

# BS in Environmental Science (285824) MAP Sheet

Life Sciences, Plant and Wildlife Sciences

For students entering the degree program during the 2018-2019 curricular year.



University Core and Graduation Requirements				Suggested Sequence of Courses			
<b>University Core Requirements:</b>				<b>FRESHMAN YEAR</b>			
<b>Requirements</b>	<b>#Classes</b>	<b>Hours</b>	<b>Classes</b>	<u>1st Semester</u>		<b>JUNIOR YEAR</b>	
<b>Religion Cornerstones</b>				PWS 155	1.0	<u>5th Semester</u>	
Teachings and Doctrine of The Book of Mormon	1	2.0	REL A 275	PWS 282	3.0	PWS 350 or BIO 350	3.0
Jesus Christ and the Everlasting Gospel	1	2.0	REL A 250	PWS 283	1.0	Experiential Learning elective	2-4.0
Foundations of the Restoration	1	2.0	REL C 225	Chemistry elective	3.0-4.0	Quantitative Reasoning	3.0
The Eternal Family	1	2.0	REL C 200	1st Year Writing or American Heritage	3.0	Arts or Letters	3.0
<b>The Individual and Society</b>				Religion Cornerstone elective	2.0	Religion elective	2.0
American Heritage	1-2	3-6.0	from approved list	<b>Total Hours</b>	<b>13-14.0</b>	<b>Total Hours</b>	<b>13-15.0</b>
Global and Cultural Awareness	1	3.0	from approved list	<u>2nd Semester</u>		<u>6th Semester</u>	
<b>Skills</b>				PWS 305	3.0	PWS 375	3.0
First Year Writing	1	3.0	from approved list	PWS 306	1.0	Major electives	6.0
Advanced Written and Oral Communications	1	3.0	ENGL 316 recommended	Chemistry elective	3-4.0	Adv. Written & Oral Communication elective	3.0
Quantitative Reasoning	1	3-4.0	from approved list	Social Science	3.0	General elective	2.0
Languages of Learning (Math or Language)	1	3-4.0	MATH 112, or 119 or STAT 121 recommended	1st Year Writing or American Heritage	3.0	Religion elective	2.0
<b>Arts, Letters, and Sciences</b>				Religion Cornerstone elective	2.0	<b>Total Hours</b>	<b>16.0</b>
Civilization 1	1	3.0	from approved list	<b>Total Hours</b>	<b>15-16.0</b>	<b>SENIOR YEAR</b>	
Civilization 2	1	3.0	from approved list	<b>SOPHOMORE YEAR</b>		<u>7th Semester</u>	
Arts	1	3.0	from approved list	<u>3rd Semester</u>		Major electives	9.0
Letters	1	3.0	from approved list	PWS 365	3.0	Arts or Letters	3.0
Biological Science	1	3.0	PWS 150	PWS 366	1.0	General electives	2.0
Physical Science	2	7.0	CHEM 105*, plus one course from approved list	Civilization 1	3.0	Religion elective	2.0
Social Science	1	3.0	from approved list	Language of Learning	3.0	<b>Total Hours</b>	<b>16.0</b>
<b>Core Enrichment: Electives</b>				Physical Science elective	3.0	<u>8th Semester</u>	
Religion Electives	3-4	6.0	from approved list	Religion Cornerstone elective	2.0	Major electives	7.0
Open Electives	Variable	Variable	personal choice	<b>Total Hours</b>	<b>15.0</b>	General electives	9.0
<b>Graduation Requirements:</b>				<u>4th Semester</u>		<b>Total Hours</b>	<b>16.0</b>
Minimum residence hours required		30.0		PDBIO 305, PWS 340 or PWS 440	3-4.0		
Minimum hours needed to graduate		120.0		Major elective	3.0		
				Global & Cultural Awareness	3.0		
				Civilization 2	2.0		
				General elective	3.0		
				Religion Cornerstone elective	2.0		
				<b>Total Hours</b>	<b>16-17.0</b>		

