCI 2233</td>
<td>3</td>
<td>Physical Science</td>
</tr>
<tr>
<td>SCI L233</td>
<td>1</td>
<td>Physical Science Lab</td>
</tr>
<tr>
<td>SCI 2234</td>
<td>3</td>
<td>Earth and Space Science</td>
</tr>
<tr>
<td>SCI L234</td>
<td>1</td>
<td>Earth and Space Science Lab</td>
</tr>
</tbody>
</table>

**Area IV**

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIS 1101</td>
<td>3</td>
<td>Western Civilization I</td>
</tr>
<tr>
<td>HIS 1102</td>
<td>3</td>
<td>Western Civilization II</td>
</tr>
<tr>
<td>HIS 1111</td>
<td>3</td>
<td>U.S. to 1877</td>
</tr>
<tr>
<td>HIS 1112</td>
<td>3</td>
<td>U.S. since 1877</td>
</tr>
<tr>
<td>HIS 1122</td>
<td>3</td>
<td>World History to 1500</td>
</tr>
<tr>
<td>HIS 1123</td>
<td>3</td>
<td>World History from 1500</td>
</tr>
</tbody>
</table>

**Area V**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 2241</td>
<td>3</td>
<td>Computer Concepts and Applications</td>
</tr>
<tr>
<td>TROY 1101</td>
<td>1</td>
<td>University Orientation</td>
</tr>
</tbody>
</table>

Additional requirements

Select any minor or area of concentration.

Select additional free electives to complete a total of 60 hours.

GENERAL EDUCATION A.S. DEGREE (60 HOURS)

 Associate of Science Degree

See the academic regulations section of this catalog for additional information regarding associate degrees.

General Studies Requirements

**Area I**

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**Area II**

Select one of the following:

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</tr>
<tr>
<td>ENG 2245</td>
<td>3</td>
<td>British Literature after 1785</td>
</tr>
</tbody>
</table>

Select six hours of one foreign language.

**Area III**

Select one of the following:

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<thead>
<tr>
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<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Finite Mathematics</td>
</tr>
<tr>
<td>MTH 1112</td>
<td>3</td>
<td>Pre-calculus Algebra</td>
</tr>
</tbody>
</table>

Select one science course and corresponding lab:

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<th>Course</th>
<th>Credits</th>
<th>Description</th>
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</thead>
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<td>Principles of Biology</td>
</tr>
<tr>
<td>BIO L100</td>
<td>1</td>
<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>SCI 2233</td>
<td>3</td>
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</tr>
<tr>
<td>SCI L233</td>
<td>1</td>
<td>Physical Science Lab</td>
</tr>
<tr>
<td>SCI 2234</td>
<td>3</td>
<td>Earth and Space Science</td>
</tr>
<tr>
<td>SCI L234</td>
<td>1</td>
<td>Earth and Space Science Lab</td>
</tr>
</tbody>
</table>

**Area IV**

Select one of the following:

<table>
<thead>
<tr>
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<th>Description</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>Western Civilization I</td>
</tr>
<tr>
<td>HIS 1102</td>
<td>3</td>
<td>Western Civilization II</td>
</tr>
<tr>
<td>HIS 1111</td>
<td>3</td>
<td>U.S. to 1877</td>
</tr>
<tr>
<td>HIS 1112</td>
<td>3</td>
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<td>World History to 1500</td>
</tr>
<tr>
<td>HIS 1123</td>
<td>3</td>
<td>World History from 1500</td>
</tr>
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</table>

**Area V**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS 2241</td>
<td>3</td>
<td>Computer Concepts and Applications</td>
</tr>
<tr>
<td>TROY 1101</td>
<td>1</td>
<td>University Orientation</td>
</tr>
</tbody>
</table>

Note: Students who pursue a baccalaureate degree with Troy University following the completion of the Associate of Science in General Education must meet the minimum grade requirements in mathematics.
BIO 1100 (3) Principles of Biology
BIO L100 (1) Principles of Biology Lab
SCI 2233 (3) Physical Science
SCI L233 (1) Physical Science Lab
SCI 2234 (3) Earth and Space Science
SCI L234 (1) Earth and Space Science Lab

**Area IV**
Select one of the following:
HIS 1101 (3) Western Civilization I
HIS 1102 (3) Western Civilization II
HIS 1111 (3) U.S. to 1877
HIS 1112 (3) U.S. since 1877
HIS 1122 (3) World History to 1500
HIS 1123 (3) World History from 1500

**Area V**
IS 2241 (3) Computer Concepts and Applications
TROY 1101 (1) University Orientation

**Additional requirements**
Select any minor or area of concentration.
Select additional free electives to complete a total of 60 hours.

