AEROSPACE STUDIES MINOR (18 HOURS)

AS 3312   (3)  Air Force Leadership Studies I
AS 3313   (3)  Air Force Leadership Studies II
AS 4412   (3)  National Security Affairs/Preparation for Active Duty I
AS 4413   (3)  National Security Affairs/Preparation for Active Duty II

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)

ANT 3310 (3) Cultural Anthropology
ANT 3311 (3) Physical Anthropology

Select at least 12 hours of additional 3000/4000-level anthropology courses as approved by your faculty adviser.

ARCHIVAL STUDIES MINOR (18 HOURS)

HIS 3360  (3)  Introduction to Archives: Theory and Issues
HIS 3362  (3)  Archival Methods and Practice
HIS 4472  (3)  Records Management
HIS 4473  (3)  Archives Practicum

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 Complex Societies

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
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
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 Apps.
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

Major Requirements
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

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.

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.
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
- **BIO 4448** (3) Mammalogy
- **BIO L448** (1) Mammalogy Lab
- **BIO 4471** (3) Parasitology
- **BIO L471** (1) Parasitology Lab

Select one ecology/environmental course with its corresponding lab:
- **BIO 2202** (3) Principles of Environmental Science
- **BIO L202** (1) Principles of Environmental Science 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

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

### BIOLGY MINOR (18-20 HOURS)

Lectures and the corresponding labs must be taken together:
- **BIO 1101** (3) Organismal Biology
- **BIO L101** (1) Organismal Biology Lab
- **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

Select 2-4 additional semester hours of approved upper-level (3300 or above) biology courses with corresponding labs.

### BIOLGY PROGRAM (55 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**
- **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 L143** (1) General Chemistry II Lab

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

**General Physics I**
- **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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Name</th>
</tr>
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<tr>
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<td>General Ecology</td>
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<tr>
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<td>1</td>
<td>General Ecology Lab</td>
</tr>
<tr>
<td>BIO 3320</td>
<td>3</td>
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<td>BIO 3372</td>
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<td>Microbiology Lab</td>
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<td>CHM 3342</td>
<td>3</td>
<td>Organic Chemistry I</td>
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<td>Organic Chemistry I Lab</td>
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<tr>
<td>CHM 3343</td>
<td>3</td>
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<td>Organic Chemistry II Lab</td>
</tr>
<tr>
<td>MTH 2210</td>
<td>3</td>
<td>Applied Statistics</td>
</tr>
</tbody>
</table>

Select one of the four concentrations shown below (cell and molecular biology, general biology, ecology and field biology, or medical technology):

- **Cell and Molecular Biology Concentration**
  - BIO 3347  (3) Human Anatomy and Physiology I Lab
  - BIO 3348  (3) Human Anatomy and Physiology II Lab
  - BIO 4478  (3) Cell Biology
  - BIO L478  (1) Cell Biology Lab
  - BIO 4482  (3) Molecular Biology
  - BIO L482  (1) Molecular Biology Lab

Select 16 hours (four lectures with labs) from the courses listed below:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
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<td>BIO 4416</td>
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<td>Microbial Ecology</td>
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<td>BIO 4430</td>
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<td>Applied Genetics</td>
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<td>Applied Genetics Lab</td>
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<tr>
<td>BIO 4451</td>
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<tr>
<td>BIO 4471</td>
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<td>BIO 4480</td>
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<td>Histology</td>
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<td>BIO L480</td>
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<tr>
<td>CHM 3352</td>
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<td>Biochemistry</td>
</tr>
<tr>
<td>CHM L352</td>
<td>1</td>
<td>Biochemistry Lab</td>
</tr>
</tbody>
</table>

- **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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 3307</td>
<td>3</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIO L307</td>
<td>1</td>
<td>Invertebrate Zoology Lab</td>
</tr>
<tr>
<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>
</tbody>
</table>

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).

Select eight semester hours of upper-level general electives.

