COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences is a diverse community of educators, students, and researchers from across the country and around the world who work together to advance the boundaries of human knowledge, foster critical thinking skills, promote intellectual inquiry, and develop an understanding of different human cultures necessary to become engaged global citizens.

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.

The College of Arts & Sciences is the university's largest and oldest; it teaches the most students, and provides the backbone for Troy University's educational and research missions. As a result, you will find a broad array of academic programs that will prepare you for careers in public and private sectors as well as post-graduate and professional schools. These programs emphasize the core values of a classic liberal arts education, as well as the skills and flexibility one will need to meet the challenges of the 21st-century workplace.

A degree from the College of Arts & Sciences is much more than preparation for a career—it is preparation for a complete, rich, and rewarding life.

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.

ACCELERATED LAW CURRICULUM (58 HOURS)

1. Students interested in the Accelerated Law Curriculum must complete the requirements for the General Social Science Concentration and the courses outlined in Area V of General Studies by the end of the third year of study at Troy University (or semester prior to attending partnered institution).
2. Students interested in the Accelerated Law Curriculum must meet the admission requirements and be accepted to a partnered institution. Students must take the LSAT exam as part of the admissions requirement.
3. Students must successfully complete 30 semester hours of law courses outlined by the partnered institution in order to receive Troy University credit.
4. Students are strongly recommended to take PHI 2204 Ethics and Modern World within Area II of General Studies.
5. Upon the successful completion of the designated 30 semester hours of courses at the partnered institution, students may be awarded a Bachelor of Science in Social Science with a minor in Legal Studies.

For additional information, interested students should see the chair of the Department of Social Science and interested students must meet with the Pre-Law Advisor.

Area V

IS 2241	(3)	Computer Concepts & Applications
TROY 1101	(1)	University Orientation

Requirements for the Major (15 hours)

SS 3375	(3)	Introduction to Social Science Inquiry
SS 3376	(3)	Statistical Applications of Social Science Inquiry
SS 3377	(3)	Spatial Applications of Social Science Inquiry
SS 4498	(3)	Social Science Theory
SS 4499	(3)	Senior Seminar

General Social Science Concentration:
Select at least 21 hours of additional 3000/4000-level courses from anthropology, economics, geography, history, political science, psychology, sociology criminal justice, or as approved by department chair. Six (6) hours may be used from ECO 2251, ECO 2252, GEO 2210, ANT 2200, POL 2241, or SOC 2275 in at least three disciplines.

Legal Studies Minor (Accelerated Law Curriculum)
Required Courses (9 hours)

LGL 2200	(3)	Introduction to Legal Studies
LGL 3300	(3)	Legal Research and Writing
LGL 4400	(3)	Seminar in Legal Studies

The remaining nine (9) hours of Legal Studies Minor will consist of courses successfully completed in Law School.

AIR FORCE ROTC/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.

**Students pursuing an Air Force ROTC Commission must also take the following Labs:*

AS L312	(1)	Leadership Laboratory I
AS L313	(1)	Leadership Laboratory II
AS L412	(1)	Leadership Laboratory I
AS L413	(1)	Leadership Laboratory II

ANTHROPOLOGY MAJOR (36 HOURS)

Area IV
Anthropology majors should take Area IV electives appropriate for their major.

Major Requirements:

ANT 3305	(3)	Introduction to Archaeology
ANT 3310	(3)	Cultural Anthropology
ANT 3311	(3)	Physical Anthropology
ANT 3340	(3)	Language in Culture and Society
ANT 4499	(3)	Anthropology Theory
SS 3376	(3)	Statistical Applications of Social Science Inquiry

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

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.

AVIATION OPERATIONS MINOR (18 HOURS)

Rotary Emphasis and Fixed Wing Emphasis – Equivalent credit toward the completion of the Aviation Operations minor/Rotary emphasis and the Aviation Operations minor/Fixed Wing emphasis may be earned through Federal Aviation Administration (FAA) certification and licensure in such areas as private pilot, commercial pilot and flight instruction.

For information regarding the Rotary emphasis and Fixed Wing emphasis of the Aviation Operations minor, contact the Dean of Undergraduate and First Year Studies in 117 Eldridge Hall, Troy Campus.

AVIATION OPERATIONS MINOR (18 HOURS)

Unmanned Aerial Systems Emphasis (18 hrs.)

Required Courses:

AFT 2200	(3)	Unmanned Aerial Systems Overview
AFT 2202	(3)	Principles of UAS Design
AFT 2204	(3)	Principles of UAS Sensors & Sensing Systems
AFT 2206	(3)	Human Factors In UAS Operations & Accidents
AFT 2208	(3)	Legal & Ethical Considerations for UAS Operations

Select 3 semester hours from the following:

AFT 2210	(3)	UAS Real World Applications
AFT 2212	(3)	UAS Piloting Familiarization

BACHELOR OF APPLIED SCIENCE: RESOURCE AND TECHNOLOGY MANAGEMENT MAJOR (36 HOURS)

Area III Requirements

SCI 2233	(3)	Physical Science
SCI L233	(1)	Physical Science Lab

Area IV Requirements

ECO 2251	(3)	Principles of Macroeconomics
ECO 2252	(3)	Principles of Microeconomics

Area V Requirements (24 hours)

TROY 1101	(1)	University Orientation
IS 2241	(3)	Computer Concepts & Applications
GEO 2210	(3)	World Regional Geography
POL 2260	(3)	World Politics
PSY 2200	(3)	General Psychology
SOC 2275	(3)	Introduction. to Sociology
SCI 2234	(3)	Earth and Space Science
SCI L234	(1)	Earth and Space Science Lab

Electives (5 hours)