**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.

**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.

**BS in Environmental Science (285824)**  
**2018-2019 Program Requirements (56 - 58 Credit Hours)**

<p><b>REQUIREMENT 1</b> Complete 8 courses</p> <p><b>ENVIRONMENTAL SCIENCE CORE:</b></p> <p>PWS 155 - Careers in Environmental Science 1.0</p> <p>PWS 282 - Soil Science 3.0</p> <p>PWS 283 - Soil Science Laboratory 1.0</p> <p>PWS 305 - Watershed Ecology 3.0</p> <p>PWS 306 - Watershed Ecology Laboratory 1.0</p> <p>PWS 365 - Environmental Microbiology and Biogeochemistry 3.0</p> <p>PWS 366 - Environmental Microbiology and Biogeochemistry Laboratory 1.0</p> <p>PWS 375 - Environmental Policies and Laws 3.0</p> <p><b>REQUIREMENT 2</b> Complete 1 course</p> <p><b>ECOLOGY COURSES:</b></p> <p>BIO 350 - Ecology 3.0</p> <p>PWS 350 - Rangeland Ecology 3.0</p> <p><b>REQUIREMENT 3</b> Complete 1 course</p> <p><b>BIOLOGY COURSES:</b></p> <p>PDBIO 305 - Human Physiology 4.0</p> <p>PWS 340 - Genetics 3.0</p> <p>PWS 440 - Plant Physiology 3.0</p> <p><b>REQUIREMENT 4</b> Complete 3.0 hours from the following course(s)</p> <p><b>EXPERIENTIAL LEARNING COURSES:</b></p> <p>PWS 199R - Academic Internship 3.0v</p> <p>PWS 250 - Field Ecology 3.0</p> <p>PWS 292R - Introduction to Mentored Learning Experience 1.0v</p> <p>PWS 494R - Mentored Learning Experience 6.0v</p> <p><b>REQUIREMENT 5</b> Complete 1 option</p> <p><b>OPTION 5.1</b> Complete 7.0 hours from the following course(s)</p> <p><b>THIS OPTION IS RECOMMENDED FOR ALL TRACKS EXCEPT ECO-BUSINESS.</b></p> <p>*CHEM 105 - General College Chemistry 1 with Lab (Integrated) 4.0</p> <p>CHEM 106 - General College Chemistry 2 3.0</p> <p>CHEM 107 - General College Chemistry Laboratory 1.0</p> <p>CHEM 351 - Organic Chemistry 1 3.0</p> <p><b>OPTION 5.2</b> Complete 7.0 hours from the following course(s)</p> <p>CHEM 101 - Introductory General Chemistry 3.0</p> <p>CHEM 285 - Introductory Bio-organic Chemistry 4.0</p> <p><b>REQUIREMENT 6</b> Complete 25.0 hours from the following option(s)</p> <p><b>COMPLETE 25 HOURS FROM THE FOLLOWING LIST OF GENERAL ELECTIVES.</b></p> <p><b>THIS 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></p>	<p><b>SOIL SCIENCE &amp; CONSERVATION CORE TRACK:</b></p> <p><b>A. Complete the following: Chem 285, Geog 212, Geog 306, PWS 303, PWS 402, PWS 405.</b></p> <p><b>B. Complete an additional 5 hours from the general major electives list below. (Recommended for advanced students: PWS 505, 540, 551.)</b></p> <p><b>WATER RESOURCES &amp; CONSERVATION CORE TRACK:</b></p> <p><b>A. Complete the following: Chem 285, Geog 212, Geol 111, Geol 435, PWS 402, PWS 405.</b></p> <p><b>B. Complete an additional 5 hours from the general major electives list below. (Recommended for advanced students: PWS 505, 551.)</b></p> <p><b>ECOLOGY CORE TRACK:</b></p> <p><b>A. Complete the following: PWS 215, PWS 344, PWS 355, PWS 417, PWS 419, PWS 440.</b></p> <p><b>B. Complete an additional 7 hours from the general major electives list below. (Recommended for advanced students: PWS 540, 551, 553.)</b></p> <p><b>ECO-BUSINESS CORE TRACK:</b></p> <p><b>Complete the following: Acc 200, BusM 241 or BusM 489, BusM 371R, Econ 110, Fin 201, Geog 306, Hlth 322, PDBio 444, PDBio 445.