<table>
<thead>
<tr>
<th>GEOGRAPHIC INFORMATION SYSTEMS (GIS) MINOR (18 HOURS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEM 3390 (3) Introduction to GIS</td>
</tr>
<tr>
<td>GEM L390 (1) Introduction to GIS Lab</td>
</tr>
<tr>
<td>GEM 3391 (3) Applications of GIS</td>
</tr>
<tr>
<td>GEM L391 (1) Applications of GIS Lab</td>
</tr>
<tr>
<td>GEM 4499 (2) Geomatics/GIS Projects</td>
</tr>
</tbody>
</table>

With adviser approval, select a minimum of eight credit hours from one of the four bundles:

**Data Collection/Analysis**
GEM 2200 (3) Basics of Cartography and Surveying
GEM L220 (1) Basics of Cartography and Surveying Lab
GEM 3330 (3) Advanced Measurement Analysis
GEM L330 (1) Advanced Measurement Analysis Lab
GEM L371 (1) Measurement for GIS Lab

**Image Processing**
GEM 1100 (1) Computer-Aided Drafting
GEM L110 (2) Computer-Aided Drafting Lab
GEM 3366 (3) Photogrammetry and Remote Sensing
GEM L366 (1) Photogrammetry and Remote Sensing Lab
GEM L367 (1) Digital Images in GIS Lab

**Customizing the ArcView GIS Interface**
CS 2255 (3) Computer Science II
CS 3330 (3) Data Structures and Algorithms
CS 3360 (3) Concepts of Object Oriented Programming I

**GIS Database Development**
CS 2255 (3) Computer Science II
CS 3323 (3) Data Structures
CS 4420 (3) Introduction to Database Systems

<table>
<thead>
<tr>
<th>GEOGRAPHY MINOR (18 HOURS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEO 3300 (3) Principles of Physical Geography</td>
</tr>
<tr>
<td>GEO 3301 (3) Principles of Cultural Geography</td>
</tr>
</tbody>
</table>

Select an additional 12 hours of approved, upper-level geography courses. GEO 2210 may not be counted toward both general studies and the geography minor.

**HISTORY EDUCATION (36 HOURS)**
Students seeking Alabama teacher certification should select history as a first major and education as a second major. Students should consult with their advisers concerning all certification requirements.

**Specialized General Studies Requirements**

**Area IV**
POL 2241 (3) American National Government
SOC 2275 (3) Introduction to Sociology

Select one six-hour sequence:
HIS 1101 (3) Western Civilization I, or placement
HIS 1102 (3) Western Civilization II, or placement

or
HIS 1122 (3) World History to 1500
HIS 1123 (3) World History from 1500

**Area V Requirements**
GEO 2210 (3) World Regional Geography
HIS 1111 (3) U.S. to 1877, or placement
HIS 1112 (3) U.S. since 1877, or placement
IS 2241 (3) Computer Concepts and Apps.
TROY 1101 (1) University Orientation

**Requirements for the Major**
HIS 3375 (3) Research and Methodology
HIS 4490 (3) Senior Seminar

Select one emphasis:

**American/Latin American History Emphasis:**
Select 15 hours of upper-level American/Latin American courses in addition to either HIS 3316 or 4406.

Select an additional nine hours of upper-level European/Asian/African courses in addition to HIS 4451.

**European/Asian/African History Emphasis:**
Select 15 hours of upper-level European/Asian/African courses in addition to HIS 4451.

Select an additional nine hours of upper-level American/Latin American courses in addition to either HIS 3316 or 4406.

NOTE: Students majoring in History Education may not select the Civil Rights emphasis in history.
HISTORY MAJOR (36 HOURS)

Select one emphasis below:

American/Latin American Emphasis:

Specialized General Studies Requirements

Area IV
Select a six hour sequence in western civilization or world history.
Select additional Area IV courses as specified in the General Studies section of this catalog.