RESOURCE & TECHNOLOGY MANAGEMENT MAJOR (36 HOURS)

Required Core courses (18 hours)

BIO 4465	(3)	Occupational Safety and Health
MKT 3300	(3)	Principles of Marketing
MGT 3300	(3)	Principles of Management
SCI 3365	(3)	Principles of Applied Science
SOC 3370	(3)	Society and Environment
SS 3375	(3)	Introduction To Social Science Inquiry

Select a minimum of 18 semester hours from the courses listed below:

BIO 4460	(3)	Critical Issues of Environmental Mgmt.
CJ 3335	(3)	Private & Public Security Administration
CS 3310	(3)	Foundations of Computer Science
PSY 4410	(3)	Business and Industrial Science
SCI 3366	(3)	Survey of Electronic Technology
SCI 3370	(3)	Toxic, Radioactive, & Hazardous Material
SCI 4450	(3)	Science in a Regulatory Environment
SOC 4413	(3)	Minorities in U.S. Social Structure

OR

Transfer of ***Specialized technical courses**. (not to exceed 18 semester hours.)

***Specialized technical courses.**

Credit will be awarded for specialized technical knowledge based upon American Council of Education (A.C.E.) credit recommendations or transfer work from regionally accredited (Southern Association of Colleges and Schools, Middle States Association of Colleges and Schools, etc.) post- secondary community college, or technical schools as approved by the Academic Council. Specializations are not available in fields of study that are offered through Troy University as majors, programs, or minors, e.g., nursing, computer science, information systems, or education. Exceptions to the use of a Troy University minor are the programs in Aviation Operations and Advanced Professional Flight. Program requirements for either minor may be used to satisfy the 18 hours of specialized technical courses.

Eligibility

Eligibility for enrollment in one of the applied science degree programs is dependent upon prior education and/or experience. Before enrollment in one of the programs, official documentation of prior learning must be submitted to determine eligibility. All post-secondary technical school transfer students must complete all courses required in the institution's curriculum and earn (if appropriate) a diploma or certificate before being granted admission into the resources management degree program. No additional credit will be awarded for the possession of a license (i.e., all credit awarded is based on documentation of training and evaluation leading to the issue of a license, not the mere possession of a license). All credit from the Community College of the Air Force (CCAF), accredited post secondary technical schools, and/or American Council on Education (ACE) recommendations will be considered junior college credit except where specifically recommended by ACE for upper-division credit. No credit will be awarded until six semester hours of academic credit has been earned at Troy University. At least 50 percent of the degree program must be traditional academic credit at the 3300/4400 level. Curriculum: The academic curricula taught by the university have been developed to supplement, not duplicate, the vocational/technical training or other experiential learning the individual may possess in a manner designed to provide these individuals greater career opportunities.

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.

BIOLOGY MAJOR (44 HOURS)

*Special Topics in Biology (BIO 4476), Guided Independent Studies (BIO 4491/4492) and Guided Independent Research (BIO 4493, 4494) may only be taken for a maximum of 6 semester 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 Requirements

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:

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 2220	(3)	Principles of Cell Biology
BIO L220	(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
BIO 4484	(1)	Senior Seminar in Biological & Environmental Sciences
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)	Introductory Statistics

Complete one botany course with its corresponding lab:

BIO 3325	(3)	Plant Form and Function
BIO L325	(1)	Plant Form and Function Lab
BIO 4425	(4)	Field Botany

Complete one zoology course with its corresponding lab:

BIO 3307	(3)	Invertebrate Zoology
BIO L307	(1)	Invertebrate Zoology Lab
BIO 4405	(3)	Entomology
BIO L405	(1)	Entomology Lab
BIO 4420	(4)	Field Vertebrate Zoology
BIO 4447	(3)	Ornithology
BIO L447	(1)	Ornithology Lab
BIO 4471	(3)	Parasitology
BIO L471	(1)	Parasitology Lab

Complete 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

Complete 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 3372	(3)	Microbiology
BIO L372	(1)	Microbiology 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 4451	(3)	Toxicology
BIO L451	(1)	Toxicology Lab
BIO 4480	(3)	Histology
BIO L480	(1)	Histology Lab
BIO 4482	(3)	Molecular Biology
BIO L482	(1)	Molecular Biology Lab

Complete one upper-level adviser-approved biology course and its corresponding lab.

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

Complete 10 to 12 additional semester hours of approved upper-level (3300 or above) biology courses with corresponding labs.

BIOLOGY PROGRAM (56 HOURS)

*****Special Topics in Biology (BIO 4476), Guided Independent Studies (BIO 4491/4492) and Guided Independent Research (BIO 4493, 4494) may only be taken for a maximum of 6 semester 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
BIO 1101	(3)	Organismal Biology
BIO L101	(1)	Organismal Biology Lab
CHM 1143	(3)	General Chemistry II
CHM L143	(1)	General Chemistry II Lab

Complete 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

BIO 2220	(3)	Principles of Cell Biology
BIO L220	(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
BIO 4484	(1)	Senior Seminar in Biological & Environment Sciences
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)	Introductory Statistics

Complete one of the five concentrations shown below (biomedical sciences, food safety, general 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

***Complete 16 hours from the courses listed below**. One upper*

level botany, ecology/environmental or zoology course with its corresponding lab may be used towards this requirement. The 16 hours chosen should be based on the student's future plans for employment, graduate school or professional school.

