

# Environmental Science

This interdisciplinary program offers a B.S. degree in Environmental Science. Students learn to analyze physical and socioeconomic environments and to reach decisions concerning environmental use and protection. The major allows students to obtain an interdisciplinary background suitable for environmental monitoring and planning. Graduates are prepared for entry- and middle-level positions in governmental agencies in such areas as regional planning and resource management; for positions in industry and the private sector; or to pursue graduate degrees in urban/regional planning, resource management, coastal studies, Geographic Information Systems (GIS), and the geosciences.

Two specializations are available under this B.S. program: Environmental Management and Natural Science. According to the departmental Academic Learning Compact, assessment of Student Learning Outcomes includes:

1. A written exit exam during a student's last semester of residency.
2. A portfolio of the two best student projects.
3. Good performance in GEO 4332 Senior Seminar.

Contact the department for information concerning the Certificate in Geographic Information Science (GIS).

## Program Requirements

In addition to the university's general requirements, students seeking the B.S. in Environmental Science must meet the requirements listed below.

Students must consult with their academic advisors for courses that may satisfy both the General Studies requirements and common prerequisites.

A grade of "C-" or better is required in all common prerequisites. No grade below a "C-" in a major course may be applied toward graduation.

## Accelerated Bachelors (B.S.)/Masters (M.S.) in Environmental Science (ABM-EVR)

### Option

### Minimum Requirements for admission include:

- Overall undergraduate GPA of 3.25 or better
- Undergraduate Major GPA of 3.5 or better
- Completion of all Bachelor of Science in Environmental Science Environmental Core requirements
- A grade of B (3.0) or higher in each Bachelor of Science in Environmental Science Environmental Core course
- Two letters of recommendation

### Process:

A prospective student who meets the minimum requirements for admission for the ABM-EVR program must schedule a meeting with his/her undergraduate faculty advisor and graduate coordinator to discuss and develop a degree plan for his/her ABM-EVR program. The student must then submit an ABM-EVR program application and two letters of recommendation to the graduate advisor.

## Eligibility and Restrictions:

Students must have completed 75 undergraduate credit hours, including credits earned from advanced placement, prior to applying to the ABM-EVR program. Transfer students must have completed a minimum of two semesters and at least 24 credit hours at the University of West Florida prior to application to the ABM-EVR program. For admission into the ABM-EVR program in the summer semester, application materials must be submitted by March 15. For admission into the ABM-EVR program in the fall semester, application materials must be submitted by June 15. For admission into the ABM-EVR program in the spring semester, application materials must be submitted by October 15. Admission into the ABM-EVR program does not guarantee admission into the Master's in Environmental Science program upon completion of the Bachelor's in Environmental Science. Students must still take the GRE and submit an Express Admission application for the Master's in Environmental Science program. Students who are a part of the ABM-EVR program cannot be provisionally or conditionally admitted into the Master's in Environmental Science program.

### Program Requirements

Upon admission into the Master's in Environmental Science program, the 12 graduate credit hours completed as an undergraduate student will count for 12 semester hours of coursework for the master's program. Students in the ABM-EVR program must earn a grade of B (3.0/4.0) or better in each of the graduate level courses that are being applied to both degrees. Courses completed with a grade of B# or below cannot be applied to the master's degree.

Students accepted into the master's program must complete all requirements within 18 months of completing the bachelor's degree in the non-thesis track (24 months if in the thesis track). If the requirements are not completed within 18 months (24 months for the thesis track); the student is no longer eligible to apply the graduate credit hours toward both degrees (i.e., the student can only apply the graduate credit hours either toward completion of the bachelor's or toward a future master's degree) and is automatically terminated from the ABM-EVR program.

If a student in the ABM-EVR program completes the bachelor's degree requirements with an overall GPA of less than 3.25/4.0, he/she is no longer eligible to apply the graduate credit hours to both degrees (i.e., the student can only apply the credit hours towards completion of the bachelor's degree or toward a future master's degree) and is automatically terminated from the ABM-EVR program.

A student who becomes ineligible to continue participating in or withdraws from the Accelerated ABM-EVR program cannot apply any graduate credit hours toward both degrees.

A student who becomes ineligible to continue participating in or withdraws from the ABM-EVR program cannot apply any graduate credit hours toward both degrees.

Students who are enrolled in the ABM-EVR program are eligible for graduate assistantship positions only after completing the bachelor's degree.

## Undergraduate degree program

### General Education

In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements.

With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "University Requirements" (<http://catalog.uwf.edu/undergraduate/universityrequirements>) section of this catalog.

## General Education Curriculum:

### Communication

ENC 1101	English Composition I	3
ENC 1102	English Composition II	3

### Mathematics

Choose one course from Group A and one Additional course from either Group A or Group B 6

#### Group A

MAC 1105	College Algebra	
MAC 1105C	College Algebra with Lab	
MAC 2311	Analytic Geometry and Calculus I	
MGF 1106	Mathematics for Liberal Arts I	
MGF 1107	Mathematics for Liberal Arts II	
STA 2023	Elements of Statistics	

#### Group B

MAC 1114	Trigonometry	
MAC 1140	Precalculus Algebra	
MAC 2233	Calculus with Business Applications	
MAC 2312	Analytic Geometry and Calculus II	

### Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

AMH 2020	United States since 1877	
ANT 2000	Introduction to Anthropology	
ECO 2013	Principles of Economics Macro	
POS 2041	American Politics	
PSY 2012	General Psychology	
SPM 2010	Sport in Global Society	
SYG 2000	Introduction to Sociology	

#### Group B

AMH 2010	United States to 1877	
ANT 2400	Current Cultural Issues	
ANT 2100	Introduction to Archaeology	
CCJ 2002	Survey of Crime and Justice	
CPO 2002	Comparative Politics	
DEP 2004	Human Development Across the Lifespan	
EUH 1000	Western Perspectives I	
EUH 1001	Western Perspectives II	
FIN 2104	Personal Financial Planning	
GEA 2000	Nations and Regions of the World	
GEB 1011	Introduction to Business	
IDH 1041	Honors Core 2	
INR 2002	International Politics	
MMC 2000	Principles of Mass Communication	

PLA 2013	Survey of American Law	
SOW 2192	Understanding Relationships in the 21st Century	
SYG 2010	Current Social Problems	

## Humanities

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

ARH 1000	Art Appreciation	
LIT 2000	Introduction to Literature	
MUL 2010	Music Appreciation	
PHI 2010	Introduction to Philosophy	
THE 2000	Theatre Appreciation	

#### Group B

AML 2010	American Literature I	
AML 2020	American Literature II	
AML 2072	Sex, Money, and Power in American Literature	
ARH 2050	Western Survey I: Prehistory to the Medieval Period	
ARH 2051	Western Survey II: Renaissance to Contemporary	
ART 1015C	Exploring Artistic Vision	
ART 2821	Art and Visual Culture Today	
CRW 2001	Introduction to Creative Writing	
ENL 2010	History of English Literature I	
ENL 2020	History of English Literature II	
IDH 1040	Honors Core 1	
MUH 2930	The Music Experience: Special Topics	
PHI 2103	Critical Thinking	
PHI 2603	Ethics in Contemporary Society	
REL 1300	World Religions	
THE 2300	Survey of Dramatic Literature	
SPC 2608	Basic Communication Skills	

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

AST 1002	Descriptive Astronomy	
BSC 1005	General Biology for Non-Majors	
BSC 1085	Anatomy and Physiology I	
BSC 2010	Biology I	
CHM 1020	Concepts in Chemistry *	
CHM 2045	General Chemistry I *	
ESC 2000	Introduction to Earth Science	
EVR 2001	Introduction to Environmental Science	
PHY 1020	Introduction to Concepts in Physics *	
PHY 2048	Calculus-Based Physics I **	
PHY 2048C	University Physics I - Studio	
PHY 2053	Algebra-Based Physics I **	

#### Group B

ANT 2511	Biological Anthropology	
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BOT 2010	General Botany	
BSC 1050	Fundamentals of Ecology	
BSC 1086	Anatomy and Physiology II *	
BSC 2011	Biology II	
BSC 2311	Introduction to Oceanography and Marine Biology *	
CGS 2060	Excursions in Computing	
CHM 1032	Fundamentals of General Chemistry *	
CHM 2046	General Chemistry II *	
CIS 2530	Introduction to Cybersecurity	
GEO 1200	Physical Geography	
GLY 2010	Physical Geology *	
MCB 1000	Fundamentals of Microbiology *	
PHY 2049	Calculus-Based Physics II **	
PHY 2054	Algebra-Based Physics II *	

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

## Common Prerequisites

**Note: These common prerequisites are identical to the common prerequisites for the Environmental Science BS.**

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual (<https://dlss.flvc.org/admin-tools/common-prerequisites-manuals>) for course substitutions from Florida colleges and universities.

