



**BS in ENVIRONMENTAL SCIENCE (285824) Map Sheet**  
 Department of Plant and Wildlife Sciences  
 For students entering the degree program during the 2012–2013 curricular year.

UNIVERSITY CORE AND GRADUATION REQUIREMENTS				PROGRAM REQUIREMENTS (59.0–60.0 total hours)			
<b>UNIVERSITY CORE REQUIREMENTS</b>				<b>Complete the following environmental science core courses:</b>			
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>	PWS 150*	Environmental Biology	3.0	
<b>Doctrinal Foundation</b>				PWS 282	Introduction to Soil Science	3.0	
Book of Mormon	2	4.0	Rel A 121 and 122	PWS 283	Introduction to Soil Science Lab	1.0	
New Testament	1	2.0	Rel A 211 or 212	PWS 305	Soils and Water Quality	3.0	
Doctrine and Covenants	1	2.0	Rel C 324 or 325	PWS 345	Air Quality and Pollution	3.0	
<b>The Individual and Society</b>				PWS 365	Environmental Microbiology	3.0	
Citizenship				PWS 366	Environmental Microbiology Lab	1.0	
American Heritage	1–2	3–6.0	from approved list	PWS 375	Environmental Policies and Laws	3.0	
Global & Cultural Awareness	1	3.0	from approved list				
<b>Skills</b>				<b>And complete 1 hour of the following:</b>			
Effective Communication				PWS 391R	Careers in Plant & Wildlife Sciences (Environmental Science section)	2.0V	
First-Year Writing	1	3.0	from approved list				
Adv Written & Oral Communication	1	3.0	Engl 316 recommended	<b>Complete the following biology courses:</b>			
Quantitative Reasoning	1	3–4.0	from approved list	Bio 350	Ecology	3.0	
Languages of Learning (Math or Language)	1	3–4.0	Math 112, 119 or Stat 121 recommended	OR PWS 350	Rangeland Ecology	3.0	
				PDBio 120	Science of Biology	2.0	
<b>Arts, Letters, and Sciences</b>				<b>Complete one course from the following:</b>			
Civilization 1 and 2	2	6.0	from approved list	Bio 450	Conservation Biology	3.0	
Arts	1	3.0	from approved list	PWS 199R	Academic Internship (2 hours required)	3.0V	
Letters	1	3.0	from approved list	PWS 494R	Mentored Learning Experience (2 hours required)	6.0V	
Scientific Principles & Reasoning				<b>Complete at least 6 hours from either of the two following groups:</b>			
Biological Science	1	3.0	PWS 150*	a. Chem 105*	General College Chemistry	4.0	
Physical Science	2	7.0	Chem 105*, plus one course from approved list	Chem 106	General College Chemistry	3.0	
Social Science	1	3.0	from approved list	Chem 107	General College Chemistry Lab	1.0	
				Chem 351	Organic Chemistry	3.0	
<b>Core Enrichment: Electives</b>				b. Chem 101*	Introductory General Chemistry	3.0	
Religion Electives	3–4	6.0	from approved list	Chem 103	Introductory Chemistry Laboratory	1.0	
Open Electives	Variable	Variable	personal choice	Chem 285	Intro Bio-organic Chemistry	3.0	
<b>GRADUATION REQUIREMENTS:</b>				<b>Note:</b> Recommended courses for graduate school and for toxicology, soil, and water tracks: Chem 105, 106, 107, 351, 352, 353.			
Minimum residence hours required		30.0		<b>Complete 25 hours from the following list of general electives. The list is organized into suggested career tracks that students may find useful, but students may choose any combination of the courses listed below to fulfill their 25 hours.</b>			
Minimum hours needed to graduate		120.0		<b>Health and Ecotoxicology Core Track:</b>			
				a. Complete the following: Chem 351, 352, 353, MMBio 261, PDBio 362, 363, 365.			
				b. Complete an additional 7 hours from the general major electives list below.			
				<b>Soil Science and Conservation Core Track:</b>			
				a. Complete the following: Chem 285, Geog 306, PWS 303, 306, 402.			
				b. Complete an additional 10 hours from the general major electives list below. (Recommended for advanced students: PWS 511, 514, 520, 560.)			
				<b>Water Resources and Conservation Core Track:</b>			
				a. Complete the following: Chem 285, Geol 111, 435, PWS 325, 402, 411.			
				b. Complete an additional 4 hours from the general major electives list below. (Recommended for advanced students: PWS 511, 514, Bio 556, 557.)			
				<b>Ecology Core Track:</b>			
				a. Complete the following: PWS 215, 344, 355, 417, 419, 440.			
				b. Complete an additional 7 hours from the general major electives list below. (Recommended for advanced students: PWS 540, 551, 553.)			
				<b>Eco-business Core Track:</b>			
				a. Complete the following: Acc 200, Bus M 201, 241, 371R, Econ 110, Geog 306, Hlth 322.			
				b. Complete an additional 6 hours from the general major electives list below.			
				<b>General Major Electives List</b>			
				Acc 200	Principles of Accounting	3.0	
				Bio 235	Field Botany	3.0	
				Bio 370	Bioethics	2.0	
				Bio 420	Evolutionary Biology	2.0	
				Bio 556	Limnology	3.0	
				Bio 557	Stream & Wetland Ecology	4.0	
				Bus M 201	Financial Management	3.0	
				Bus M 241	Marketing Management	3.0	
				Bus M 371R	Entrepreneurship Lecture Series	1.0	
				Chem 223	Quantitative & Qualitative Analysis	4.0	
				Chem 285	Intro to Bio-organic Chemistry	4.0	
				Chem 351	Organic Chemistry-Majors	3.0	
				Chem 352	Organic Chemistry-Majors	3.0	
				Chem 353	Organic Chem Lab-Nonmajors	2.0V	
				Chem 481	Biochemistry-Majors	3.0	
				Econ 110	Economic Principles & Problems	3.0	
				Geog 101	Introduction to Geology	3.0	
				Geog 212	Intro to GIS	4.0	
				Geog 303	Biogeography	3.0	
				Geog 306	Public Land Conservation	3.0	
				Geog 310	Land Use Planning	3.0	
				Geol 101	Introduction to Geology	3.0	
				Geol 111	Physical Geology	4.0	
				Geol 435	Groundwater	3.0	
				<b>(Continued on next page)</b>			