BIO 3340	(3)	Evolution
BIO 3382	(3)	Immunology
BIO L382	(1)	Immunology Lab
BIO 4414	(3)	Food Microbiology
BIO L414	(1)	Food Microbiology Lab
BIO 4416	(3)	Microbial Ecology
BIO L416	(1)	Microbial Ecology Lab
BIO 4451	(3)	Toxicology
BIO L451	(1)	Toxicology Lab
BIO 4471	(3)	Parasitology
BIO L471	(1)	Parasitology Lab
BIO 4476	(1-3)	Special Topics in Biology
BIO 4480	(3)	Histology
BIO L480	(1)	Histology Lab
BIO 4488/	(1-3)	Internship in Biological
OR		
4489/4490		Environmental Science
BIO 4491/92	(1-3)	Guided Independent Research
BIO 4493/94	(1-3)	Guided Independent Study
CHM 3352	(3)	Biochemistry
CHM L352	(1)	Biochemistry Lab

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
HSTM 4466	(3)	Restaurant Management
NSG 2211	(3)	Human Nutrition

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

BIO 3340	(3)	Evolution
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 4476	(1-3)	Special Topics in Biology*
BIO 4482	(3)	Molecular Biology
BIO L482	(1)	Molecular Biology Lab
BIO 4488/	(1-8)	Internship in the Biological
OR		
4489/4490		Environmental Sciences
BIO 4491/92	(3)	Guided Independent Research
BIO 4493/94	(3)	Guided Independent Study*
CHM 4455	(3)	Instrumental Analysis
CHM L455	(1)	Instrumental Analysis Lab
HSTM 3372	(3)	Hospitality Management
HSTM 4465	(3)	Hospitality Service

General Biology Concentration:

Complete one botany course with its corresponding lab:

BIO 3325	(3)	Plant Form and Function
BIO L325	(1)	Plant Form and Function Lab
BIO 4425	(4)	Field Botany

Complete one zoology course with its corresponding lab:

BIO 3307	(3)	Invertebrate Zoology
BIO L307	(1)	Invertebrate Zoology Lab
BIO 4405	(3)	Entomology
BIO L405	(1)	Entomology Lab
BIO 4420	(4)	Field Vertebrate Zoology
BIO 4447	(3)	Ornithology
BIO L447	(1)	Ornithology Lab
BIO 4471	(3)	Parasitology
BIO L471	(1)	Parasitology Lab

Complete 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

Complete 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 3372	(3)	Microbiology
BIO L372	(1)	Microbiology 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 4451	(3)	Toxicology
BIO L451	(1)	Toxicology La
BIO 4480	(3)	Histology
BIO L480	(1)	Histology Lab
BIO 4482	(3)	Molecular Biology
BIO L482	(1)	Molecular Biology Lab

Complete 16 additional semester hours of Biology or Marine Biology courses*. The 16 hours chosen should be based on the student's future plans for employment, graduate school or professional school.*

Medical Laboratory Science 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

Complete 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 MLS 4400-4413 courses.

BIOLOGY, PRE-PROFESSIONAL PROGRAM (56 HOURS)

Specialized General Studies Requirements

Area III (12 Hours)

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* (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

Complete 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

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 2220	(3)	Principles of Cell Biology
BIO L220	(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)	Introductory Statistics
BIO 4484	(1)	Senior Seminar in Biological & Environment Sciences

Select 32 semester hours from the courses listed below:

BIO 3347	(3)	Human Anatomy & Physiology I
BIO L347	(1)	Human Anatomy & Physiology I Lab
BIO 3348	(3)	Human Anatomy & Physiology II
BIO L348	(1)	Human Anatomy & 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 4451	(3)	Toxicology
BIO L451	(1)	Toxicology Lab
BIO 4471	(3)	Parasitology
BIO L471	(1)	Parasitology Lab
BIO 4480	(3)	Histology
BIO L480	(1)	Histology Lab
BIO 4482	(3)	Molecular Biology
BIO L482	(1)	Molecular Biology Lab
BIO 4485	(1-2)	Principles & Methods for the Lab Assistant
CHM 3352	(3)	Biochemistry
CHM L352	(1)	Biochemistry Lab

Electives

BIO 3372	(3)	Microbiology
BIO L372	(1)	Microbiology Lab
BIO 4416	(3)	Microbial Ecology
BIO L416	(1)	Microbial Ecology Lab
BIO 4476	(1-4)	Special Topics in Biology
BIO 4491-92	(1-3)	Guided Independent Research
BIO 4493-94	(1-3)	Guided Independent Study

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 (36 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
MTH 1126	(4)	Calculus II
*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
TROY 1101	(1)	University Orientation

*Chemistry majors minoring in Physics may replace these with free electives.

Chemistry Core (36 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 3381	(3)	Physical Chemistry I
CHM L381	(1)	Physical Chemistry I Lab
CHM 3382	(3)	Physical Chemistry II
CHM 4444	(3)	Advanced Inorganic Chemistry
CHM 4445	(3)	Instrumental Analysis
CHM L445	(1)	Instrumental Analysis Lab

Complete 6 hours of the following 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
MTH 2210	(3)	Introductory Statistics

Students must select an 18 semester hour minor:

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	(3)	Analytical Chemistry
CHM L242	(1)	Analytical Chemistry Lab
CHM 3352	(3)	Biochemistry Lab

CHM L352 (1) Biochemistry 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.