Area V Requirements
GEO 2210 (3) World Regional Geography
HIS 1111 (3) U.S. to 1877, or placement
HIS 1112 (3) U.S. since 1877, or placement
IS 2241 (3) Computer Concepts and Apps.
TROY 1101 (3) University Orientation

Requirements for the Major
HIS 3375 (3) Research and Methodology
HIS 4490 (3) Senior Seminar

Select 18 hours of approved upper-level American/Latin American courses.
Select 12 hours of approved upper-level European/Asian/African courses.

Civil Rights Emphasis:

Specialized General Studies Requirements

Area IV
Select a six hour sequence in western civilization or world history.
Select six additional Area IV courses as specified in the General Studies section of this catalog.

Area V Requirements
IS 2241 (3) Computer Concepts and Apps.
TROY 1101 (1) University Orientation
HIS 1111 (3) U.S. to 1877, or placement
HIS 1112 (3) U.S. since 1877, or placement
GEO 2210 (3) World Regional Geography

Requirements for the Major
HIS 3375 (3) Research and Methodology
HIS 4490 (3) Senior Seminar

Select 18 hours of approved, upper-level European/Asian/African courses.
Select 12 hours of approved, upper-level American/Latin American courses.

HISTORY MINOR (18 HOURS)

HIS 3375 (3) Research and Methodology
Select 15 hours of upper-level history courses.

Note: HIS 1111 and HIS 1112 are prerequisites for upper-level American history courses and must be taken if they have not been taken for general studies.

Note: HIS 1101 and HIS 1102 are prerequisites for upper-level European history courses and must be taken if they have not been taken for general studies.

HOMELAND SECURITY MINOR (18 HOURS)

CJ 1101 (3) Introduction to Criminal Justice
Select 15 additional hours from the following as approved by the adviser:

CJ 3335 (3) Private and Public Security Administration
CJ 4435 (3) Grant Writing
CJ 4440 (3) Terrorism
CJ 4470 (3) Criminal Justice Issues in Homeland Security
CJ 4472 (3) Cyber Crime
CJ 4488 (3) Internship (limit one)
POL 3364 (3) State and Local Politics
POL 4422 (3) Public Policy Making

Note: This minor is not available to criminal justice majors.

HUMANITIES MINOR (18 HOURS)

ART 3302 (3) History of the Arts
CLA 2260 (3) Classical Mythology
CLA 2290 (3) Classical Literature in English Translation
PHI 2203 (3) Introduction to Philosophy
PHI 3301 (3) Western Philosophy
REL 2280 (3) World Religions
LEADERSHIP STUDIES MINOR (18 HOURS)

LDR 1100 (3) Introduction to Leadership
LDR 2200 (3) Tools for Leaders
LDR 3300 (3) Leadership Theory
LDR 4400 (3) Leadership Seminar

Select at least an additional six hours from the following:

AS 3312 (3) Air Force Leadership Studies I
AS 3313 (3) Air Force Leadership Studies II
COM 3326 (3) Conflict Management
COM 3345 (3) Group Discussion and Leadership
COM 4426 (3) Organizational Communication
SED 4400 (3) Secondary Classroom Management
HIS 3304 (3) Military History of the United States
HIS 3315 (3) Vietnam War
HIS 3318 (3) History of American Women
IDS 2200 (3) Interdisciplinary Studies
LDR 4402 (2) Leadership Field Experiences
LDR 4403 (1) Contemporary Issues in Leadership
LDR 4444 (3-6) Leadership Internship
LDR 4450 (1-6) Leadership Service Learning
LDR 4493-94 (1-3) Guided Independent Study
MGT 3371 (3) Principles of Management and Organizational Behavior
MGT 3375 (3) Human Resources Management
MSL 2201 (2) Individual Leadership Studies
MSL 2202 (2) Leadership and Teamwork
MSL 2204 (2) Leadership Lab
PHI 2204 (3) Ethics and the Modern World
POL 3340 (3) U.S. Government – Executive Branch
POL 3364 (3) State and Local Politics
POL 4421 (3) Introduction to Public Administration
PSY 4410 (3) Business and Industrial Psychology
SOC 3301 (3) Social Change in the Information Age
SOC 3310 (3) Minorities in U.S. Social Structure
SS 4498 (3) Social Science Theory

CHM L143 (1) General Chemistry II Lab

Select one sequence (physics sequence not required for medical technology concentration):

PHY 2252 (3) General Physics I
PHY L225 (1) General Physics I Lab
PHY 2253 (3) General Physics II
PHY L2253 (1) General Physics II Lab

or

PHY 2262 (3) Physics I with Calculus
PHY L2262 (1) Physics I with Calculus Lab
PHY 2263 (3) Physics II with Calculus
PHY L2263 (1) Physics II with Calculus Lab

Requirements for the Program

Lectures and corresponding labs must be taken together.