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Hlth	322	Environmental Health	3.0
MMBio	221	General Microbiology	3.0
MMBio	240	Molecular Biology	3.0
MMBio	241	Molecular & Cellular Bio Lab	1.0
MMBio	261	Infection and Immunity	3.0
PDBio	362	Advanced Physiology	3.0
PDBio	363	Advanced Physiology Lab	1.0
PDBio	365	Pathophysiology	4.0
Phscs	106	Intro Applied Physics	3.0
Phscs	107	Intro Applied Physics Lab	1.0
Phscs	108	Intro Applied Physics Lab	1.0
PWS	100	Living with Plants	3.0
PWS	215	Principles of Range Management	3.0
PWS	225	Principles of Wildlife & Fishery Mgt	3.0
PWS	275	Genetics & Reproduction	3.0
PWS	288	Mentored Laboratory Techniques	2.0
PWS	303	Soils Conservation & Resources	3.0
PWS	306	Soil Fertility Lab	1.0
PWS	325	Fisheries & Wetlands Management	3.0
PWS	330	Rangeland Plant ID & Ecology	3.0
PWS	331	Science of Plant Pest Control	3.0
PWS	340	Genetics	2.0
PWS	344	Natural History of Wildlife	3.0
PWS	355	Wildland Veg. Measure & Analysis	3.0
PWS	402	Urban Soils & Water	4.0
PWS	411	Watershed Management	3.0
PWS	416	Rangeland Vegetation Improvement	3.0
PWS	417	Rangeland Planning & GIS	3.0
PWS	419	Forest Management and Ecology	3.0
PWS	431	Integrated Management of Plant Pests	3.0
PWS	440	Plant Physiology	3.0
PWS	511	Environ Biophysics: Soil & Plant	4.0
PWS	514	Soil Microbiology	2.0
PWS	540	Plant Response to the Environment	3.0
PWS	551	Quantitative Ecology	3.0

**Federal Register Requirements:**

The federal register requirements for environmental science ecology or physical science can be met by choosing appropriate electives. Ecology requires 30 semester hours of basic and applied biology, including at least 9 semester hours of ecology and 12 hours of physical and mathematical sciences. Physical science requires 25 semester hours of physical sciences (chemistry, physics, math, etc.)

\*\*All environmental science students should enroll for PWS 391R in every Fall semester they are enrolled. Substitutions can be arranged for students who are not able to take four enrollments for this course.