COMPREHENSIVE GENERAL SCIENCE PROGRAM (54 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/Applications
PHY 2262 (3) Physics I w/Calculus
PHY L262 (1) Physics I w/Calculus Lab
SCI 2234 (3) Earth & Space Science
SCI L234 (1) Earth & Space Science Lab
TROY 1101 (1) University Orientation

Required Courses:

BIO 1101 (3) Organismal Biology
BIO L101 (1) Organismal Biology Lab
BIO 2220 (3) Principles of Cell Biology
BIO L220 (1) Principles of Cell Biology Lab
BIO 3320 (3) Genetics
BIO L320 (1) Genetics Lab
BIO 3347 (3) Human Anatomy & Physiology I
BIO L347 (1) Human Anatomy & Physiology 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
CHM 3381 (3) Physical Chemistry I
CHM L381 (1) Physical Chemistry 1 Lab
MTH 1126 (4) Calculus II
MTH 2210 (3) Introductory Statistics
PHY 2263 (3) Physics II w/Calculus
PHY L263 (1) Physics II w/Calculus Lab
PHY 3310 (3) Modern Physics
PHY L310 (1) Modern Physics Lab
PHY 3359 (3) Waves and Optics
PHY L359 (1) Waves and Optics Lab
PHY 4420 (3) Mechanics

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) Introductory 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) Calculus NS Its Applications

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	(3)	Visual Arts
THE 1130	(3)	Introduction to Theatre
MUS 1131	(3)	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 9 hours of free electives.

CYBER SECURITY MINOR (18 HOURS)

CJ 4472	(3)	Cyber Crime
CJ 4473	(3)	Computer Forensics
CS 3360	(3)	Concepts of Object-Oriented Programming I
CS 3334	(3)	Foundations of Cyber Security
CS 3336	(3)	Information Assurance
CS 4452	(3)	Cyber Security Policies and Compliance

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.

Area IV

CJ 2221	(3)	Survey of Law Enforcement
CJ 2231	(3)	Survey of Corrections

Area V

CJ 2241	(3)	Survey of Law and Criminal Procedure

Required Courses:

CJ 1101	(3)	Introduction to Criminal Justice
CJ 1110	(3)	Careers in Criminal Justice
CJ 3345	(3)	Criminology
CJ 3352	(3)	Constitutional Law
CJ 3375	(3)	Research Methods

Select 21 additional hours of upper-level (3000-4000) Criminal Justice courses, as approved by the advisor for the major.

BS/MSCJ Accelerated Honors Requirements:

*CJ 6610	(3)	Principles of Administration in Criminal Justice
*CJ 6620	(3)	Current Trends in Criminal Law
*CJ 6622	(3)	Seminar in the Administration of Criminal Justice

Select an additional 3 hours of upper level (3000-4000) criminal justice courses, as approved by your academic advisor.

**Registration for courses marked with an asterisk is restricted to students who have been admitted to BS/MS in Criminal Justice Accelerated Honors Option, have completed at least 90 credit hours, and 18 hours of criminal justice courses, and have a GPA of 3.4 or above. Students must also meet requirements for the graduate program.*

**Students who major in Criminal Justice with Homeland Security Concentration must add Homeland Security as a Minor to be eligible for BS/MSCJ Accelerated Honors Option consideration.*

**Students who major in Criminal Justice with Digital Forensics Concentration must add Digital Forensics as a Minor to be eligible for BA/MSCJ Accelerated Honors Option consideration.*

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.

DIGITAL FORENSICS MINOR / CERTIFICATE (18 HOURS)

Select 18 hours from the following:

CJ 3380	(3)	Digital Forensics I
CJ 3382	(3)	Social Media Investigation
CJ 4472	(3)	Cyber Crime
CJ 4475	(3)	Seminar in Cyber Crime
CJ 4480	(3)	Digital Forensics II
CJ 4481	(3)	Operating and File System Forensics
CJ 4482	(3)	Digital Evidence Practicum

ELECTRONICS ENGINEERING TECHNOLOGY PROGRAM (54 HOURS

Area III

MTH 1125	(4)	Calculus I
CHM 1142	(3)	General Chemistry I
CHM L142	(1)	General Chemistry I Lab

Area V

TROY 1101	(1)	University Orientation
CS 2250	(3)	Computer Science I
GEM 1100	(2)	Computer-Aided Drafting I

Requirements:

MTH 1126	(4)	Calculus II
PHY 2262	(3)	Physics I w/Calculus
PHY L262	(1)	Physics I w/Calculus Lab
PHY 2263	(3)	Physics II w/Calculus
PHY L263	(1)	Physics II w/Calculus Lab
EET 2210	(3)	Electronic Devices and Materials
EET 2215	(3)	Analog Circuits and Systems
EET L215	(1)	Analog Circuits and Systems Lab
EET 3315	(3)	Digital Circuits and Systems
EET L315	(1)	Digital Circuits and Systems Lab
EET 3320	(3)	Measurement and Instrumentation
EET 4415	(3)	Automation and Control
EET L415	(1)	Automation and Control Lab
EET 4420	(3)	Fundamentals of Microcontrollers
EET L420	(1)	Fundamentals of Microcontrollers Lab
EET 4425	(3)	Data Communication & Networking
EET 4430	(3)	Optical Electronics
EET 4435	(4)	LSI/ VLSI Design
EET 4440	(4)	Electronic Testing with Lab
EET 4499	(3)	Electronic Engineering Technology Capstone

ENVIRONMENTAL SCIENCE MINOR (18-20 HOURS)

BIO 1120	(3)	Survey of Environmental Sciences
BIO L120	(1)	Survey of Environmental Sciences Lab
BIO 3328	(3)	Environmental Pollution and Control
BIO L328	(1)	Environmental Pollution and Control Lab

Complete 12 hours from the following:

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
CHM 4445	(3)	Instrumental Analysis
CHM L445	(1)	Instrumental Analysis Lab

ENVIRONMENTAL SCIENCE PROGRAM (54-56 HOURS)

***Special Topics in Biology (BIO 4476), Guided Independent Studies (BIO 4491/4492) and Guided Independent Research (BIO 4493, 4494) may only be taken for a maximum of 6 semester 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

Select one of the following MTH courses:

MTH 1114	(3)	Pre-Calculus Trigonometry
OR		
MTH 1125	(4)	Calculus I*

Area V Requirements:

IS 2241	(3)	Computer Concepts and Applications
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 of the following GEO or GEM courses:

GEO 2299	(3)	Basic GIS
OR		
GEM 3390	(3)	Fundamentals of Geographical Information

Select one PHY lecture and lab combination:

PHY 2252	(3)	General Physics I
PHY L252	(1)	General Physics I Lab
OR		
PHY 2262	(3)	Physics I with Calculus
PHY L262	(1)	Physics I with Calculus Lab

Program Requirements:

BIO 1120	(3)	Survey of Environmental Science
BIO L120	(1)	Survey of Environmental Science Lab
BIO 2220	(3)	Principles of Cell Biology
BIO L220	(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
BIO 3328	(3)	Environmental Pollution and Control
BIO L328	(1)	Environmental Pollution and Control Lab
BIO 4413	(3)	Limnology
BIO L413	(1)	Limnology Lab
BIO 4479	(3)	Environmental Assessment
BIO L479	(1)	Environmental Assessment Lab
BIO 4484	(1)	Senior Seminar in Biological & Environmental Sciences
CHM 3342	(3)	Organic Chemistry I
CHM L342	(1)	Organic Chemistry I Lab
MTH 2210	(3)	Introductory Statistics

Complete 18-20 hours of adviser-approved upper-level courses in biology, marine biology, chemistry, geography, or mathematics.

BS/MSEBS Accelerated Honors Requirements:

*EBS 6601	(3)	Environmental and Biological Ethics
*EBS 6624	(3)	Public Health
*EBS 6691	(3)	Research Methodology and Experimental Design

Note: These three courses fulfill 9 hours of the upper-level electives courses in the BS in Environmental Science Program.

*Registration for courses marked with an asterisk is restricted to students who have been admitted to the Environmental and Biological Sciences Accelerated Honors Option, have completed at least 90 credit hours and 18 hours of biology courses, and have a GPA of 3.4 or above. Students must also meet the requirements for the graduate program.

FIRE SCIENCE AND EMERGENCY MANAGEMENT MINOR (18 HOURS)

FS 3300	(3)	Introduction to Fire Science
FS 3305	(3)	Community Risk Reduction for Fire and Emergency Services

FS 3310	(3)	Fire and Emergency Services Administration
CJ 3305	(3)	Foundations of Emergency Management

Select 6 hours from the following courses:

FS 3315	(3)	Financial Management in Fire and Emergency Services
FS 3320	(3)	Arson Investigation
CJ 3335	(3)	Security Operations
CJ 3345	(3)	Criminology
CJ 4440	(3)	Terrorism
CJ 4470	(3)	Criminal Justice Issues in Homeland Security
COM 4460	(3)	Crisis Communication

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.

Note: Students who pursue a baccalaureate degree with Troy University following the completion of the Associate of Arts in General Education must meet the minimum grade requirements in mathematics.

General Studies Requirements

Area I

ENG 1101	(3)	Composition & Modern English I
ENG 1102	(3)	Composition & Modern English II

Area II

Select one of the following:

ART 1133	(3)	Visual Arts
THE 1130	(3)	Introduction to Theatre
MUS 1131	(3)	Music Appreciation

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 six hours of one foreign language.

Area III

Select one of the following:

MTH 1110	(3)	Finite Mathematics
MTH 1112	(3)	Pre-calculus Algebra

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

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

The completion of 12 or more elective hours within the same discipline area (English, Math, History, etc) will constitute an emphasis area with the Associate's degree. Emphasis areas are not required for the completion of the Associate's degree.

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.

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.

General Studies Requirements

Area I

ENG 1101	(3)	Composition & Modern English I
ENG 1102	(3)	Composition & Modern English II

Area II

Select one of the following:

ART 1133	(3)	Visual Arts
THE 1130	(3)	Introduction to Theatre
MUS 1131	(3)	Music Appreciation

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

Area III

Select one of the following:

MTH 1110	(3)	Finite Mathematics
MTH 1112	(3)	Pre-calculus Algebra

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

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

The completion of 12 or more elective hours within the same discipline area (English, Math, History, etc) will constitute an emphasis area with the Associate's degree. Emphasis areas are not required for the completion of the Associate's degree.

GEOGRAPHIC INFORMATION SYSTEMS (GIS) MINOR (18 HOURS)

Required Courses: (9 Hours)

GIS 3301	(3)	Cartography and Geo-Visualization
GEM 3390	(3)	Fundamentals of Geographical Information and Analysis
GIS 3305	(3)	Spatial Information and Analysis

Electives: (9 hours)

Select one course from the following: (3 Hours)

GEO 3300	(3)	Principles of Physical Geography
GEO 3301	(3)	Principles of Cultural Geography
POL 4402	(3)	Political Geography

Select two courses from the following: (6 Hours)

GIS 4401	(3)	Spatial Database Design and Management
GIS 4405	(3)	Spatial Modeling and Programming
GEM 3391	(3)	Application of Geospatial Information Systems
GEM 4410	(3)	Introduction to Global Positions
CS 3310	(3)	Foundations of Computer Sciences

GEOGRAPHY MINOR (18 HOURS)

GEO 3300	(3)	Principles of Physical Geography
GEO 3301	(3)	Principles of Cultural Geography

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 9 hours of upper-level American/Latin American courses in addition to either HIS 3316 or 4406.

HISTORY MAJOR (36 HOURS)

History Majors/Minors will receive credit for no more than six hours of 3000-level and 4000-level history courses taken before or concurrently with HIS 3375.