BIO 2220 (3) Principles of Cell Biology
BIO L2220 (1) Principles of Cell Biology Lab
BIO 2229 (3) General Ecology
BIO L229 (1) General Ecology Lab
BIO 3320 (3) Genetics
BIO L320 (1) Genetics Lab
CHM 3342 (3) Organic Chemistry I
CHM L342 (1) Organic Chemistry I Lab
CHM 3343 (3) Organic Chemistry II
CHM L343 (1) Organic Chemistry II Lab
MTH 2210 (3) Applied Statistics

Troy University Courses:

BIO 3307 (3) Invertebrate Zoology
BIO L307 (1) Invertebrate Zoology Lab

Select three additional upper-level adviser-approved biology courses (12 SH). Lectures and their corresponding labs must be taken together.

Dauphin Island Sea Lab (DISL) Courses (16 semester hours).

DISL courses are offered during the summer term. Students are required to take the following prerequisites before attending DISL: CHM 1143, L143, BIO 1101, L101, BIO 2229, L229. Students must also comply with all DISL catalog prerequisites for individual courses.

Select three courses:

MB 4403 (4) Marine Vertebrate Zoology
MB 4404 (4) Marine Botany
MB 4410 (4) Introduction to Oceanography
MB 4406 (4) Marsh Ecology, or
MB 4418 (4) Marine Behavioral Ecology, or
MB 4423 (4) Marine Ecology

Select four semester hours of marine biology elective(s).

MARINE BIOLOGY PROGRAM (55 HOURS)

Students must take courses at both Troy University and Dauphin Island Sea Lab.

Specialized General Studies Requirements

Area III

BIO 1100 (3) Principles of Biology
BIO L100 (1) Principles of Biology Lab
CHM 1142 (3) General Chemistry I
CHM L142 (1) General Chemistry I Lab
MTH 1125 (4) Calculus I

Area V Requirements

IS 2241 (3) Computer Concepts and Apps.
TROY 1101 (1) University Orientation
BIO 1101 (3) Organismal Biology
BIO L101 (1) Organismal Biology Lab
CHM 1143 (3) General Chemistry II

CHM L1143 (1) General Chemistry II Lab

Select three courses:

MB 4403 (4) Marine Vertebrate Zoology
MB 4404 (4) Marine Botany
MB 4410 (4) Introduction to Oceanography
MB 4406 (4) Marsh Ecology, or
MB 4418 (4) Marine Behavioral Ecology, or
MB 4423 (4) Marine Ecology

Select four semester hours of marine biology elective(s).

MATHEMATICS EDUCATION

Students seeking Alabama teacher certification should select mathematics as a first major and education as a second major. Students should consult with their advisers concerning all certification requirements.
MATHEMATICS MAJOR (38 HOURS)

Specialized General Studies Requirements

Area III
BIO 1100  (3) Principles of Biology
BIO L100  (1) Principles of Biology Lab
MTH 1125  (4) Calculus I

Select a four hour course/lab combination from the following:
CHM 1142  (3) General Chemistry I
CHM L142 (1) General Chemistry I Lab
PHY 2252  (3) General Physics I
PHY L252 (1) General Physics I Lab
SCI 2233  (3) Physical Science
SCI L233  (1) Physical Science Lab

SCI 2234  (3) Earth and Space Science
SCI L234  (1) Earth and Space Science Lab

Area V Requirements
TROY 1101 (1) University Orientation
MTH 2220  (3) Computer Programming for Mathematics

Requirements for the Major
MTH 1126  (4) Calculus II
MTH 2227  (4) Calculus III
MTH 3311 (3) Differential Equations
MTH 3318 (3) Introduction to Advanced Mathematics
MTH 3331 (3) Linear Algebra
MTH 4424 (3) Real Analysis I
MTH 4441 (3) Abstract Algebra I

Select one of the following:
MTH 4425 (3) Real Analysis II
MTH 4442 (3) Abstract Algebra II

or both of the following:
MTH 4451 (3) Mathematical Statistics I
MTH 4452 (3) Mathematical Statistics II

Students selecting MTH 4451 and MTH 4452: select nine more hours of mathematics courses at the 3000 level and above (excluding MTH 4481).