- **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 3382 (3) Immunology
- BIO L382 (1) Immunology Lab
- BIO 3386 (3) Hematology
- BIO L386 (1) Hematology 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

<table>
<thead>
<tr>
<th>Area III (12 Hours)</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1100 (3)</td>
<td>Principles of Biology</td>
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<tr>
<td>BIO L100 (1)</td>
<td>Principles of Biology Lab</td>
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<tr>
<td>CHM 1142 (3)</td>
<td>General Chemistry I</td>
</tr>
<tr>
<td>CHM L142 (1)</td>
<td>General Chemistry I Lab</td>
</tr>
<tr>
<td>MTH 1125 (4)</td>
<td>Calculus I</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Area V (20 Hours)</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 1101 (3)</td>
<td>Organismal Biology</td>
</tr>
<tr>
<td>BIO L101 (1)</td>
<td>Organismal Biology Lab</td>
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<tr>
<td>CHM 1143 (3)</td>
<td>General Chemistry II</td>
</tr>
<tr>
<td>CHM L143 (1)</td>
<td>General Chemistry II Lab</td>
</tr>
<tr>
<td>IS 2241 (3)</td>
<td>Computer Concepts and Applications</td>
</tr>
<tr>
<td>TROY 1101 (1)</td>
<td>University Orientation</td>
</tr>
</tbody>
</table>

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
- 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
CHEMISTRY MAJOR (37 HOURS)

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

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 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

Chemistry Core (34 Hours)

CHM L1143 (3) General Chemistry II
CHM L143 (1) General Chemistry II Lab

CHEMISTRY MINOR (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
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

Select four additional hours of advanced chemistry courses, such as:

CHM 2242/L242 Analytical Chemistry and Lab
CHM 3352/L352 Biochemistry and Lab

Note: The chemistry minor requires 20 hours in addition to the hours required for a major in another discipline. For example, the biology major requires Organic Chemistry II and lab, so a student majoring in biology would need to select eight, not four, additional hours of advanced chemistry courses.
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 3381 (3) Physical Chemistry I
CHM L381 (1) Physical Chemistry I Lab
CHM 4444 (3) Advanced Inorganic Chemistry
CHM 4445 (3) Instrumental Analysis
CHM L445 (1) Instrumental Analysis Lab
MTH 1126 (4) Calculus II

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 3382 (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)

Specialized General Studies Requirements

Area III
BIO 1101 (3) Principles of Biology
BIO L101 (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
BIO 1101 (3) Organismal Biology
BIO L101 (1) Organismal Biology Lab
CHM 1143 (3) General Chemistry II
CHM L143 (1) General Chemistry II Lab
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

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
PHY L410 (1) Modern Physics Lab
SCI 3335 (3) Physical Geology
SCI L335 (1) Physical Geology Lab
SCI 3336 (3) Principles of Astronomy

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 1 botany course with corresponding lab (four hours).
Select 1 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 8 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 8 hours of upper level physics or chemistry courses approved by the academic adviser.
### COMPUTER SCIENCE MINOR (18 HOURS)

<table>
<thead>
<tr>
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<th>Hours</th>
<th>Title</th>
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<td>CS 2244</td>
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</tr>
<tr>
<td>CS 2260</td>
<td>3</td>
<td>Computer Programming II</td>
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</tbody>
</table>