BOT 2010+L	General Botany (+Lab)	4
CHM 2045+L	General Chemistry I (+Lab)	4
CHM 2046+L	General Chemistry II (+Lab)	4
GLY 2010+L	Physical Geology (+Lab)	4
or		
ESC 2000	Introduction to Earth Science	
ESC 2000L	Introduction to Earth Science Laboratory	
MAC 2311	Analytic Geometry and Calculus I	4
PHY 2048+L	Calculus-Based Physics I (+Lab)	4
STA 2023	Elements of Statistics	3
Total Hours		27

## Accelerated Bachelor's (B.S.)/Master's (M.S.) Major

The following courses are identical to those in the Major for the Natural Science specialization except that the graduate version of dual-listed courses is listed when available.

GEO 4250+L	Weather and Climate (+Lab)	4
GEO 4260+L	Geography of Soils (+Lab)	4

GEO 4280+L	Basic Hydrology (+Lab)	4
GEO 3372	Conservation of Natural Resources	3
EVR 3894	Environmental Writing	3
GEO 4164	Geostatistics	3
GIS 3015+L	Cartographic Skills (+Lab)	4
GIS 4043+L	Geographic Information Systems (+Lab)	4
GEO 4332	Senior Seminar	1
Choose one:		3
EVR 4941	Practicum in Environmental Studies	
EVR 4970	Research in Earth and Environmental Sciences	
GIS 4944	GIS Internship	

Total Hours 33

## Environmental Science Core

**Note: The following courses are identical to those in the Environmental Science Core for the Natural Science specialization except that the graduate version of dual listed courses is listed when available.**

**Up to 12 hours from the list below can be taken at the graduate level and applied towards both the graduate and undergraduate degrees. If a student takes 14 hours at the graduate level, 12 hours can be applied towards the undergraduate degree and 14 hours towards the graduate degree. If a student chooses to take GLY 3031C only 9-11 hours can be applied towards both degrees.**

CHM 3120+L	Analytical Chemistry (+Lab)	4
GEO 4251	Advanced Climatology and Climate Change	3
PCB 4043+L	Ecology (+Lab)	4
Choose One:		3
EVR 5071	Coastal and Marine Environments	
EVS 5194C	Environmental Soil Science	
Choose one:		4
GLY 3031C	Environmental Geology	
GEO 5225+L	Coastal Morphology and Processes (+Lab)	
Choose one:		3 - 4
GIS 5027+L	Aerial Photography and Remote Sensing (+Lab)	
GIS 5039	Applications in Remote Sensing	
GIS 5100	Applications in Geographic Information Systems	
GIS 4071	Methods and Techniques in Environmental Resource Management and Planning	
Choose one:		3
GLY 5266	Biogeochemistry	
GLY 5246	Geochemistry	
Total Hours		24-25

## Environmental Management Specialization

### General Education

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students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "University Requirements" (<http://catalog.uwf.edu/undergraduate/universityrequirements>) section of this catalog.

## General Education Curriculum:

### Communication

ENC 1101	English Composition I	3
ENC 1102	English Composition II	3

### Mathematics

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#### Group A

MAC 1105	College Algebra	
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MAC 2311	Analytic Geometry and Calculus I	
MGF 1106	Mathematics for Liberal Arts I	
MGF 1107	Mathematics for Liberal Arts II	
STA 2023	Elements of Statistics	

#### Group B

MAC 1114	Trigonometry	
MAC 1140	Precalculus Algebra	
MAC 2233	Calculus with Business Applications	
MAC 2312	Analytic Geometry and Calculus II	

### Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

AMH 2020	United States since 1877	
ANT 2000	Introduction to Anthropology	
ECO 2013	Principles of Economics Macro	
POS 2041	American Politics	
PSY 2012	General Psychology	
SPM 2010	Sport in Global Society	
SYG 2000	Introduction to Sociology	

#### Group B

AMH 2010	United States to 1877	
ANT 2400	Current Cultural Issues	
ANT 2100	Introduction to Archaeology	
CCJ 2002	Survey of Crime and Justice	
CPO 2002	Comparative Politics	
DEP 2004	Human Development Across the Lifespan	
EUH 1000	Western Perspectives I	
EUH 1001	Western Perspectives II	
FIN 2104	Personal Financial Planning	
GEA 2000	Nations and Regions of the World	
GEB 1011	Introduction to Business	
IDH 1041	Honors Core 2	
INR 2002	International Politics	
MMC 2000	Principles of Mass Communication	
PLA 2013	Survey of American Law	

SOW 2192	Understanding Relationships in the 21st Century
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SYG 2010	Current Social Problems
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## Humanities

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

ARH 1000	Art Appreciation
LIT 2000	Introduction to Literature
MUL 2010	Music Appreciation
PHI 2010	Introduction to Philosophy
THE 2000	Theatre Appreciation

#### Group B

AML 2010	American Literature I
AML 2020	American Literature II
AML 2072	Sex, Money, and Power in American Literature
ARH 2050	Western Survey I: Prehistory to the Medieval Period
ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
IDH 1040	Honors Core 1
MUH 2930	The Music Experience: Special Topics
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature
SPC 2608	Basic Communication Skills

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

#### Group A

AST 1002	Descriptive Astronomy
BSC 1005	General Biology for Non-Majors
BSC 1085	Anatomy and Physiology I
BSC 2010	Biology I
CHM 1020	Concepts in Chemistry *
CHM 2045	General Chemistry I *
ESC 2000	Introduction to Earth Science
EVR 2001	Introduction to Environmental Science
PHY 1020	Introduction to Concepts in Physics *
PHY 2048	Calculus-Based Physics I **
PHY 2048C	University Physics I - Studio
PHY 2053	Algebra-Based Physics I **

#### Group B

ANT 2511	Biological Anthropology
BOT 2010	General Botany

BSC 1050	Fundamentals of Ecology
BSC 1086	Anatomy and Physiology II *
BSC 2011	Biology II
BSC 2311	Introduction to Oceanography and Marine Biology *
CGS 2060	Excursions in Computing
CHM 1032	Fundamentals of General Chemistry *
CHM 2046	General Chemistry II *
CIS 2530	Introduction to Cybersecurity
GEO 1200	Physical Geography
GLY 2010	Physical Geology *
MCB 1000	Fundamentals of Microbiology *
PHY 2049	Calculus-Based Physics II **
PHY 2054	Algebra-Based Physics II *

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

Environmental Management specialization Environmental Science majors should take the following to satisfy perspectives of General Education:

Social Science/Behavioral Perspectives (one of the following): 3

ANT 2000	Introduction to Anthropology
PSY 2012	General Psychology

Social Science/Socio-political Perspectives (one of the following): 3

GEA 2000	Nations and Regions of the World
ECO 2013	Principles of Economics Macro
INR 2002	International Politics
POS 2041	American Politics

## Multicultural Requirement

### Multicultural Courses

An important component of a liberal education is the study of cultures other than one's own. As such, multiculturalism encompasses the appreciation of the values, expressions, and modes of organization of diverse cultural communities. To further such study, the University of West Florida requires all students pursuing a bachelor's degree to complete at least one course that explores one or more of the dimensions of another culture (language, religion, socio-economic structures, etc.). Students are exempt from this requirement if they have completed an A.A. degree, the general education program at a Florida public institution, or a baccalaureate degree.