Students selecting MTH 4425 or MTH 4442: select 12 hours of mathematics courses at the 3000 level and above (excluding MTH 4481).

Students seeking Alabama teacher certification must select MTH 3325 and MTH 4451.

MILITARY OPERATIONS MINOR (18 HOURS)

Military electives may be taken from credit earned through the American Council on Education (ACE) recommendations, Community College of the Air Force (CCAF) or military credit from regionally accredited institutions. This minor is applicable only to Bachelor of Science programs. Military science as a specialization is applicable to the resources management program.

MILITARY SCIENCE MINOR (19 HOURS)

MSL 3301  (3) Leadership and Problem Solving
MSL 3302  (3) Leadership and Ethics
MSL 3304 (1) Leadership Lab
MSL 3305 (1) Leadership Lab
MSL 4401 (3) Leadership and Management
MSL 4402 (3) Officership
MSL 4404 (1) Leadership Lab
MSL 4405 (1) Leadership Lab

Select a three-hour military history course approved by the professor of military science.

PHYSICAL SCIENCE MINOR (19-20 HOURS)

CHM 1142  (3) General Chemistry I
CHM L142 (1) General Chemistry I Lab
CHM 1143  (3) General Chemistry II
CHM L143 (1) General Chemistry II Lab

Select one series:
PHY 2252  (3) General Physics I
PHY L252 (1) General Physics I Lab
PHY 2253  (3) General Physics II
PHY L253 (1) General Physics II Lab

or
PHY 2262  (3) Physics I with Calculus
PHY L262 (1) Physics I with Calculus Lab
PHY 2263 (3) Physics II with Calculus
PHY L263 (1) Physics II with Calculus

Select an upper-level course in chemistry or physics (three to four semester hours).

PHYSICS MINOR (19 HOURS)

PHY 4410  (3) Modern Physics
PHY L410  (1) Modern Physics Lab
PHY 4420 (3) Mechanics

Select one series:
PHY 2252  (3) Gen. Physics I
PHY L252 (1) Gen. Physics Lab I
PHY 2253  (3) Gen. Physics II
PHY L253 (1) Gen. Physics Lab II

or
PHY 2262  (3) Physics I Calculus
PHY L262 (1) Physics I with Calculus Lab
PHY 2263 (3) Physics II with Calculus
PHY L263 (1) Physics II with Calculus Lab

Select an additional four hours of adviser-approved, upper-level physics courses.

MATHEMATICS MINOR (18 HOURS)

MTH 1125  (4) Calculus I
MTH 1126  (4) Calculus II
MTH 2227  (4) Calculus III
MTH 3331 (3) Linear Algebra

Select an additional three hours of math courses at the 3000 level and above, other than those courses whose catalog description declares that they do not count toward the major or minor.
**POLITICAL SCIENCE MAJOR (36 HOURS)**

**Area V Requirements**
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation
- POL 2241 (3) American National Government or placement in POL 2240
- POL 2260 (3) World Politics

**Major Requirements**
- POL 3300 (3) Foundations of Political Science
- POL 3330 (3) Political Theory

Select one of the following concentrations:

**American Politics Concentration:**
Select 15 hours from the following:
- POL 3340 (3) U.S. Government – Executive Branch
- POL 3341 (3) U.S. Government – Legislative Branch
- POL 3342 (3) U.S. Government – Judicial Branch
- POL 3343 (3) American Political Processes
- POL 3355 (3) Southern Politics
- POL 3364 (3) State and Local Politics
- POL 4422 (3) Public Policy Making
- POL 4423 (3) American Foreign Policy to 1920
- POL 4424 (3) Contemporary American Foreign Policy
- POL 4420 (3) Constitutional Law
- POL 4471 (3) Intergovernmental Relations

Select an additional 15 hours of upper-level (3000-4000) political science courses, as approved by your academic adviser.