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

### COMPUTER SCIENCE PROGRAM (49 HOURS)

#### General Studies Requirements

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

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

**Area V**
- CS 2244 (3) Computer Programming I
- TROY 1101 (1) University Orientation

#### Required Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MTH 1126</td>
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<td>MTH 2215</td>
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<td>Applied Discrete Mathematics</td>
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<tr>
<td>CS 2260</td>
<td>3</td>
<td>Computer Programming II</td>
</tr>
<tr>
<td>CS 2261</td>
<td>3</td>
<td>Foundations of Computer Science</td>
</tr>
<tr>
<td>CS 3323</td>
<td>3</td>
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</tr>
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<td>CS 3329</td>
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<td>Analysis of Algorithms</td>
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<tr>
<td>CS 3332</td>
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<tr>
<td>CS 3372</td>
<td>3</td>
<td>Formal Languages and the Theory of Computation</td>
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<tr>
<td>CS 3357</td>
<td>3</td>
<td>Logical Structures of Computer Design</td>
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<tr>
<td>CS 3365</td>
<td>3</td>
<td>Intro to Computer Organization and Architectures</td>
</tr>
<tr>
<td>CS 3370</td>
<td>3</td>
<td>Nature of Programming Languages</td>
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<tr>
<td>CS 4420</td>
<td>3</td>
<td>Introduction to Database Management Systems</td>
</tr>
<tr>
<td>CS 4445</td>
<td>3</td>
<td>Data Communication and Networking</td>
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<tr>
<td>CS 4448</td>
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<td>Operating Systems</td>
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Select two of the following:

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<td>CS 3325</td>
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<td>Operations Research</td>
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<td>CS 3331</td>
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<td>Fundamentals of Artificial Intelligence</td>
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<td>CS 3339</td>
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<td>Fundamentals of Object-Oriented Programming</td>
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<td>CS 4401</td>
<td>3</td>
<td>Special Topics in AI</td>
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<tr>
<td>CS 4443</td>
<td>3</td>
<td>Web Based Software Development</td>
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<td>CS 4447</td>
<td>3</td>
<td>Systems Analysis and Design</td>
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<td>CS 4451</td>
<td>3</td>
<td>Computer Security and Reliability</td>
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<tr>
<td>CS 4461</td>
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<tr>
<td>CS 4462</td>
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### 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**
- IS 2241 (3) Computer Concepts and Applications
- MTH 2215 (3) Applied Discrete Mathematics
- TROY 1101 (1) University Orientation

#### Major Requirements

<table>
<thead>
<tr>
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<td>CS 2265</td>
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<td>Advanced Programming I</td>
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<td>CS 3330</td>
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<td>CS 4420</td>
<td>3</td>
<td>Introduction to Database Management Systems</td>
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<td>CS 4443</td>
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<td>Data Communications and Networking</td>
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<td>CS 4447</td>
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<td>Systems Analysis and Design</td>
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<td>CS 4448</td>
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<td>Computer Security</td>
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<td>CS 4495</td>
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<td>Special Topics in Computer Science</td>
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### COMPUTER SCIENCE A.S. DEGREE (60 HOURS)

#### Associate of Science Degree

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

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

**Area II**

Select one:

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<tr>
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<td>World Literature before 1660</td>
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<td>ENG 2206</td>
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<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>
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<td>ENG 2244</td>
<td>3</td>
<td>British Literature before 1785</td>
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<td>ENG 2245</td>
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<td>British Literature after 1785</td>
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Select one:

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<tr>
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<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>
Area III
Select one:
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 IV
MTH 1125 (3) 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 V
COM 1110 (3) Effective Communication
(Montgomery campus only)
IS 2241 (3) Computer Concepts and Applications
TROY 1101 (1) University Orientation

Area VI
CS 2244 (3) Computer Programming I
CS 2260 (3) Computer Programming II
CS 2261 (3) Foundations of Computer Science Concepts
CS 3323 (3) Data Structures
CS 3329 (3) Analysis of Algorithms
CS 3332 (3) Software Engineering I
CS 3337 (3) Logical Structures
MTH 2215 (3) Applied Discrete Mathematics

Area VII
Select 7-10 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.
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 12 additional hours of advanced (2000) or upper-level criminal justice courses, as approved by adviser.

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 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)
Specialized General Studies Requirements
Area V
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
Select an additional 33 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
ENG 4488  (3) Seminar in Professional Writing Portfolio Design
ENG 4490  (3) Professional Writing Internship
Select an additional four courses:
ENG 3320  (3) Introduction to Linguistics
ENG 3342  (3) Advanced Composition
ENG 3351  (3) Creative Writing I
ENG 3352  (3) Creative Writing II
ENG 4400  (3) Selected Topics
ENG 4405  (3) History of English Language
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
or
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 4427 (3) Contemporary 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 English Language
ENG 4419 (3) Advanced Writing
ENG 4488 (3) Seminar in Professional Writing Portfolio Design
ENG 4490 (3) Professional Writing Internship