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 Applications
TROY 1101	(1)	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.

European/ Asian/ African Emphasis:

Specialized General Studies Requirements

Area IV

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

Area V Requirements

IS 2241	(3)	Computer Concepts and Applications
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)

History Majors/Minors will receive credit for no more than six hours of 3000-level and 4000-level history courses taken before or concurrently with HIS 3375.

HIS 3375	(3)	Research and Methodology

Select 15 hours of upper-level history courses.

Note: HIS 1111 and HIS 1112 or permission of instructor are prerequisites for upper-level American/Latin American history courses. HIS 1101 and HIS 1102 or HIS 1122 and 1123 or permission of instructor are prerequisite for upper-level European /Asian/African history courses.

HOMELAND SECURITY MINOR (18 HOURS)

Select 18 hours from the following as approved by the adviser:

CJ 3305	(3)	Foundations of Emergency Management
CJ 3335	(3)	Security Operations
CJ 4420	(3)	Comparative Criminal Justice
CJ 4405	(3)	National Security and the Law
CJ 4440	(3)	Terrorism
CJ 4470	(3)	Criminal Justice Issues in Homeland Security
CJ 4488	(3)	Internship (limit one)
POL 3364	(3)	State and Local Politics
POL 4415	(3)	International Conflict
POL 4422	(3)	Public Policy Making

HUMANITIES MINOR (18 HOURS)

Please see the College of Communication and Fine Arts for details on the Humanities Minor.

INTELLIGENCE MINOR (18 HOURS)

Required for the minor:

CJ 3308	(3)	Foundations of Intelligence

Select 15 hours from the following courses:

CJ 3305	(3)	Foundations of Emergency Management
CJ 3345	(3)	Criminology
CJ 3350	(3)	Gangs
CJ 3382	(3)	Social Media Investigation
CJ 4406	(3)	Transnational Organized Crime
CJ 4425	(3)	Violence in America
CJ 4430	(3)	Selected Topics in Criminal Justice
CJ 4440	(3)	Terrorism
CJ 4470	(3)	Criminal Justice Issues in Homeland Security

LEGAL STUDIES MINOR (18 HOURS)

Required Courses (9 hours)

LGL 2200	(3)	Introduction to Legal Studies
LGL 3300	(3)	Legal Research and Writing
LGL 4400	(3)	Seminar in Legal Studies

Select 9 hours of electives from the following courses:

CJ 2241	(3)	Survey of Law and Criminal Procedure
CJ 3352	(3)	Constitutional Law in Criminal Justice
CJ 4447	(3)	Current Issues in Legal Systems Operation and Administration
CJ 4411	(3)	Evidence
LAW 2221	(3)	Legal Environment of Business
LAW 4420	(3)	Administrative Law
POL 3342	(3)	Judicial Branch
POL 4420	(3)	Constitutional Law
POL 4472	(3)	Administrative Law

MARINE BIOLOGY PROGRAM (56 HOURS)

*Special Topics in Biology (BIO 4476), Guided Independent Studies (BIO 4491/4492) and Guided Independent Research (BIO 4493, 4494) may only be taken for a maximum of 6 semester 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 Applications
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

Complete 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 Program

Lectures and corresponding labs must be taken together.

BIO 2220	(3)	Principles of Cell Biology
BIO L220	(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
BIO 4484	(1)	Senior Seminar in Biological & Environment Sciences
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)	Introductory Statistics

Troy University Courses:

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

Complete 12 additional semester hours of adviser-approved biology or marine biology (MB) courses.

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.

Complete 16 semester hours of MB courses approved by the DISL liaison and Department Chair.

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

MTH 1125	(4)	Calculus I

Area V Requirements

TROY 1101	(1)	University Orientation
MTH 2210	(3)	Introductory Statistics
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 3350	(3)	Statistical Methods and Computation
MTH 4451	(3)	Mathematical Statistics I

Students selecting MTH 3350 and MTH 4451: 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, MTH 3350 and MTH 4451.

MATHEMATICS AND PHYSICS DOUBLE MAJOR

Students seeking a double major in Mathematics and Physics should consult with their advisers in both the Mathematics and Physics Departments.

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.

STATISTICS MINOR (18 HOURS)

Requirements for Minor:

MTH 2210	(3)	Introductory Statistics
MTH 3350	(3)	Statistical Methods and Computations
MTH 4451	(3)	Mathematical Statistics I

Select 9 hours from the following:

MTH 3355	(3)	Survey Sampling
MTH 4452	(3)	Mathematical Statistics II
MTH 4459	(3)	Applied Regression Analysis
MTH 4465	(3)	Categorical Data Analysis
MTH 4466	(3)	Data Mining
MTH 4467	(3)	Experimental Design
MTH 4456	(3)	Mathematics of Finance
MTH 4464	(3)	Multivariate Analysis

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.

MILITARY SCIENCE LEADERSHIP MINOR (19-22 HOURS)

Area II Requirements:

COM 2241	(3)	Fundamentals of Speech

Area IV Requirements:

Select one 2000 level 3-hour course from one of the following areas: Psychology, Sociology, or Political Science.

MSL 3301	(3)	Leadership and Problem Solving
MSL 3302	(3)	Leadership and Ethics
MSL 3304	(1)	Military Advanced Leadership Lab 111-A
MSL 3305	(1)	Military Advanced Leadership Lab 111-B
MSL 4401	(3)	Leadership and Management
MSL 4402	(3)	Officership
MSL 4404	(1)	Military Advanced Leadership Lab IV-A
MSL 4405	(1)	Military Advanced Leadership Lab IV-B
MSL 4497	(1-3)	Senior Seminar in Military Science

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

PHILOSOPHY AND RELIGION MINOR (18 HOURS)

Select 9 hours from the following:

PHI 2201	(3)	Introduction to Political Philosophy
PHI 2203	(3)	Introduction to Philosophy
PHI 2204	(3)	Ethics and the Modern World
PHI 2205	(3)	Introduction to Logic
PHI 2210	(3)	Critical Thinking
REL 2280	(3)	World Religions

Select 9 hours from the following upper division courses. At least 6 hours must be philosophy (PHI) courses.