**International Politics Concentration:**
- POL 3351 (3) International Relations
- POL 4410 (3) International Political Economy
- POL 4433 (3) Comparative Government

Select six hours from the following:
- POL 4415 (3) International Conflict
- POL 4423 (3) American Foreign Policy to 1920
- POL 4424 (3) Contemporary American Foreign Policy
- POL 4432 (3) Comparative Public Policy
- POL 4445 (3) Inter-American Relations
- POL 4450 (3) Latin American Politics
- POL 4452 (3) International Law
- POL 4460 (3) Intercultural Relations
- POL 4465 (3) Politics of the Developing World
- POL 4466 (3) Middle Eastern Politics
- POL 4467 (3) Asian Politics
- POL 4470 (3) European Politics
- POL 4474 (3) Terrorism and Political Violence
- POL 4476 (3) Politics of Southeast Asia

Select an additional 15 hours of upper-level (3000-4000) political science courses, as approved by your academic adviser.

**Public Administration Concentration:**
Select 15 hours from the following:
- POL 3364 (3) State and Local Politics
- POL 4421 (3) Introduction to Public Administration
- POL 4422 (3) Public Policy Making
- POL 4451 (3) Public Personnel Administration
- POL 4432 (3) Comparative Public Policy
- POL 4453 (3) Bureaucratic Politics
- POL 4471 (3) Intergovernmental Relations
- POL 4472 (3) Administrative Law

Select an additional 15 hours of upper-level political science courses, as approved by your academic adviser.

**POLITICAL SCIENCE MINOR (18 HOURS)**
- POL 3300 (3) Foundations of Political Science
- POL 3330 (3) Introduction to Political Theory

Select an additional 12 hours of upper level courses, as approved by your academic adviser.

**SOCIAL SCIENCE EDUCATION**
Students seeking Alabama teacher certification should complete the social science major with a general social science concentration and select education as a second major. Students should consult their education advisers concerning all certification requirements and with their academic discipline adviser for requirements in the major.

**SOCIAL SCIENCE MAJOR (36 HOURS)**

**Specialized General Studies Requirements**

**AREA IV**
NOTE: Social Science majors with concentrations in anthropology, geography, or sociology should take Area IV electives appropriate for their concentration.

**Requirements for the Major**
- SS 3375 (3) Introduction to Social Scientific Inquiry
- SS 3376 (3) Application of Social Scientific Inquiry
- SS 4498 (3) Social Science Theory
- SS 4499 (3) Senior Seminar

Select one of the five following concentrations:

**Anthropology Concentration:**
- ANT 3310 (3) Cultural Anthropology
- ANT 3311 (3) Physical Anthropology

Select at least 18 hours of additional 3000/4000-level anthropology courses as approved by your faculty adviser.

**General Social Science Concentration:**
Select at least 24 hours of additional 3000/4000-level courses from anthropology, economics, geography, history, political science, psychology or sociology (six hours may be used from ECO 2251, ECO 2252, GEO 2210, ANT 2200, POL 2260 [World Politics], or SOC 2230) in at least three disciplines.
Geography Concentration:
GEO 3300 (3) Principles of Physical Geography
GEO 3301 (3) Principles of Cultural Geography

Select at least 18 hours of additional 3000/4000-level courses as approved by your faculty adviser:

Leadership Concentration:
LDR 1100 (3) Introduction to Leadership
LDR 4400 (3) Leadership Seminar*
*L Requires approval of the director of the Institute of Leadership Development

Select an additional 18 hours from the following:
AS 3312 (3) Air Force Leadership Studies I
AS 3313 (3) Air Force Leadership Studies II
COM 3345 (3) Group Discussion and Leadership
HIS 4415 (3) Contemporary America
MGT 3371 (3) Principles of Management and Organizational Behavior
MGT 3375 (3) Human Resources Management
MSL 2202 (2) Leadership and Teamwork
MSL 2204 (1) Leadership Lab
POL 4422 (3) Public Policy Making
POL 3351 (3) Foundations of International Relations
PSY 4410 (3) Business and Industrial Psychology
SOC 3301 (3) Social Change in the Information Age
SOC 3302 (3) Small Groups

Sociology Concentration:
Select at least 24 hours of additional 3000/4000-level sociology courses as approved by your faculty adviser.