ENGLISH—LANGUAGE ARTS PROGRAM (139 HOURS)

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

SPH 2241 (3) Fundamentals of Speech
DRA 2200 (2) Introduction to Drama
ENG 2205 (3) World Literature before 1660
ENG 2206 (3) World Literature after 1660

Select one of the following:

ART 1133 (2) Visual Arts
MUS 1131 (2) Music Appreciation

Area V

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 Apps.
JRN 1101 (3) Intro. to Mass Communications
TROY 1101 (1) University Orientation

Required Courses for Language Arts
DRA 2211 (1) Theatre for Youth
DRA 2245 (1) Stagecraft Lab
DRA 3301 (2) Acting I
DRA 4451 (3) Directing I
ENG 3341 (3) Advanced Grammar
ENG 3371 (3) Literature for Young Adults
ENG 4405 (3) History of Language
ENG 4478 (3) Theory and Practice of Composition: Writing and Learning Across the Curriculum
JRN 3326 (3) Advising Student Publications
SPH 3342 (3) Argumentation and Debate
SPH 4441 (2) Oral Interpretation

Select twelve 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 MINOR (18-20 SEMESTER HOURS)

BIO 2202 (3) Principles of Environmental Science
BIO L202 (1) Principles of Environmental Science Lab
BIO 4428 (3) Environmental Pollution and Control
BIO L428 (1) Environmental Pollution and Control Lab

Select 12 hours from the following:
BIO 4451 (3) Toxicology
BIO L451 (1) Toxicology Lab
BIO 4452 (3) Industrial Hygiene
BIO L452 (1) Industrial Hygiene Lab
BIO 4479 (3) Environmental Assessment
BIO L479 (1) Environmental Assessment Lab
BIO 4420 (4) Field Vertebrate Zoology (combined lecture and lab)
BIO 4425 (4) Field Botany or BIO 4402 (combined lecture and lab)
BIO 4476 (1-4) Special Topics (combined lecture and lab)
BIO 4491 (1-4) Guided Independent Research (combined lecture and lab)
CHM 3350 (3) Principles of Physical Chemistry
CHM L350 (1) Principles of Physical Chemistry Lab
CHM 3352 (3) Biochemistry
CHM L352 (1) Biochemistry Lab
**ENVIRONMENTAL SCIENCE PROGRAM (55 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**
- 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 L143 (1) General Chemistry II Lab

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

**Program Requirements**
- 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

**Environmental Science Core (32 semester hours):**
- BIO 2202 (3) Principles of Environmental Science
- BIO L202 (1) Principles of Environmental Science Lab
- BIO 4428 (3) Environmental Pollution and Control
- BIO L428 (1) Environmental Pollution and Control Lab
- BIO 4413 (3) Limnology
- BIO L413 (1) Limnology Lab
- BIO 4451 (3) Toxicology
- BIO L451 (1) Toxicology Lab
- BIO 4452 (3) Industrial Hygiene
- BIO L452 (1) Industrial Hygiene Lab

- BIO 4479 (3) Environmental Assessment
- BIO L479 (1) Environmental Assessment Lab

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

- BIO 4488/4489/4490 (1-8) Internship in Environmental Science

**GENERAL EDUCATION A.A. DEGREE (60 HOURS)**

**Associate of Arts Degree**

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

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

**Area II**

Select one:
- 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 1875
- ENG 2245 (3) British Literature after 1875

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

Select six hours of one foreign language.

**Area III**

Select one:
- 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 IV**

Select one:
- MTH 1102 (3) Finite Mathematics
- MTH 1112 (3) College Algebra

Select one science course and corresponding lab:
- BIO 1100 (3) Principles of Biology
- BIO L110 (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 V
- COM 1110 (3) Effective Communication (Montgomery campus only)
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation

Area VI
Select any minor or area of concentration.

Area VII
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 bulletin for additional information regarding associate degrees.