</b></p> <p><b>OPTION 6.1</b> Complete 25.0 hours from the following course(s)</p> <p><b>GENERAL MAJOR ELECTIVES:</b></p> <p>ACC 200 - Principles of Accounting 3.0</p> <p>BIO 235 - Field Botany 3.0</p> <p>BIO 370 - Bioethics 2.0</p> <p>BIO 420 - Evolutionary Biology 4.0</p> <p>BIO 421 - (Not currently offered)</p> <p>BIO 556 - Limnology 3.0</p> <p>BIO 557 - Stream and Wetland Ecology 4.0</p> <p>CHEM 223 - Quantitative and Qualitative Analysis 4.0</p> <p>CHEM 285 - Introductory Bio-organic Chemistry 4.0</p> <p>CHEM 351 - Organic Chemistry 1 3.0</p> <p>CHEM 352 - Organic Chemistry 2 3.0</p> <p>CHEM 353 - Organic Chemistry Laboratory--Nonmajors 2.0v</p> <p>CHEM 481 - Biochemistry 3.0</p> <p>ECON 110 - Economic Principles and Problems 3.0</p> <p>FIN 201 - Principles of Finance 3.0</p> <p>GEOG 101 - Global Environment: Understanding Physical Geography 3.0</p> <p>GEOG 212 - Introduction to Geographic Information Systems 3.0</p> <p>GEOG 303 - Biogeography 3.0</p> <p>GEOG 306 - Global Conservation Designations 3.0</p> <p>GEOG 310 - Introduction to Urban and Regional Planning 3.0</p>	<p>GEOL 101 - Introduction to Geology 3.0</p> <p>GEOL 111 - Physical Geology 4.0</p> <p>GEOL 435 - Introduction to Groundwater 3.0</p> <p>HLTH 322 - Environmental Health 3.0</p> <p>MATH 302 - Mathematics for Engineering 1 4.0</p> <p>MATH 303 - Mathematics for Engineering 2 4.0</p> <p>MKTG 201 - Marketing Management 3.0</p> <p>MMBIO 221 - General Microbiology 3.0</p> <p>MMBIO 240 - Molecular Biology 3.0</p> <p>MMBIO 241 - Molecular and Cellular Biology Laboratory 1.0</p> <p>MMBIO 261 - Infection and Immunity 3.0</p> <p>MSB 381R - Social Innovation Lecture Series 1.0</p> <p>PDBIO 120 - Science of Biology 3.0</p> <p>PDBIO 362 - Advanced Physiology 3.0</p> <p>PDBIO 363 - Advanced Physiology Laboratory 1.0</p> <p>PDBIO 365 - Pathophysiology 4.0</p> <p>PDBIO 444 - BIO-Innovation and -Entrepreneurship 1 2.0</p> <p>PDBIO 445 - BIO-Innovation and -Entrepreneurship 2 2.0</p> <p>PHIL 205 - Introduction to Formal Logic 3.0</p> <p>PHSCS 106 - General Physics 2 3.0</p> <p>PHSCS 107 - General Physics Lab 1 1.0</p> <p>PHSCS 108 - General Physics Lab 2 1.0</p> <p>PWS 100 - Plants in the Environment 3.0</p> <p>*PWS 150 - Environmental Biology 3.0</p> <p>PWS 215 - Principles of Range Management 3.0</p> <p>PWS 225 - Principles of Wildlife and Fisheries Management 3.0</p> <p>PWS 275 - Genetics and Reproduction 3.0</p> <p>PWS 303 - Soils Conservation and Resources 3.0</p> <p>PWS 325 - Fisheries and Wetlands Management 3.0</p> <p>PWS 330 - Rangeland Plant Identification and Ecology 3.0</p> <p>PWS 331 - Science of Plant Pest Control 3.0</p> <p>PWS 340 - Genetics 3.0</p> <p>PWS 344 - Natural History of Wildlife 3.0</p> <p>PWS 355 - Rangeland Vegetation Measurements and Analysis 3.0</p> <p>PWS 402 - Soils and Water in the Urban Environment 3.0</p> <p>PWS 405 - Environmental Chemistry Laboratory 2.0</p> <p>PWS 411 - Watershed Management 3.0</p> <p>PWS 416 - Rangeland Improvement and Restoration 3.0</p> <p>PWS 417 - Rangeland Planning and GIS 3.0</p> <p>PWS 419 - Forest Management and Ecology 3.0</p>
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## BS in Environmental Science (285824) 2018-2019 Program Requirements Cont...