The requirement is satisfied by the successful completion of a multicultural course designated on the following list. Several of the selections are General Education courses, and students may enroll in these to meet both the General Education and the multicultural requirements.

\*Faculty Senate 11/8/2002

This list is continually updated and students are encouraged to check with their advisors for alternative options.

AML 2010	American Literature I	3
AML 2020	American Literature II	3
AML 3604	African American Literature	3
AML 3624	Black Women Writers	3
AML 4015	Topics in Nineteenth-Century American Literature	3
ANT 2000	Introduction to Anthropology	3
ANT 3212	Peoples and Cultures of the World	3
ANT 3312	North American Indians	3
ANT 3363	Japanese Culture	3
ANT 3403	Cultural Ecology	3
ANT 4006	Anthropology of Human Rights	3
ARH 1000	Art Appreciation	3
ARH 2050	Western Survey I: Prehistory to the Medieval Period	3
ARH 2051	Western Survey II: Renaissance to Contemporary	3
ARH 3590	Non-Western Art	3
ARH 4302	Late Renaissance Art in Italy	3
ARH 4305	Early Italian Renaissance Art	3
ARH 4412	The Age of Revolution to Romanticism	3
ARH 4450	Modern Art: 1850-1980	3
ARH 4470	Contemporary Art	3
ARH 4653	Art and Archaeology of Mesoamerica	3
CCJ 3678	Race, Gender, Ethnicity, and Crime	3
COM 3014	Gender Communication	3
COM 3461	Intercultural Communication	3
CPO 2002	Comparative Politics	3
CPO 3055	Dictatorships	3
CPO 3103	Politics of Western Europe	3
CPO 3322	Cuba, Castro and the USA	3
CPO 3513	Politics of the Far East-Japan and China	3
CPO 4303	Politics of Spain, Portugal, and Latin America	3
CPO 4792	Geopolitics	3
CRW 2001	Introduction to Creative Writing	3
EDF 2085	Teaching Diverse Populations	3
ENG 4013	Introduction to Literary Theory	3
ENL 2020	History of English Literature II	3
EUH 1000	Western Perspectives I	3
EUH 1001	Western Perspectives II	3
EUH 3203	Modern Europe	3
EUH 3411	Rome and the Mediterranean World	3
EUH 3576	Soviet Union since 1917	3
EUH 4239	Age of Empires	3
FRE 4955	Supervised Foreign Language Field Experience Abroad	1-3
GEA 2000	Nations and Regions of the World	3
GEA 4405	Geography of Latin America	3
GEB 4361	International Business	3

GEO 3421	Cultural Geography	3
GEO 3471	Geography of World Affairs	3
HIS 4316	Women in the Atlantic World	3
IDH 1041	Honors Core 2	3
INR 2002	International Politics	3
JPN 3270	Supervised Language Experience Abroad	3
LIT 2000	Introduction to Literature	3
LIT 2030	Introduction to Poetry	3
LIT 3233	Postcolonial Literature	3
LIT 4385	Feminist Theory	3
MAN 4102	Management of Diversity	3
MAR 4156	Seminar in International Marketing	3
MMC 3601	Minorities and the Mass Media	3
MMC 4300	Global Communication	3
MUH 2930	The Music Experience: Special Topics	3
NUR 4615	Community and Public Health Nursing	3
PSY 3680	Positive Psychology	3
REL 3142	New Perspectives on the Religious Self	3
REL 4420	Contemporary Theology	3
REL 3310	Philosophies of the East	3
REL 4592	Development of Christian Thought	3
SOP 3730	Psychology, Culture, and Society	3
SOW 4233	Human Diversity and Social Justice	3
SOW 4941	Immersive Experiences in Social Work	3
SPN 3400	Advanced Stylistics	3
SPN 4500	Spanish Civilization	3
SPN 4520	Latin American Culture and Civilization	3
SPN 4955	Intensive Spanish Abroad	1-5
SYO 4530	Inequality in America	3

## Civic Literacy Requirement

- Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
  - Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
    - Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
    - An understanding of the United States Constitution and its application;
    - Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
    - An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.
- Achieving the standard score on one of the following assessments:

Assessment	Standard Score
U.S. Citizenship and Immigration Services Naturalization Test	60
Advanced Placement Government and Politics: United States	3

Advanced Placement United States History	4
CLEP American Government	50

\*BOG 8.006 (<http://www.flbog.edu/board/regulations/regulations.php>)

## Common Prerequisites

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. See the Common Prerequisite Manual (<https://dlss.flvc.org/admin-tools/common-prerequisites-manuals>) for course substitutions from Florida colleges and universities.

BSC 1005+L	General Biology for Non-Majors (+Lab)	4
BOT 2010+L	General Botany (+Lab) *	4
CHM 2045+L	General Chemistry I (+Lab) *	4
CHM 2046+L	General Chemistry II (+Lab) *	4
MAC 1140	Precalculus Algebra *	3
STA 2023	Elements of Statistics *	3
Choose one of the following:		4
GLY 2010+L	Physical Geology (+Lab) *	
ESC 2000+L	Introduction to Earth Science (+Lab) *	
Total Hours		26

\* Indicates common prerequisites which can be used to satisfy General Education requirements.

## Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 60 sh in the lower division. Current UWF students may use elective courses at any level (1000-4000) to meet this elective requirement. 0-10

## Environmental Core - 31 sh

### CORNERSTONE

EVR 2920	Foundations in Environmental Science	1
GEO 3210+L	Geomorphology (+Lab) +	4

### TECHNIQUES AND SKILLS

GEO 4280+L	Basic Hydrology (+Lab) +	4
GEO 4250+L	Weather and Climate (+Lab) +	4
GEO 4260+L	Geography of Soils (+Lab) +	4
EVR 3894	Environmental Writing +	3
or ENC 3455	Writing for Science, Technology, Engineering and Math Majors	
GIS 4043+L	Geographic Information Systems (+Lab) +	4
GEO 4004	Environmental Science, Politics and Policy +	3

### CAPSTONE

Choose one:		3
EVR 4941	Practicum in Environmental Studies	
EVR 4970	Research in Earth and Environmental Sciences	
EVR 4039	Community Engagement through Environmental Science	
GEO 4332	Senior Seminar +	1

Total Hours 31

**Major\***

Environmental Studies Core		31
Environmental Management Content		
Choose 12 hours		12
GEO 3372	Conservation of Natural Resources <sup>+</sup>	
EVR 4035	Environmental Law <sup>+</sup>	
EVR 4412	Environmental Aspects of Urban Growth <sup>+</sup>	
EVR 4870	Urban Planning <sup>+</sup>	
GEO 4005	Environmental Management & Planning <sup>+</sup>	
GEO 4357	Environment and Economy <sup>+</sup>	
Environmental Management Skills		
Choose 12 hours		12
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab) <sup>+</sup>	
GIS 4048	Applications in Geographic Information Systems <sup>+</sup>	
GIS 4071	Methods and Techniques in Environmental Resource Management and Planning <sup>+</sup>	
EVR 4823	Environmental Impact Assessment <sup>+</sup>	
GEO 4164	Geostatistics	
	or STA 417:Biostatistics	
Any upper-level courses with prefix of EVR, EVS, GEA, GEO, GIS, or GLY, or advisor approved elective <sup>+</sup>		17
Total Hours		72