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

Area II
Select one:
- 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 before 1785

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

Area III
Select one:
- 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 IV
Select one:
- MTH 1102 (3) Finite Mathematics
- MTH 1112 (3) College Algebra

Select one science course and corresponding lab:
- BIO 1100 (3) Principles of Biology
- BIO L110 (1) Principles of Biology Lab
- SCI 2233 (3) Physical Science
- SCI L233 (1) Physical Science Lab
- SCI 2234 (3) Earth and Space Science

Area V
- COM 1110 (3) Effective Communication (Montgomery campus only)
- IS 2241 (3) Computer Concepts and Applications
- TROY 1101 (1) University Orientation

Area VI
Select any minor or area of concentration.

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

GEOGRAPHIC INFORMATION SYSTEMS (GIS) MINOR (18 HOURS)

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 2260 (3) Computer Programming II
- CS 3330 (3) Data Structures and Algorithms
- CS 3339 (3) Fundamentals of Object-Oriented Programming

GIS Database Development
- CS 2260 (3) Computer Programming II
- CS 3323 (3) Data Structures
- CS 4420 (3) Introduction to Database Systems
**GEOGRAPHY MINOR (18 HOURS)**

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<tr>
<td>GEO 3301</td>
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<td>Principles of Cultural Geography</td>
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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.

**GEOMATICS MAJOR (47 HOURS)**

**Specialized General Studies Requirements**

**Area II**

Select the following in lieu of ART 1133:

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

**Area III**

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<td>PHY 2252</td>
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**Area IV**

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<td>ECO 2252</td>
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Select one history sequence as specified in the General Studies section of this catalog.

**Area V**

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<td>PHY 2253</td>
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**Major Requirements**

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<tr>
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<tr>
<td>GEO 3309</td>
<td>3</td>
<td>Land Parcel Administration and Law</td>
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<td>GEM L309</td>
<td>1</td>
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</tr>
<tr>
<td>GEO 3310</td>
<td>3</td>
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<tr>
<td>GEM 3330</td>
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<tr>
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<td>3</td>
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<tr>
<td>GEM 3370</td>
<td>3</td>
<td>Geodesy and Geodesics</td>
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<td>1</td>
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</tr>
<tr>
<td>GEM 3379</td>
<td>3</td>
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<tr>
<td>GEM 3390</td>
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<tr>
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<tr>
<td>GEM 4405</td>
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<tr>
<td>GEM 4407</td>
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<tr>
<td>GEM 4499</td>
<td>2</td>
<td>Geomatics/GIS Projects</td>
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</table>

**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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Title</th>
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<tbody>
<tr>
<td>POL 2241</td>
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</tr>
<tr>
<td>SOC 2275</td>
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<td>Introduction to Sociology</td>
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Select one six-hour sequence:

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</thead>
<tbody>
<tr>
<td>HIS 1101</td>
<td>3</td>
<td>Western Civilization I, or placement</td>
</tr>
<tr>
<td>HIS 1102</td>
<td>3</td>
<td>Western Civilization II, or place-</td>
</tr>
<tr>
<td>HIS 1122</td>
<td>3</td>
<td>World History to 1500</td>
</tr>
<tr>
<td>HIS 1123</td>
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<td>World History from 1500</td>
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**Area V**

<table>
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<th>Title</th>
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</thead>
<tbody>
<tr>
<td>GEO 2210</td>
<td>3</td>
<td>World Regional Geography</td>
</tr>
<tr>
<td>HIS 1111</td>
<td>3</td>
<td>U.S. to 1877, or placement</td>
</tr>
<tr>
<td>HIS 1112</td>
<td>3</td>
<td>U.S. since 1877, or placement</td>
</tr>
<tr>
<td>IS 2241</td>
<td>3</td>
<td>Computer Concepts and Apps.</td>
</tr>
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**Requirements for the Major**

<table>
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<tr>
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<th>Hours</th>
<th>Title</th>
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<tbody>
<tr>
<td>HIS 3375</td>
<td>3</td>
<td>Research and Methodology</td>
</tr>
<tr>
<td>HIS 4490</td>
<td>3</td>
<td>Senior Seminar</td>
</tr>
</tbody>
</table>

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 9 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 9 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**
  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**
  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)**

- 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.