SOCIAL SCIENCE MINOR: GENERAL SOCIAL SCIENCE (18 HOURS)
SS 4498 (3) Social Science Theory

Select an additional 15 hours from at least three of the following: anthropology, economics, geography, history, political science, psychology, social science, or sociology. At least 12 hours must be 3000/4000 level.

SOCIOLOGY MAJOR (36 HOURS)
Area IV Requirements
SOC 2275 (3) Introduction to Sociology

Area V Requirements
IS 2241 (3) Computer Concepts and Applications
TROY 1101 (1) University Orientation
SOC 2280 (3) Social Problems in Contemporary Society

Requirements for the Major
SS 3375 (3) Introduction to Social Science Inquiry
SS 3376 (3) Application of Social Scientific Inquiry
SOC 4420 (3) Sociological Theory
SS 4499 (3) Senior Seminar

Select an additional 24 hours of approved upper-level sociology courses.

SOCIOLOGY MINOR (18 HOURS)
Select 18 hours of approved, upper-level Sociology courses. SOC 2280 may be applied toward the minor.

SURVEYING AND GEOMATICS SCIENCES PROGRAM (59 HOURS)
Area II Requirements
ART 2201 (3) Introductory Drawing

Select one of the following courses:
DRA 2200 (2) Introduction to Drama
MUS 1131 (2) Music Appreciation

Select remaining Area II courses as specified in the General Studies section of this catalog.

Area III Requirements
BIO 1100 (3) Principles of Biology
BIO L100 (1) Principles of Biology Lab
MTH 1125 (4) Calculus I

Select a physics course/lab combination:
PHY 2252 (3) General Physics I
PHY L252 (1) General Physics I Laboratory
or
PHY 2262 (3) Physics I with Calculus
PHY L262 (1) Physics I with Calculus Laboratory

Area IV Requirements
ECO 2251 (3) Principles of Macroeconomics
ECO 2252 (3) Principles of Microeconomics
HIS 1111 (3) U.S. History to 1877
HIS 1112 (3) U.S. History since 1877

Area V Requirements
CS 2250 (3) Computer Science I
IS 2241 (3) Computer Concepts and Applications
MTH 1126 (4) Calculus II
MTH 2210 (3) Applied Statistics
TROY 1101 (1) University Orientation

Select a physics course/lab combination:
PHY 2253 (3) General Physics II
PHY L253 (1) General Physics II Laboratory
or
PHY 2263 (3) Physics II with Calculus
PHY L263 (1) Physics II with Calculus Laboratory

Program Requirements
GEM 1100 (2) Computer-Aided Drafting
GEM L100 (2) Computer-Aided Drafting Lab
GEM 2220 (3) Basics of Surveying
GEM L220 (1) Basics of Surveying Lab
GEM 3309 (3) Land Parcel Admin & Law
GEM L309 (1) Land Parcel Admin & Law Lab
GEM 3310  (3)  Land Surveying Practice
GEM L310  (1)  Boundary Retracement Seminar
GEM 3330  (3)  Advanced Measurement Analysis
GEM L330  (1)  Advanced Measurement Analysis Lab
GEM 3366  (3)  Photogrammetry and Remote Sensing
GEM L366  (1)  Photogrammetry and Remote Sensing Lab
GEM 3370  (3)  Geodesy & Geodetics
GEM L370  (1)  Geodesy & Geodetics Lab
GEM 3379  (3)  Introduction to Least Squares Adjustment
GEM L379  (1)  Introduction to Least Squares Adjustment Lab
GEM 3390  (3)  Introduction to GIS
GEM L390  (1)  Introduction to GIS Lab
GEM 3391  (3)  Applications of GIS
GEM L391  (1)  Applications of GIS Lab
GEM 4405  (3)  Route & Construction Surveying
GEM L405  (1)  Route & Construction Surveying Lab
GEM 4407  (3)  Land Development
GEM L407  (1)  Land Development Lab
GEM 4409  (3)  Hydrology
GEM L409  (1)  Hydrology Lab
GEM 4410  (3)  Introduction to Global Positions
GEM L410  (1)  Introduction to Global Positions Lab
GEM 4490  (1)  Geomatics Capstone

Select two hours below:
GEM 4499  (2)  Geomatics/GIS Projects

or

GEM 3395  (1)  Cooperative Work Experience I, and
GEM 4496  (1)  Cooperative Work Experience II