<sup>+</sup> Courses included in the major GPA

**Natural Science Specialization****General Education**

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**General Education Curriculum:****Communication**

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ENC 1102	English Composition II	3

**Mathematics**

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MAC 1105	College Algebra	
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MAC 2311	Analytic Geometry and Calculus I	
MGF 1106	Mathematics for Liberal Arts I	
MGF 1107	Mathematics for Liberal Arts II	
STA 2023	Elements of Statistics	

Group B

MAC 1114	Trigonometry	
MAC 1140	Precalculus Algebra	
MAC 2233	Calculus with Business Applications	
MAC 2312	Analytic Geometry and Calculus II	

**Social Sciences**

Choose one course from Group A and one additional course from either Group A or Group B

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AMH 2020	United States since 1877	
ANT 2000	Introduction to Anthropology	
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CPO 2002	Comparative Politics	
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EUH 1000	Western Perspectives I	
EUH 1001	Western Perspectives II	
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GEA 2000	Nations and Regions of the World	
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IDH 1041	Honors Core 2	
INR 2002	International Politics	
MMC 2000	Principles of Mass Communication	
PLA 2013	Survey of American Law	
SOW 2192	Understanding Relationships in the 21st Century	
SYG 2010	Current Social Problems	

**Humanities**

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ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
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PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature
SPC 2608	Basic Communication Skills

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A	
AST 1002	Descriptive Astronomy
BSC 1005	General Biology for Non-Majors
BSC 1085	Anatomy and Physiology I
BSC 2010	Biology I
CHM 1020	Concepts in Chemistry *
CHM 2045	General Chemistry I *
ESC 2000	Introduction to Earth Science
EVR 2001	Introduction to Environmental Science
PHY 1020	Introduction to Concepts in Physics *
PHY 2048	Calculus-Based Physics I **
PHY 2048C	University Physics I - Studio
PHY 2053	Algebra-Based Physics I **
Group B	
ANT 2511	Biological Anthropology
BOT 2010	General Botany
BSC 1050	Fundamentals of Ecology
BSC 1086	Anatomy and Physiology II *
BSC 2011	Biology II
BSC 2311	Introduction to Oceanography and Marine Biology *
CGS 2060	Excursions in Computing
CHM 1032	Fundamentals of General Chemistry *
CHM 2046	General Chemistry II *
CIS 2530	Introduction to Cybersecurity
GEO 1200	Physical Geography
GLY 2010	Physical Geology *
MCB 1000	Fundamentals of Microbiology *
PHY 2049	Calculus-Based Physics II **
PHY 2054	Algebra-Based Physics II *

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

Natural Science specialization Environmental Science majors should take the following to satisfy perspectives of General Education:

Social Science/Behavioral Perspectives (one of the following):		3
ANT 2000	Introduction to Anthropology	
PSY 2012	General Psychology	
Social Science/Socio-political Perspectives (one of the following):		3
GEA 2000	Nations and Regions of the World	
ECO 2013	Principles of Economics Macro	
INR 2002	International Politics	
POS 2041	American Politics	

## Multicultural Requirement

### Multicultural Courses

An important component of a liberal education is the study of cultures other than one's own. As such, multiculturalism encompasses the appreciation of the values, expressions, and modes of organization of diverse cultural communities. To further such study, the University of West Florida requires all students pursuing a bachelor's degree to complete at least one course that explores one or more of the dimensions of another culture (language, religion, socio-economic structures, etc.). Students are exempt from this requirement if they have completed an A.A. degree, the general education program at a Florida public institution, or a baccalaureate degree.

The requirement is satisfied by the successful completion of a multicultural course designated on the following list. Several of the selections are General Education courses, and students may enroll in these to meet both the General Education and the multicultural requirements.

\*Faculty Senate 11/8/2002

This list is continually updated and students are encouraged to check with their advisors for alternative options.

AML 2010	American Literature I	3
AML 2020	American Literature II	3
AML 3604	African American Literature	3
AML 3624	Black Women Writers	3
AML 4015	Topics in Nineteenth-Century American Literature	3
ANT 2000	Introduction to Anthropology	3
ANT 3212	Peoples and Cultures of the World	3
ANT 3312	North American Indians	3
ANT 3363	Japanese Culture	3
ANT 3403	Cultural Ecology	3
ANT 4006	Anthropology of Human Rights	3
ARH 1000	Art Appreciation	3
ARH 2050	Western Survey I: Prehistory to the Medieval Period	3
ARH 2051	Western Survey II: Renaissance to Contemporary	3
ARH 3590	Non-Western Art	3
ARH 4302	Late Renaissance Art in Italy	3



ARH 4305	Early Italian Renaissance Art	3
ARH 4412	The Age of Revolution to Romanticism	3
ARH 4450	Modern Art: 1850-1980	3
ARH 4470	Contemporary Art	3
ARH 4653	Art and Archaeology of Mesoamerica	3
CCJ 3678	Race, Gender, Ethnicity, and Crime	3
COM 3014	Gender Communication	3
COM 3461	Intercultural Communication	3
CPO 2002	Comparative Politics	3
CPO 3055	Dictatorships	3
CPO 3103	Politics of Western Europe	3
CPO 3322	Cuba, Castro and the USA	3
CPO 3513	Politics of the Far East-Japan and China	3
CPO 4303	Politics of Spain, Portugal, and Latin America	3
CPO 4792	Geopolitics	3
CRW 2001	Introduction to Creative Writing	3
EDF 2085	Teaching Diverse Populations	3
ENG 4013	Introduction to Literary Theory	3
ENL 2020	History of English Literature II	3
EUH 1000	Western Perspectives I	3
EUH 1001	Western Perspectives II	3
EUH 3203	Modern Europe	3
EUH 3411	Rome and the Mediterranean World	3
EUH 3576	Soviet Union since 1917	3
EUH 4239	Age of Empires	3
FRE 4955	Supervised Foreign Language Field Experience Abroad	1-3
GEA 2000	Nations and Regions of the World	3
GEA 4405	Geography of Latin America	3
GEB 4361	International Business	3
GEO 3421	Cultural Geography	3
GEO 3471	Geography of World Affairs	3
HIS 4316	Women in the Atlantic World	3
IDH 1041	Honors Core 2	3
INR 2002	International Politics	3
JPN 3270	Supervised Language Experience Abroad	3
LIT 2000	Introduction to Literature	3
LIT 2030	Introduction to Poetry	3
LIT 3233	Postcolonial Literature	3
LIT 4385	Feminist Theory	3
MAN 4102	Management of Diversity	3
MAR 4156	Seminar in International Marketing	3
MMC 3601	Minorities and the Mass Media	3
MMC 4300	Global Communication	3
MUH 2930	The Music Experience: Special Topics	3
NUR 4615	Community and Public Health Nursing	3
PSY 3680	Positive Psychology	3
REL 3142	New Perspectives on the Religious Self	3
REL 4420	Contemporary Theology	3
REL 3310	Philosophies of the East	3
REL 4592	Development of Christian Thought	3

SOP 3730	Psychology, Culture, and Society	3
SOW 4233	Human Diversity and Social Justice	3
SOW 4941	Immersive Experiences in Social Work	3
SPN 3400	Advanced Stylistics	3
SPN 4500	Spanish Civilization	3
SPN 4520	Latin American Culture and Civilization	3
SPN 4955	Intensive Spanish Abroad	1-5
SYO 4530	Inequality in America	3