**HUMANITIES MINOR (18 HOURS)**

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

**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

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
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<tbody>
<tr>
<td>IS 2241</td>
<td>(3)</td>
<td>Computer Concepts and Apps.</td>
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<tr>
<td>TROY 1101</td>
<td>(1)</td>
<td>University Orientation</td>
</tr>
<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>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):

- **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 L252 (1) General Physics I Lab**
- **PHY 2263 (3) Physics II with Calculus**
- **PHY L253 (1) General Physics II Lab**

### Requirements for the Major

**Lectures and the corresponding labs must be taken together.**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BIO 2229</td>
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<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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<td>BIO L320</td>
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<td>Genetics Lab</td>
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<tr>
<td>BIO 3372</td>
<td>(3)</td>
<td>Microbiology</td>
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<tr>
<td>BIO L372</td>
<td>(1)</td>
<td>Microbiology Lab</td>
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<td>CHM 3342</td>
<td>(3)</td>
<td>Organic Chemistry I</td>
</tr>
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<td>CHM L342</td>
<td>(1)</td>
<td>Organic Chemistry I Lab</td>
</tr>
<tr>
<td>CHM 3343</td>
<td>(3)</td>
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<td>CHM L343</td>
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<td>Organic Chemistry II Lab</td>
</tr>
<tr>
<td>MTH 2210</td>
<td>(3)</td>
<td>Applied Statistics</td>
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</table>

**Troy University Courses:**

<table>
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<tr>
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<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BIO 3307</td>
<td>(3)</td>
<td>Invertebrate Zoology</td>
</tr>
<tr>
<td>BIO L307</td>
<td>(1)</td>
<td>Invertebrate Zoology Lab</td>
</tr>
</tbody>
</table>

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).

Select eight semester hours of upper-level general electives other than biology.

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### 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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>BIO 1100</td>
<td>(3)</td>
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<tr>
<td>BIO L110</td>
<td>(1)</td>
<td>Principles of Biology Lab</td>
</tr>
<tr>
<td>MTH 1125</td>
<td>(4)</td>
<td>Calculus I</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TROY 1101</td>
<td>(1)</td>
<td>University Orientation</td>
</tr>
<tr>
<td>MTH 2220</td>
<td>(3)</td>
<td>Computer Programming for Mathematics</td>
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**Requirements for the Major**

<table>
<thead>
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<th>Course</th>
<th>Credits</th>
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<tr>
<td>MTH 1126</td>
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<tr>
<td>MTH 2227</td>
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<td>Calculus III</td>
</tr>
<tr>
<td>MTH 3311</td>
<td>(3)</td>
<td>Differential Equations</td>
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<td>MTH 3318</td>
<td>(3)</td>
<td>Introduction to Advanced Mathematics</td>
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<tr>
<td>MTH 3331</td>
<td>(3)</td>
<td>Linear Algebra</td>
</tr>
<tr>
<td>MTH 4424</td>
<td>(3)</td>
<td>Real Analysis I</td>
</tr>
<tr>
<td>MTH 4441</td>
<td>(3)</td>
<td>Abstract Algebra I</td>
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</table>

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 9 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.
### MATHEMATICS MINOR (18 HOURS)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MTH 1125</td>
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<tr>
<td>MTH 1126</td>
<td>(4)</td>
</tr>
<tr>
<td>MTH 2227</td>
<td>(4)</td>
</tr>
<tr>
<td>MTH 3331</td>
<td>(3)</td>
</tr>
</tbody>
</table>

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.

### 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)

<table>
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<tr>
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<tbody>
<tr>
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<td>MSL 3302</td>
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<tr>
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<tr>
<td>MSL 3304b</td>
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<td>MSL 4401</td>
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<td>MSL 4402</td>
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<td>MSL 4404a</td>
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<td>MSL 4404b</td>
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Select a three-hour military history course approved by the professor of military science.