PWS 431 - Plant Health Diagnostics	3.0
PWS 440 - Plant Physiology	3.0
PWS 505 - Aquatic and Terrestrial Biogeochemistry	3.0
PWS 511 - Environmental Biophysics: Soil and Plant Water Relations	4.0
PWS 540 - Plant Response to the Environment	3.0
PWS 551 - Quantitative Ecology	3.0
PWS 553 - Restoration Ecology	3.0
PWS 560 - Quantitative Environmental Chemistry	2.0
STRAT 489 - Agribusiness Management 2	3.0

**FEDERAL REGISTER REQUIREMENTS:** *The federal register requirements for environmental science ecology or physical science emphasis 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.).*

### THE DISCIPLINE:

This degree educates and trains students in the fundamentals of biogeochemistry, ecology, and biology relating to soil and water conservation, quality, and pollution. Through core courses and environmental labs, students will understand the science, politics, and ethics behind current problems facing the environment—locally, regionally, nationally, and globally; learn and practice effective research techniques in field and lab settings (i.e., testable hypotheses, utilization of the scientific method, and environmental testing procedures); and conduct and design basic environmental quality measurements and site assessments. We strive to help students foster and promote environmental stewardship within their own realms of influence.

### CAREER OPPORTUNITIES:

Bachelor's Degree: environmental compliance inspector, natural sciences manager, environmental scientist and specialist, hydrologist, NEPA planner, recycling solutions associate, environmental site assessor, environmental consultant, ecological resource specialist, staff scientist, park naturalists, fish and game officer, range manager, water resource specialist, brownfield redevelopment specialist and site manager, environmental restoration planner.

Master's Degree: environmental business consultant; natural resource

and conservation consultant/scientist; principal soil consultant, principal water consultant; environmental, soil, or water scientist for local, state, or national governmental agencies [i.e., Bureau of Land Management (BLM), Natural Resource Conservation Service (NRCS), United States Environmental Protection Agency (EPA), United States Department of Agriculture (USDA), United States Department of Energy (DOE)].

Doctorate Degree: professor of natural resource and conservation, senior water or soil natural resources scientist.

### HANDS-ON LEARNING OPPORTUNITIES:

Students are encouraged to seek mentored research opportunities early as part of PWS 494R: Mentored Learning Experience and participate in the multiple study abroad programs (China, Africa, South America, and South Pacific-Australia) organized by the Environmental Science faculty.

### FINANCING:

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

### ENVIRONMENTAL SCIENCE CLUB:

Environmental Science majors participate in the BYU Environmental Science Club. The club is student lead and organizes career network and educational opportunities in fun, social, environmental settings. Fund-raising efforts support educational and networking trips every semester.

### MAP DISCLAIMER

While every reasonable effort is made to ensure accuracy, there are some student populations that could have exceptions to listed requirements. Please refer to the university catalog and your college advisement center/department for complete guidelines.

### DEPARTMENT INFORMATION

**Plant and Wildlife Science**  
Brigham Young University  
4105 Life Sciences Building

Provo, UT 84602  
Telephone: (801) 422-2760

### ADVISEMENT CENTER INFORMATION

**Life Sciences Advisement**  
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