## Civic Literacy Requirement

1. Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
  - a. Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
    - i Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
    - ii An understanding of the United States Constitution and its application;
    - iii Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
    - iv An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.
  2. Achieving the standard score on one of the following assessments:

Assessment	Standard Score
U.S. Citizenship and Immigration Services Naturalization Test	60
Advanced Placement Government and Politics: United States	3
Advanced Placement United States History	4
CLEP American Government	50

\*BOG 8.006 (<http://www.flbog.edu/board/regulations/regulations.php>)

## Common Prerequisites

BOT 2010+L	General Botany (+Lab) *	4
CHM 2045+L	General Chemistry I (+Lab) *	4
CHM 2046+L	General Chemistry II (+Lab) *	4
ESC 2000+L	Introduction to Earth Science (+Lab) or GLY 2010L Physical Geology Laboratory & GLY 2010 and Physical Geology	4
MAC 2311	Analytic Geometry and Calculus I *	4
PHY 2048+L	Calculus-Based Physics I (+Lab) * or PHY 2053L Algebra-Based Physics I Lab & PHY 2053 and Algebra-Based Physics I	4
STA 2023	Elements of Statistics *	3
Total Hours		27

\* Indicates common prerequisites which can be used to satisfy General Education requirements.

## Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 60 sh in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement.

Total Hours 0-10

## Environmental Studies Core

### CORNERSTONE

EVR 2920 Foundations in Environmental Science <sup>+</sup> 1

GEO 3210+L Geomorphology (+Lab) <sup>+</sup> 4

### TECHNIQUES AND SKILLS

GEO 4280+L Basic Hydrology (+Lab) <sup>+</sup> 4

GEO 4250+L Weather and Climate (+Lab) <sup>+</sup> 4

GEO 4260+L Geography of Soils (+Lab) <sup>+</sup> 4

EVR 3894 Environmental Writing <sup>+</sup> 3

or ENC 3455 Writing for Science, Technology, Engineering and Math Majors

GIS 4043+L Geographic Information Systems (+Lab) <sup>+</sup> 4

GEO 4004 Environmental Science, Politics and Policy 3

### CAPSTONE

Choose one: 3

EVR 4941 Practicum in Environmental Studies

EVR 4970 Research in Earth and Environmental Sciences

EVR 4039 Community Engagement through Environmental Science

GEO 4332 Senior Seminar <sup>+</sup> 1

Total Hours 31

Environmental Studies Core 31

Natural Science Content

Choose 15 hours 15

GEO 4221+L Coastal Morphology and Processes (+Lab) <sup>+</sup>

GEO 4251 Advanced Climatology and Climate Change <sup>+</sup>

EVR 4023 Coastal and Marine Environments <sup>+</sup>

GLY 3031C Environmental Geology <sup>+</sup>

GLY 4240 Geochemistry <sup>+</sup>

GLY 4244 Biogeochemistry <sup>+</sup>

EVS 4192C Environmental Soil Science <sup>+</sup>

Natural Science Skills

Choose 9 hours 9

GEO 4164 Geostatistics

or STA 4173 Biostatistics

GIS 4071 Methods and Techniques in Environmental Resource Management and Planning <sup>+</sup>

CHM 3120+L Analytical Chemistry (+Lab)

GIS 4035+L Photo Interpretation and Remote Sensing (+Lab) <sup>+</sup>

GIS 4048 Applications in Geographic Information Systems <sup>+</sup>

Any upper-level course with prefix of EVR, EVS, GEO, GIS, or GLY 11

Total Hours 66

+ Courses included in the major GPA

## Environmental Science Teaching

### General Education requirements

In addition to the General Education requirements listed on this page, students must satisfy all additional University requirements, including the Gordon Rule, multicultural, and foreign language requirements. With appropriate planning and coordination with an academic advisor, students may satisfy some of the general University requirements through the General Education curriculum. For a complete listing of general degree requirements, refer to the "University Requirements" (<http://catalog.uwf.edu/undergraduate/universityrequirements>) section of this catalog.

### General Education Curriculum

#### Communication

ENC 1101 English Composition I 3

ENC 1102 English Composition II 3

#### Mathematics

Choose one course from Group A and one Additional course from either Group A or Group B 6

##### Group A

MAC 1105 College Algebra

MAC 1105C College Algebra with Lab

MAC 2311 Analytic Geometry and Calculus I

MGF 1106 Mathematics for Liberal Arts I

MGF 1107 Mathematics for Liberal Arts II

STA 2023 Elements of Statistics

##### Group B

MAC 1114 Trigonometry

MAC 1140 Precalculus Algebra

MAC 2233 Calculus with Business Applications

MAC 2312 Analytic Geometry and Calculus II

### Social Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

##### Group A

AMH 2020 United States since 1877

ANT 2000 Introduction to Anthropology

ECO 2013 Principles of Economics Macro

POS 2041 American Politics

PSY 2012 General Psychology

SPM 2010 Sport in Global Society

SYG 2000 Introduction to Sociology

##### Group B

AMH 2010 United States to 1877

ANT 2400 Current Cultural Issues

ANT 2100 Introduction to Archaeology

CCJ 2002 Survey of Crime and Justice

CPO 2002	Comparative Politics
DEP 2004	Human Development Across the Lifespan
EUH 1000	Western Perspectives I
EUH 1001	Western Perspectives II
FIN 2104	Personal Financial Planning
GEA 2000	Nations and Regions of the World
GEB 1011	Introduction to Business
IDH 1041	Honors Core 2
INR 2002	International Politics
MMC 2000	Principles of Mass Communication
PLA 2013	Survey of American Law
SOW 2192	Understanding Relationships in the 21st Century
SYG 2010	Current Social Problems

## Humanities

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A	
ARH 1000	Art Appreciation
LIT 2000	Introduction to Literature
MUL 2010	Music Appreciation
PHI 2010	Introduction to Philosophy
THE 2000	Theatre Appreciation
Group B	
AML 2010	American Literature I
AML 2020	American Literature II
AML 2072	Sex, Money, and Power in American Literature
ARH 2050	Western Survey I: Prehistory to the Medieval Period
ARH 2051	Western Survey II: Renaissance to Contemporary
ART 1015C	Exploring Artistic Vision
ART 2821	Art and Visual Culture Today
CRW 2001	Introduction to Creative Writing
ENL 2010	History of English Literature I
ENL 2020	History of English Literature II
IDH 1040	Honors Core 1
MUH 2930	The Music Experience: Special Topics
PHI 2103	Critical Thinking
PHI 2603	Ethics in Contemporary Society
REL 1300	World Religions
THE 2300	Survey of Dramatic Literature
SPC 2608	Basic Communication Skills

## Natural Sciences

Choose one course from Group A and one additional course from either Group A or Group B 6

Group A	
AST 1002	Descriptive Astronomy
BSC 1005	General Biology for Non-Majors
BSC 1085	Anatomy and Physiology I
BSC 2010	Biology I

CHM 1020	Concepts in Chemistry *
CHM 2045	General Chemistry I *
ESC 2000	Introduction to Earth Science
EVR 2001	Introduction to Environmental Science
PHY 1020	Introduction to Concepts in Physics *
PHY 2048	Calculus-Based Physics I **
PHY 2048C	University Physics I - Studio
PHY 2053	Algebra-Based Physics I **
Group B	
ANT 2511	Biological Anthropology
BOT 2010	General Botany
BSC 1050	Fundamentals of Ecology
BSC 1086	Anatomy and Physiology II *
BSC 2011	Biology II
BSC 2311	Introduction to Oceanography and Marine Biology *
CGS 2060	Excursions in Computing
CHM 1032	Fundamentals of General Chemistry *
CHM 2046	General Chemistry II *
CIS 2530	Introduction to Cybersecurity
GEO 1200	Physical Geography
GLY 2010	Physical Geology *
MCB 1000	Fundamentals of Microbiology *
PHY 2049	Calculus-Based Physics II **
PHY 2054	Algebra-Based Physics II *

\* May be taken with or without lab.