### PHYSICAL SCIENCE MINOR (19-20 HOURS)

<table>
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<td>CHM L142</td>
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<tr>
<td>CHM 1143</td>
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<td>CHM L143</td>
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Select one series:

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<tr>
<td>PHY L252</td>
<td>(1)</td>
</tr>
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<td>PHY 2253</td>
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<td>PHY L253</td>
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or

<table>
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<th>Hours</th>
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<tbody>
<tr>
<td>PHY 2262</td>
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<tr>
<td>PHY 2263</td>
<td>(3)</td>
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<tr>
<td>PHY L263</td>
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</table>

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

### PHYSICS MINOR (19 HOURS)

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Select one series:

<table>
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or

<table>
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<th>Hours</th>
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</thead>
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<tr>
<td>PHY L263</td>
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</table>

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

### POLITICAL SCIENCE MAJOR (36 HOURS)

**Specialized General Studies Requirements**

**Area V**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>IS 2241</td>
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<tr>
<td>TROY 1101</td>
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<td>POL 2241</td>
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**Major Requirements**

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<tr>
<td>POL 3330</td>
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Select one of the following concentrations:

**American Politics Concentration**

Select 15 hours from the following:

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<td>POL 3342</td>
<td>(3)</td>
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<tr>
<td>POL 3343</td>
<td>(3)</td>
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<td>POL 3344</td>
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<td>POL 4422</td>
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<td>POL 4423</td>
<td>(3)</td>
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<tr>
<td>POL 4424</td>
<td>(3)</td>
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</table>

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

**International Politics Concentration**

<table>
<thead>
<tr>
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<tr>
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<td>POL 4433</td>
<td>(3)</td>
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Select six hours from the following:

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<tbody>
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<td>POL 4415</td>
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<td>POL 4450</td>
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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 4470 (3)  European Politics
POL 4474 (3)  Political Violence and Terrorism
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
POL 4476 (3)  Politics of Southeast Asia

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 MAJOR (36 HOURS)

Specialized General Studies Requirements

AREA IV (12 SH)
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 concentration:

· Concentration 1: Anthropology
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.

· Concentration 2: General Social Science
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.

· Concentration 3: Geography
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.

· Concentration 4: Leadership
LDR 1100 (3)  Introduction to Leadership
LDR 4400 (3)  Leadership Seminar*
*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
HIS 4415 (3)  Contemporary America
MGT 3371 (3)  Principles of Management and Organizational Behavior
MGT 3375 (3)  Human Resources Management
MS 2202 (2)  Leadership, Management and Tactics
MS 2204 (1)  Leadership Lab
POL 3322 (3)  Public Policy Making
POL 3351 (3)  Foundations of International Relations
POL 4421 (3)  Introduction to Public Administration
PSY 4410 (3)  Business and Industrial Psychology
SPH 3345 (3)  Group Discussion and Leadership
SOC 3301 (3)  Social Change in the Information Age
SOC 3302 (3)  Sociology of Small Groups

· Concentration 5: Sociology
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 or sociology. At least 12 hours must be 3000/4000 level.
### SOCIAL SCIENCE MINOR: LEADERSHIP (18 HOURS)

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<td>LDR 4400</td>
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<td>Leadership Seminar*</td>
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<td>SS 4498</td>
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<td>Social Science Theory</td>
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*Requires approval of the Director of the Institute of Leadership Development

Select an additional nine hours from the following:

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<td>SOC 3310</td>
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### SOCIOLOGY MAJOR (36 HOURS)

**Specialized General Studies Requirements**

**Area V**

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<td>TROY 1101</td>
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<td>ANT 2200</td>
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<td>SOC 2230</td>
<td>3</td>
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**Requirements for the Major**

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<td>SS 3376</td>
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Select an additional 27 hours of approved upper-level sociology courses.

### SOCIOLOGY MINOR (18 HOURS)

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<td>ANT 2200</td>
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<td>SOC 2230</td>
<td>3</td>
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Select an additional 12 hours of approved, upper-level sociology courses.