ANT 3340	(3)	Language in Culture and Society
ANT 3360	(3)	Magic, Witchcraft, and Religion
CLA 3311	(3)	Civilization of Greece
HIS 3302	(3)	History of Religion in the United States
HIS 3331	(3)	Western Thought since the 17th Century
HIS 3356	(3)	History of the Middle East
HIS 4463	(3)	Europe in the Age of Enlightenment
PHI 2280	(3)	Travel Study in Philosophy
PHI 3301	(3)	Western Philosophy
PHI 3310	(3)	Applied Ethics
PHI 3320	(3)	Non-Western Philosophies
PHI 3322	(3)	Philosophy of Religion
PHI 3365	(3)	Bioethics in Historical Context
PHI 4493-94	(3)	Guided Independent Study
PHI 4495	(3)	Selected Topics in Philosophy
REL 2285	(3)	Travel Study in Religion

PHYSICS MAJOR (37 HOURS)

Area III

MTH 1125	(4)	Calculus I
PHY 2262	(3)	Physics I w/Calculus
PHY L262	(1)	Physics I w/Calculus Lab

Area V

CS 2250	(3)	Computer Science I
MTH 1126	(4)	Calculus II*

*Note: *Students selecting a minor in Mathematics or a second major in Mathematics will meet the Calculus II requirement in the Mathematics Major/Minor rather than in Area V.*

Required courses (20 hours)

PHY 2263	(3)	Physics II w/Calculus
PHY L263	(1)	Physics II w/Calculus Lab
PHY 3310	(3)	Modern Physics
PHY L310	(1)	Modern Physics Lab
PHY 3325	(3)	Thermodynamics
PHY 4420	(3)	Mechanics
PHY 4435	(3)	Electricity & Magnetism
PHY 4445	(3)	Quantum Mechanics I

Select a minimum of 17 semester hours from the courses listed below:

MTH 2227	(4)	Calculus III
MTH 3364	(3)	Vector Calculus
PHY 3320	(3)	Mathematical Methods for Physicists
PHY 3321	(3)	Equations of Mathematical Physics
PHY 3359	(3)	Waves and Optics
PHY L359	(1)	Waves and Optics Lab
PHY 4438	(3)	Electromagnetic Fields
PHY 4440	(3)	Dynamics of Particles & Systems
PHY 4446	(3)	Quantum Mechanics II
PHY 4460	(3)	Relativity I
PHY 4470	(3)	Nuclear Physics

PHY 4475	(3)	Particle Physics
PHY 4478	(3)	Relativity II
PHY 4482	(3)	Introduction to String Theory
PHY 4483-85	(1)	Seminar in Relativity
PHY 4495	(3)	Topics in Physics
PHY 4491-92	(3)	Guided Independent Research
PHY 4493-94	(3)	Guided Independent Study

PHYSICS AND MATHEMATICS DOUBLE MAJOR

Students seeking a double major in Physics and Mathematics should consult with their advisers in both the Physics and Mathematics Departments.

PHYSICS MINOR (18-19 HOURS)

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
PHY 3310	(3)	Modern Physics
PHY L310	(1)	Modern Physics Lab

Select an additional six to seven hours of adviser-approved, upper -level physics courses.

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
POL 3390	(3)	The Art of Political Science Research

Select one of the following concentrations:

American Politics and Public Administration Concentration

POL 3340	(3)	U. S. Government—Executive Branch
POL 3341	(3)	U. S. Government—Legislative Branch
POL 3342	(3)	U. S. Government—Judicial Branch

Select six hours from the following:

POL 3343	(3)	American Political Processes
POL 3355	(3)	Southern Politics
POL 3364	(3)	State and Local Politics
POL 3338	(3)	Women in Politics
POL 3339	(3)	African-American Politics
POL 4405	(3)	Political Behavior and Public Opinion
POL 4420	(3)	Constitutional Law
POL 4421	(3)	Introduction to Public Administration
POL 4422	(3)	Public Policy Making
POL 4424	(3)	Contemporary American Foreign Policy
POL 4432	(3)	Comparative Public Policy
POL 4451	(3)	Public Personnel Administration
POL 4453	(3)	Bureaucratic Politics
POL 4469	(3)	Religion in Politics
POL 4472	(3)	Administrative Law

Select an additional 12 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 4405	(3)	Political Behavior and Public Opinion
POL 4415	(3)	International Conflict
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 4464	(3)	Arab-Israeli Conflict
POL 4465	(3)	Politics of the Developing World
POL 4466	(3)	Middle Eastern Politics
POL 4467	(3)	Asian Politics
POL 4468	(3)	Russian Politics
POL 4470	(3)	European Politics
POL 4474	(3)	Terrorism and Political Violence
POL 4476	(3)	Politics of Southeast Asia

Select an additional 12 hours of upper-level (3000-4000) political science courses, as approved by your academic adviser.

Accelerated Honors Requirements:

*IR 5551	(3)	Survey of International Relations
*IR 6601	(3)	Research Method in International Relations
*IR6620	(3)	International Political Economy

Select an additional 3 hours of upper-level (3000-4000) political science courses, as approved by your academic advisor.