\*\* General Physics is non-calculus based and is usually recommended for non-science majors. University Physics is calculus based and is usually recommended for science majors.

\*\*\* Although students receive 5 semester hours credit for PHY 2048C, an additional 3 semester science course will be needed to meet General Education requirements.

## General Education Electives

Choose an additional course from two of the three areas of Humanities, Social Sciences and Natural Sciences

## Multicultural Requirement

### Multicultural Courses

AML 3604	African American Literature	3
AML 3624	Black Women Writers	3
AML 4015	Topics in Nineteenth-Century American Literature	3
ANT 2000	Introduction to Anthropology	3
ANT 3212	Peoples and Cultures of the World	3
ANT 3312	North American Indians	3
ANT 3363	Japanese Culture	3
ANT 3403	Cultural Ecology	3
ARH 1000	Art Appreciation	3
ARH 2050	Western Survey I: Prehistory to the Medieval Period	3
ARH 2051	Western Survey II: Renaissance to Contemporary	3
ARH 3590	Non-Western Art	3

ARH 4302	Late Renaissance Art in Italy	3
ARH 4305	Early Italian Renaissance Art	3
ARH 4412	The Age of Revolution to Romanticism	3
ARH 4450	Modern Art: 1850-1980	3
ARH 4470	Contemporary Art	3
ARH 4653	Art and Archaeology of Mesoamerica	3
CCJ 3678	Race, Gender, Ethnicity, and Crime	3
COM 3014	Gender Communication	3
COM 3461	Intercultural Communication	3
COM 3014	Gender Communication	3
CPO 2002	Comparative Politics	3
CPO 3055	Dictatorships	3
CPO 3103	Politics of Western Europe	3
CPO 3322	Cuba, Castro and the USA	3
CPO 3513	Politics of the Far East-Japan and China	3
CPO 4303	Politics of Spain, Portugal, and Latin America	3
CPO 4792	Geopolitics	3
EDF 2085	Teaching Diverse Populations	3
ENG 4013	Introduction to Literary Theory	3
EUH 1000	Western Perspectives I	3
EUH 1001	Western Perspectives II	3
EUH 3203	Modern Europe	3
EUH 3411	Rome and the Mediterranean World	3
EUH 3576	Soviet Union since 1917	3
EUH 4239	Age of Empires	3
FRE 4955	Supervised Foreign Language Field Experience Abroad	1-3
GEA 2000	Nations and Regions of the World	3
GEA 4405	Geography of Latin America	3
GEB 4361	International Business	3
GEO 3421	Cultural Geography	3
GEO 3471	Geography of World Affairs	3
HIS 4316	Women in the Atlantic World	3
IDH 1041	Honors Core 2	3
INR 2002	International Politics	3
JPN 3270	Supervised Language Experience Abroad	3
LIT 2000	Introduction to Literature	3
LIT 3233	Postcolonial Literature	3
LIT 4385	Feminist Theory	3
MAN 4102	Management of Diversity	3
MAR 4156	Seminar in International Marketing	3
MMC 3601	Minorities and the Mass Media	3
MMC 4300	Global Communication	3
MUH 2930	The Music Experience: Special Topics	3
NUR 4615	Community and Public Health Nursing	3
NUR 4636	Public Health & Community-based Nursing	3
PSY 3680	Positive Psychology	3
REL 3310	Philosophies of the East	3
REL 4592	Development of Christian Thought	3
SOP 3730	Psychology, Culture, and Society	3
SOW 4233	Human Diversity and Social Justice	3

SOW 4941	Immersive Experiences in Social Work	3
SPN 3400	Advanced Stylistics	3
SPN 4500	Spanish Civilization	3
SPN 4520	Latin American Culture and Civilization	3
SPN 4955	Intensive Spanish Abroad	1-5

## Civics Literacy Requirement

- Baccalaureate degree-seeking students initially entering a state university fall semester 2018 and thereafter must demonstrate competency in civic literacy through one of the following options prior to graduation:
  - Successfully passing either POSX041 American Government or AMHX020 Introductory Survey Since 1877. Each of the courses must include the following competencies:
    - Understanding of the basic principles and practices of American democracy and how they are applied in our republican form of government;
    - An understanding of the United States Constitution and its application;
    - Knowledge of the founding documents and how they have shaped the nature and functions of our institutions of self-government; and
    - An understanding of landmark Supreme Court cases, landmark legislation and landmark executive actions and their impact on law and society.
- Achieving the standard score on one of the following assessments:

Assessment	Standard Score
U.S. Citizenship and Immigration Services Naturalization Test	60
Advanced Placement Government and Politics: United States	3
Advanced Placement United States History	4
CLEP American Government	50

\*BOG 8.006 (<http://www.flbog.edu/board/regulations/regulations.php>)

## Common Prerequisites:

BSC 1005+L	General Biology for Non-Majors (+Lab)	4
BOT 2010+L	General Botany (+Lab)	4
CHM 2045+L	General Chemistry I (+Lab)	4
CHM 2046+L	General Chemistry II (+Lab)	4
MAC 1147	Precalculus with Trigonometry	4
STA 2023	Elements of Statistics	3
Choose one of the following		4
GEO 1200+L	Physical Geography (+Lab)	
GLY 2010+L	Physical Geology (+Lab)	
ESC 2000+L	Introduction to Earth Science (+Lab)	

Total Hours 27

## Lower Division Electives

Students must complete sufficient 1000/2000 level electives to satisfy at least 60 sh in the lower division. Current UWF students may use elective courses at any level (1000#4000) to meet this elective requirement.

## Environmental Science Core

ENC 3455	Writing for Science, Technology, Engineering and Math Majors	3
ECP 3301	Principles of Environmental Economics	3
EVR 4023	Coastal and Marine Environments (*)	3
GEO 3210	Geomorphology (*)	3
GEO 4250+L	Weather and Climate (+Lab) (*)	4
GEO 4260+L	Geography of Soils (+Lab) (*)	4
GEO 3372	Conservation of Natural Resources (*)	3
GEO 4280+L	Basic Hydrology (+Lab) (*)	4
GEO 4221+L	Coastal Morphology and Processes (+Lab) (*)	4
GEO 4332	Senior Seminar (*)	1
GIS 3015+L	Cartographic Skills (+Lab) (*)	4
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab) (*)	4
GIS 4043+L	Geographic Information Systems (+Lab) (*)	4
Advisor approved elective		1
Total Hours		45

### Teaching Core

EDG 2041	Exploring Inquiry Teaching	3
EDF 3234	Applied Foundations of Education (*)	3
EDG 3323	Methods of K-12 Literacy Instruction (*)	3
TSL 4080	ESOL Principles and Practices (*)	3
ESE 4322	Instruction, Management, and Assessment: Secondary Education (*)	3
SCE 4320	Teaching Science in the Middle and Secondary Schools (*)	3
ESE 4940	Secondary Practicum (*)	3
EDG 4948	Apprenticeship Teaching	6
Total Hours		27

\* Courses included in the major GPA

## Environmental Science

The minor in Environmental Science is offered as a micro-version of the B.S. in Environmental Science degree. The required courses represent a cross section of the departmental offerings.

An Environmental Science Minor consists of 19-20 sh; of the 12-13 upper-level hours, at least 9 of which must be taken at UWF. Directed studies may not be used. Environmental Science majors may not earn this minor.