**Note:** Students are encouraged to complete an average of 15 credit hours each semester or 30 credit hours each year, which could include spring and/or summer terms. Taking fewer credits substantially increases the cost and the number of semesters to graduate.

Preprofessional students should consult with the Preprofessional Advisement Office (3326 WSC) to determine which additional courses they will be required to complete.

The following courses are recommended for students that plan to pursue graduate degrees in environmental science.

Chem 351, 352, 353, 481.  
Math 119 or higher.  
Phscs 105, 106, 107, 108.

**Suggested Sequence of Courses:**

**FRESHMAN YEAR**

1st Semester

PDBio 120	2.0
Chemistry elective	3–4.0
1 <sup>st</sup> Year Writing or American Heritage	3.0
PWS 391R** (ESci)	0.5
Quantitative Reasoning (if needed)	3.0
Rel A 121 (FWSpSu)	2.0
<b>Total Hours</b>	<b>13.5–14.5</b>

2nd Semester

A Htg 100	3.0
or 1 <sup>st</sup> Year Writing	(3.0)
PWS 150	3.0
Chemistry elective	2–3.0
PWS 282, 283	4.0
Rel A 122 (FWSpSu)	2.0
<b>Total Hours</b>	<b>14–15.0</b>

**SOPHOMORE YEAR**

3rd Semester

Civilization 1 elective	3.0
Math 112 or Stat 121 (Lang. of Learning)	3–4.0
PWS 303	3.0
PWS 391R** (ESci)	0.5
Physical Science elective	3.0
Rel A 211 or 212 (FWSpSu)	2.0
<b>Total Hours</b>	<b>14.5–15.5</b>

4th Semester

General elective	3.0
Civilization 2 elective	3.0
Global & Cultural Awareness elective	3.0
Major elective	2.0
PWS 305	3.0
Religion elective	2.0
<b>Total Hours</b>	<b>16.0</b>

**JUNIOR YEAR**

5th Semester

Arts or Letters elective	3.0
Bio 350	3.0
Major electives	4.0
PWS 345	3.0
PWS 391R** (ESci)	0.5
Rel C 324 or 325 (FWSpSu)	2.0
<b>Total Hours</b>	<b>15.5</b>

6th Semester

Adv. Written & Oral Communication elective	3.0
Major electives	6.0
PWS 375	2.0
Religion elective	2.0
Social Science elective	3.0
<b>Total Hours</b>	<b>16.0</b>

Apply for graduation.

**SENIOR YEAR**

7th Semester

Arts or Letters electives	6.0
Major elective	3.0
PWS 391R** (ESci)	0.5
General electives	4.0
Religion elective	2.0
<b>Total Hours</b>	<b>15.5</b>

8th Semester

Bio 450 or PWS 490 or PWS 494R	2–3.0
Major electives	5.0
General electives	6.0
PWS 491R	1.0
<b>Total Hours</b>	<b>14–15.0</b>

**Note:** The above course of study provides a guide in planning. However to meet special needs and interests of each student the courses taken and the order in which they are taken may require alteration. Study the requirements, plan a course of study, and consult with an advisor early in the program. This will save considerable time and minimize frustration.

**THE DISCIPLINE:**

This degree incorporates soil science, biology, and physical science. It is designed for students who desire combined training in these fields and it provides flexibility for students. The emphasis may either be on the environment or on soil science. Students may pursue immediate employment in environmental soil science or graduate study in soil science, environmental science, and other related fields.

**CAREER OPPORTUNITIES:**

Many graduates in environmental soil science will find employment in environmental consulting, analytical laboratories, and governmental agencies. Most students in this program will continue their education in graduate school: graduate schools (PhD), professional schools (medical, dental), law schools, and hydrology. Those with MS and PhD degrees will fill leadership positions in environmental consulting, governmental agencies, and universities.

The major is designed to provide a broad range of skills, including the following: quantitative reasoning; interpretation of scientific literature; recognition of historical and current scientific trends; principles of scientific data collection, interpretation, and assimilation; and critical writing.

**HANDS-ON LEARNING OPPORTUNITIES:**

Students are also encouraged to seek mentored research opportunities in environmental soil science.

**FINANCING:**

Scholarships are available for qualified students from the department, college, and university.

**HONORARY SOCIETIES AND CLUBS:**

The Department of Plant and Wildlife Sciences encourages student participation in active clubs within the department. Students are encouraged to be active participants in professional societies; national honor societies; campus academic, service, and social clubs.

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