Registration for courses marked with an asterisk is restricted to students who have been admitted to **International Relations Concentration Accelerated Honors Option, have completed at least 90 credit hours, and 18 hours of political science courses. Students must also meet requirements for the graduate program.*

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.

AMERICAN POLITICS MINOR (18 HOURS)

Required Courses (9 hours)

POL 3340	(3)	U. S. Government—Executive Branch
POL 3341	(3)	U. S. Government—Legislative Branch
POL 3342	(3)	U. S. Government—Judicial Branch

Select three of the following courses (9 hours)

POL 3343	(3)	American Political Processes
POL 3355	(3)	Southern Politics
POL 3364	(3)	State and Local Politics
POL 3338	(3)	Women in Politics
POL 3339	(3)	African-American Politics
POL 4405	(3)	Political Behavior and Public Opinion
POL 4420	(3)	Constitutional Law
POL 4421	(3)	Introduction to Public Administration
POL 4422	(3)	Public Policy Making
POL 4424	(3)	Contemporary American Foreign Policy
POL 4432	(3)	Comparative Public Policy
POL 4451	(3)	Public Personnel Administration
POL 4453	(3)	Bureaucratic Politics
POL 4469	(3)	Religion in Politics
POL 4472	(3)	Administrative Law

INTERNATIONAL RELATIONS MINOR (18 HOURS)

Required course (9 hours)

POL 3351	(3)	International Relations
POL 4410	(3)	International Political Economy
POL 4433	(3)	Comparative Government

Select three hours from the following courses (9 hours)

POL 3300	(3)	Foundations of Political Science

POL 4405	(3)	Political Behavior and Public Opinion
POL 4415	(3)	International Conflict
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 4464	(3)	Arab-Israeli Conflict
POL 4465	(3)	Politics of the Developing World
POL 4466	(3)	Middle Eastern Politics
POL 4467	(3)	Asian Politics
POL 4468	(3)	Russian Politics
POL 4470	(3)	European Politics
POL 4474	(3)	Terrorism and Political Violence
POL 4476	(3)	Politics of Southeast Asia

SCIENCE EDUCATION

Students seeking Alabama teacher certification should select the comprehensive science program as a first major and education as a second major. Students should consult with their advisers concerning all certification requirements.

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. **Education students will need to take coursework to include the following disciplines: Geography, History, Political Science, and Economics.*

SOCIAL SCIENCE MAJOR (36 HOURS)

Specialized General Studies Requirements

AREA IV

NOTE: Social Science major with a concentration should take Area IV electives appropriate for their concentration.

NOTE: Social Science Education Majors must take HIS 1101 Western Civilization I and HIS 1102 Western Civilization II.

Requirements for the Major

SS 3375	(3)	Introduction to Social Science Inquiry
SS 3376	(3)	Statistical Applications of Social Science Inquiry
SS 3377	(3)	Spatial Applications of Social Science Inquiry
SS 4498	(3)	Social Science Theory
SS 4499	(3)	Senior Seminar

Select one of the following concentrations:

General Social Science Concentration:

Select at least 21 hours of additional 3000/4000-level courses in at least three disciplines from anthropology, economics, geography, history, political science, psychology, sociology, criminal justice, or as approved by department chair. (Six hours may be used from ECO 2251, ECO 2252, GEO 2210, ANT 2200, *POL 2241, or SOC 2275).*Education students will need to take ECO 2251, POL 2241, and HIS 3375.*

Geography Concentration:

GEO 3300	(3)	Principles of Physical Geography
GEO 3301	(3)	Principles of Cultural Geography

Select at least 15 hours of additional 3000/4000-level courses as approved by your faculty adviser:

Leadership Development Concentration:

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

Select an additional 9 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
LDR 3310	(3)	Leadership and Interpersonal Skills
LDR 3320	(3)	Great Leaders
MGT 3300	(3)	Principles of 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
POL 4421	(3)	Introduction to Public Administration
PSY 4410	(3)	Business and Industrial Psychology
SOC 3301	(3)	Collective Behavior and Social Movements
SOC 3302	(3)	Small Groups

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

SOC 4420	(3)	Sociological Theory
SS 3375	(3)	Introduction to Social Science Inquiry
SS 3376	(3)	Statistical Applications of Social Science Inquiry
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 (53 HOURS)

Area II:

ART 2201	(3)	Introductory Drawing

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

Area III Requirements

MTH 1125	(4)	Calculus I

Select an 8 hour physics sequence with labs:

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

Area V Requirements

CS 2250	(3)	Computer Science I
IS 2241	(3)	Computer Concepts & Application
MTH 1126	(4)	Calculus II
MTH 2210	(3)	Introductory Statistics
TROY 1101	(1)	University Orientation

Program Requirements

GEM 1100	(2)	Computer-Aided Drafting I
GEM 1101	(2)	Computer-Aided Drafting II
GEM 2220	(3)	Basics of Surveying
GEM L220	(1)	Basics of Surveying Lab
GEM 3309	(3)	Land Survey Principles
GEM L309	(1)	Land Survey Principles Lab
GEM 3310	(3)	Land Survey Practice
GEM L310	(1)	Land Survey Practice Lab
GEM 3330	(3)	Advanced Measurement Analysis
GEM L330	(1)	Advanced Measurement Analysis Lab
GEM 3366	(3)	Photogrammetry and Remote Sensing
GEM 3379	(3)	Introduction to Least Squares Adjustment
GEM 3390	(3)	Fundamentals of Geographic Information and Analysis
GEM 3391	(3)	Application of Geospatial Information Science
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 4408	(3)	Geodesy & Geodetics
GEM 4409	(3)	Hydrology
GEM L409	(1)	Hydrology Lab
GEM 4410	(3)	Introduction to Global Positions
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