EVR 2001	Introduction to Environmental Science	3
GEO 3372	Conservation of Natural Resources	3
Choose one:		4
GEO 1200+L	Physical Geography (+Lab)	
GLY 2010+L	Physical Geology (+Lab)	
ESC 2000+L	Introduction to Earth Science (+Lab)	
Choose one:		3-4
GEO 4260+L	Geography of Soils (+Lab)	
GEO 4280+L	Basic Hydrology (+Lab)	
GEO 4376+L	Landscape Ecology (+Lab)	
GLY 3031C	Environmental Geology	

Choose one:		3
EVR 4035	Environmental Law	
EVR 4823	Environmental Impact Assessment	
EVR 4870	Urban Planning	
Any 3000/4000-level EVR, EVS, GEO, GIS, or GLY course		3
Total Hours		19-20

## Geographic Information Science

Geographic Information Science is a computerized system that allows users to work with, interrelate, and analyze virtually all forms of spatial data for decision making. The program represents the latest technologies that are revolutionizing many disciplines, including geography, environmental sciences, archaeology, business, defense and intelligence, and public health/safety in the information age. Required courses and GIS internship have been carefully combined to reflect the real-world requirements needed for careers in the geospatial sciences.

GIS 3015+L	Cartographic Skills (+Lab)	4
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab)	4
GIS 4043+L	Geographic Information Systems (+Lab)	4
GIS 4048	Applications in Geographic Information Systems	3
GIS 4102	GIS Programming	3
GIS 4930	Special Topics in Geographic Information Science	3
Plus choose from the following		3
GIS 4905	Directed Study	
GIS 4944	GIS Internship	
Total Hours		24

## Geographic Information Science Certificate

Department: Environmental Science

Veterans Affairs (VA) Certified? Yes

Semester Hours: 24

This GIS Certificate Program (<http://uwf.edu/cse/departments/earth-and-environmental-sciences/geographic-information-science/geographic-information-science/ug-gis-certificate>) offered through Online Campus is designed to teach students, from novice to working professionals, both the highly in-demand technical skill of using industry-standard geospatial software as well as a strong conceptual foundation in Geographic Information Science. Geographic Information Systems is a computerized system that allows users to work with, interrelate, and analyze virtually all forms of spatial data for decision making. The program provides a solid background in the fundamentals of geography and geospatial science that extends beyond the software. Students can expect to learn the latest geospatial technologies that are revolutionizing many disciplines, including geography, urban planning, environmental sciences, archaeology, business, defense and intelligence, information technology services, and public health/safety. Required courses and GIS internship have been carefully combined to reflect the real-world requirements needed for careers in the geospatial sciences. Students who successfully complete the 24-credit program with a 3.0 overall GPA will be awarded a certificate in Geographic Information Science. Students completing this program can expect to be marketable as GIS Technicians, GIS Analysts, and GIS Managers within various industries.

Offered completely online, our undergraduate GIS Certificate program is designed for non-degree seeking working professionals seeking part-time education from a distance.

Two specializations are available including: Traditional GIS and Archaeology for GIS. Six semester hours are devoted to each specialization. See the Course Catalog (<http://catalog.uwf.edu/courseinformation/courses/gis>) for course descriptions. Students accepted into program of their choice should schedule to meet with a program advisor to receive a detailed course plan.

## Admission Requirements

- Submission of GIS Certificate Program application
- Submission of letter of intent describing the candidate's work experience and reasons for pursuing the certificate program including how the certificate relates to career goals
- Admission to UWF as a degree or non-degree seeking student

Students may transfer one class (3 or 4 credits) into the undergraduate certificate program providing the transfer criteria are met. The class must be an upper level undergraduate class from a regionally accredited U.S. university.

## Course Requirements

Required Courses:

GIS 4043+L	Geographic Information Systems (+Lab)	4
GIS 4006+L	Computer Cartography (+Lab)	4
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab)	4
GIS 4102	GIS Programming	3
Choose from the following (3hr):		3
GIS 4048	Applications in Geographic Information Systems	
GIS 4260	GIS Applications for Archaeology (online only)	
Choose from the following (3hr)		3
GIS 4930	Special Topics in Geographic Information Science	
GIS 5938	Special Topics in GIS for Archaeology (online only)	
Choose from the following (3 sh):		3
GIS 4905	Directed Study (1-3sh)	
GIS 4944	GIS Internship (1-3 sh)	
Total Hours		24

## Geographic Information Science - Archaeology Certificate

Department: Environmental Science

Veterans Affairs (VA) Certified? Yes

Semester Hours: 24

This GIS Archaeology Certificate Program (<http://uwf.edu/cse/departments/earth-and-environmental-sciences/geographic-information-science/geographic-information-science/ug-gis-archaeology-certificate>) is offered through Online Campus and designed to teach students, from novice to working professionals, both the highly in-demand technical skill of using industry-standard geospatial software as well as a strong conceptual foundation in Geographic Information Science. Geographic Information Systems

is a computerized system that allows users to work with, interrelate, and analyze virtually all forms of spatial data for decision making. The program provides a solid background in the fundamentals of geography and geospatial science that extends beyond the software. Students can expect to learn latest technologies that are revolutionizing many disciplines, including geography, environmental sciences, archaeology, business, defense and intelligence, and public health/safety in the information age. The archaeology program utilizes ArcGIS to create, visualize, query, and model archaeological, historical and anthropological data. Additionally, the program is designed to reinforce best practices for collecting spatially-related data on anthropological archaeology projects while recognizing the ethical issues associated with the management of sensitive data. Required courses and GIS internship have been carefully combined to reflect the real-world requirements needed for those interested in using GIS in the fields of archaeology and anthropology. Students completing this program can expect to be marketable as GIS Technicians, GIS Analysts, and GIS Managers within the fields of archaeology and anthropology and other industries.

Offered completely online, our undergraduate GIS Archaeology Certificate program is designed for non-degree seeking working professionals seeking part-time education from a distance.

Students who successfully complete the 24-credit program with a 3.0 overall GPA will be awarded a certificate in Geographic Information Science for Archaeology. Students accepted into the GIS Archaeology Certificate program should meet with an advisor to develop a course plan.

## Admission Requirements

- Submission of GIS Certificate Program application.
- Submission of letter of intent describing the candidate's work experience and reasons for pursuing the certificate program, including how the certificate relates to career goals.
- Admission to UWF as a degree or non-degree seeking student

Students may transfer one class (3 or 4 credits) into the program providing the transfer criteria are met. The class must be an upper level undergraduate class from a regionally accredited U.S. university.

## Required Courses:

GIS 4043+L	Geographic Information Systems (+Lab)	4
GIS 4006+L	Computer Cartography (+Lab)	4
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab)	4
GIS 4102	GIS Programming	3
GIS 4260	GIS Applications for Archaeology	3
GIS 4938	Special Topics in GIS for Archaeology	3
Choose from the following		3
GIS 4944	GIS Internship	
GIS 4905	Directed Study	
Total Hours		24

## Geospatial Computing Certificate

Department: Environmental Science

Semester Hours: 22

The Certificate in Geospatial Computing combines foundation computer programming, database and web programming concepts with the specialized study of geographic information systems. This program is designed to address the need for customized GIS

desktop and web-based applications related to business, geospatial intelligence, education, healthcare, and numerous other employment fields.

As part of the coursework, students will be provided with the opportunity to become technically proficient in a variety of geospatial technologies and applications through hands-on instruction.

The program focuses on Geographic Information Science, data mining, programming, database concepts, computational modeling, automation, and implementation of customized GIS applications. The proposed courses have been carefully combined to reflect the real-world requirements needed for careers in the geospatial sciences. With 100 percent of the coursework offered online, this program is designed to meet the needs of recent graduates looking to enter the workforce and those working professionals who did not acquire a computational GIS background as part of their primary academic training while they continue to hold their position in their chosen field.

## Program Requirements

In addition to meeting general UWF requirements, participants must successfully complete the prescribed courses earning a grade of "C-" or better in each course, and secure a combined grade point average of 2.5 or higher for the courses required by the certificate.

GIS 4043+L	Geographic Information Systems (+Lab)	4
GIS 4048	Applications in Geographic Information Systems	3
GIS 4930	Special Topics in Geographic Information Science	3
Choose one of the following		3
COP 2253	Programming Using Java	
CGS 3464	Programming Using Visual Basic for Non-Majors	
COP 2334	Programming Using C++	
COP 4710	Database Systems	3
Select one of the following		3
COP 3813	Server-Side Programming (Internet Programming)	
CAP 4770	Data Mining	
CNT 4007	Theory and Fundamentals of Networks	
Select one of the following		3
GIS 4944	GIS Internship	
GIS 4102	GIS Programming	
Total Hours		22

## Plan of Study Environmental Management Example

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
ENC 1101	English Composition I <sup>GEC</sup>	3
BSC 1005+L	General Biology for Non-Majors (+Lab) <sup>GENS</sup>	4
STA 2023	Elements of Statistics <sup>GEM</sup>	3
General Ed Humanities <sup>GEH</sup>		3
Gen Ed Humanities <sup>GEH</sup>		3
Credit Hours		16
<b>Spring</b>		
ENC 1102	English Composition II <sup>GEC</sup>	3
MAC 1140	Precalculus Algebra <sup>GEM</sup>	3

BOT 2010+L	General Botany (+Lab) <sup>GENS</sup>	4
ESC 2000+L	Introduction to Earth Science (+Lab) <sup>PR</sup>	4
Credit Hours		14

### Sophomore

<b>Fall</b>		
CHM 2045+L	General Chemistry I (+Lab) <sup>PR</sup>	4
General Education Social Studies <sup>GENS</sup>		3
GEO 3210+L	Geomorphology (+Lab) <sup>core</sup>	4
EVR 2920	Foundations in Environmental Science	1
GEO 4004	Environmental Science, Politics and Policy	3
Credit Hours		15

### Spring

CHM 2046+L	General Chemistry II (+Lab) <sup>PR</sup>	4
General Education Social Studies <sup>GENS</sup>		3
EVR 4970	Research in Earth and Environmental Sciences <sup>core</sup>	1-3
GEO 4332	Senior Seminar <sup>core</sup>	1
EVR 3894	Environmental Writing <sup>core</sup>	3
Credit Hours		12-14

### Junior

<b>Fall</b>		
GEO 4250+L	Weather and Climate (+Lab) <sup>core</sup>	4
GEO 4280+L	Basic Hydrology (+Lab) <sup>core</sup>	4
GEO 4260+L	Geography of Soils (+Lab) <sup>core</sup>	4
GIS 4043+L	Geographic Information Systems (+Lab) <sup>core</sup>	4
Credit Hours		16

### Spring

GEO 4005	Environmental Management & Planning <sup>core</sup>	3
EVR 4035	Environmental Law <sup>2A</sup>	3
EVR 4870	Urban Planning <sup>2A</sup>	3
EVR 4412	Environmental Aspects of Urban Growth <sup>2A</sup>	3
GEO 4357	Environment and Economy <sup>2A</sup>	3
Credit Hours		15

### Senior

<b>Fall</b>		
EVR 4823	Environmental Impact Assessment <sup>2B</sup>	3
GEO 4164	Geostatistics <sup>2B</sup>	3
GIS 4048	Applications in Geographic Information Systems <sup>2B</sup>	3
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab) <sup>2B</sup>	4
Credit Hours		13

### Spring

Advisor Approved elective 3000 or 4000 level <sup>3</sup>		3
Advisor Approved elective 3000 or 4000 level <sup>3</sup>		3
Advisor Approved elective 3000 or 4000 level <sup>3</sup>		3
Advisor Approved elective 3000 or 4000 level <sup>3</sup>		3
Advisor Approved elective 3000 or 4000 level <sup>3</sup>		3
Credit Hours		15

Total Credit Hours

116-118

*This semester plan represents an example of progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply. For an individualized plan of study please consult your advisor.*

## Plan of Study Natural Science Example

Course	Title	Hours
<b>Freshman</b>		
<b>Fall</b>		
ENC 1101	English Composition I <sup>GEC</sup>	3

General Education Humanities <sup>GEH</sup>		3
MAC 1140	Precalculus Algebra <sup>GEM</sup>	3
General Education Social Studies <sup>GESS</sup>		3
ESC 2000+L	Introduction to Earth Science (+Lab) <sup>GENS</sup>	4
	Credit Hours	16
<b>Spring</b>		
ENC 1102	English Composition II <sup>GEC</sup>	3
BOT 2010+L	General Botany (+Lab) <sup>GENS</sup>	4
MAC 2311	Analytic Geometry and Calculus I <sup>PR</sup>	4
CHM 2045+L	General Chemistry I (+Lab) <sup>PR</sup>	4
Gen Ed Humanities <sup>GEH</sup>		3
	Credit Hours	18
<b>Sophomore</b>		
<b>Fall</b>		
STA 2023	Elements of Statistics <sup>GEM</sup>	3
General Education Social Studies <sup>GESS</sup>		3
General Education Humanities		3
CHM 2046+L	General Chemistry II (+Lab) <sup>PR</sup>	4
PHY 2048+L	Calculus-Based Physics I (+Lab) <sup>PR</sup>	4
	Credit Hours	17
<b>Spring</b>		
GEO 3210+L	Geomorphology (+Lab) <sup>core</sup>	4
EVR 2990	Cornerstone seminar course <sup>core</sup>	1
EVR 3894	Environmental Writing <sup>core</sup>	3
EVR 4970	Research in Earth and Environmental Sciences <sup>core</sup>	3
GEO 4332	Senior Seminar <sup>core</sup>	1
GEO 4250+L	Weather and Climate (+Lab)	4
	Credit Hours	16
<b>Junior</b>		
<b>Fall</b>		
GEO 4280+L	Basic Hydrology (+Lab) <sup>core</sup>	4
GIS 4043+L	Geographic Information Systems (+Lab)	4
GEO 4990	Env Management and Planning <sup>core</sup>	3
GEO 4221	Coastal Morphology and Processes <sup>2A</sup>	3
GEO 4260+L	Geography of Soils (+Lab)	4
	Credit Hours	18
<b>Spring</b>		
EVR 4023	Coastal and Marine Environments <sup>2A</sup>	3
GEO 4221	Coastal Morphology and Processes <sup>2A</sup>	3
GLY 3031C	Environmental Geology <sup>2A</sup>	4
	Credit Hours	10
<b>Senior</b>		
<b>Fall</b>		
GLY 4240	Geochemistry <sup>2A</sup>	3
GEO 4164	Geostatistics <sup>2B</sup>	3
GIS 4071	Methods and Techniques in Environmental Resource Management and Planning <sup>2B</sup>	3
GIS 4035+L	Photo Interpretation and Remote Sensing (+Lab)	4
	Credit Hours	13
<b>Spring</b>		
3000 or 4000 level course prefix <sup>3</sup>		3
3000 or 4000 level course prefix <sup>3</sup>		3
3000 or 4000 level course prefix <sup>3</sup>		3
3000 or 4000 level course prefix <sup>3</sup>		3
	Credit Hours	12
	Total Credit Hours	120

*scheduling availability of courses. Prerequisites still apply. For an individualized plan of study please consult your advisor.*

*This semester plan represents an example of progression through the major. Actual courses and course order may be different depending on the student's academic record and*