## University Core and Graduation Requirements

### University Core Requirements:

<table>
<thead>
<tr>
<th>Requirements</th>
<th>#Classes</th>
<th>Hours</th>
<th>Classes</th>
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<tbody>
<tr>
<td><strong>Religion Cornerstones</strong></td>
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<tr>
<td>Teachings and Doctrine of The Book of Mormon</td>
<td>1</td>
<td>2.0</td>
<td>REL A 275</td>
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<tr>
<td>Jesus Christ and the Everlasting Gospel</td>
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<tr>
<td>Foundations of the Restoration</td>
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<td>The Eternal Family</td>
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<td><strong>The Individual and Society</strong></td>
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<tr>
<td>American Heritage</td>
<td>1-2</td>
<td>3-6.0</td>
<td>from approved list</td>
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<tr>
<td>Global and Cultural Awareness</td>
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<td><strong>Skills</strong></td>
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<td>First Year Writing</td>
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<td>Advanced Written and Oral Communications</td>
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<td>WRTG 316, recommended</td>
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<td>Quantitative Reasoning</td>
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<tr>
<td>Languages of Learning (Math or Language)</td>
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<td>MATH 112, or 119 or STAT 121, recommended</td>
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<td><strong>Arts, Letters, and Sciences</strong></td>
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<tr>
<td>Civilization 2</td>
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<tr>
<td>Arts</td>
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<tr>
<td>Letters</td>
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<td>Biological Science</td>
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<td>PWS 150</td>
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<td>Physical Science</td>
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<td>CHEM 105, plus one course from approved list</td>
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<td>Social Science</td>
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<td><strong>Core Enrichment: Electives</strong></td>
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<td>Religion Electives</td>
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<td>Open Electives</td>
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<td>personal choice</td>
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### Graduation Requirements:

- Minimum residence hours required: 30.0
- Minimum hours needed to graduate: 120.0

## Suggested Sequence of Courses

### FRESHMAN YEAR

**1st Semester**
- PWS 155: 1.0
- PWS 282: 3.0
- PWS 283: 1.0
- Chemistry elective: 3.0-4.0
- 1st Year Writing or American Heritage: 3.0
- Religion Cornerstone elective: 2.0
  - Total Hours: 13-14.0

**2nd Semester**
- PWS 305: 3.0
- PWS 306: 1.0
- Chemistry elective: 3.4-0
- Social Science: 3.0
- 1st Year Writing or American Heritage: 3.0
- Religion Cornerstone elective: 2.0
  - Total Hours: 15-16.0

### SOPHOMORE YEAR

**3rd Semester**
- PWS 365: 3.0
- PWS 366: 1.0
- Civilization 1: 3.0
- Language of Learning: 3.0
- Physical Science elective: 3.0
- Religion Cornerstone elective: 2.0
  - Total Hours: 15.0

**4th Semester**
- PDBIO 305, PWS 340 or PWS 440: 3.4-0
- Major elective: 3.0
- Global & Cultural Awareness: 3.0
- Civilization 2: 2.0
- General elective: 3.0
- Religion Cornerstone elective: 2.0
  - Total Hours: 16-17.0

### JUNIOR YEAR

**5th Semester**
- PWS 350 or BIO 350: 3.0
- Experiential Learning elective: 2.4-0
- Quantitative Reasoning: 3.0
- Arts or Letters: 3.0
- Religion elective: 2.0
  - Total Hours: 13-15.0

**6th Semester**
- PWS 375: 3.0
- Major electives: 6.0
- Adv. Written & Oral Communication elective: 3.0
- General elective: 2.0
- Religion elective: 2.0
  - Total Hours: 16.0

### SENIOR YEAR

**7th Semester**
- Major electives: 9.0
- Arts or Letters: 3.0
- General electives: 2.0
- Religion elective: 2.0
  - Total Hours: 16.0

**8th Semester**
- Major electives: 7.0
- General electives: 9.0
  - Total Hours: 16.0

### 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.
- 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.
**RECOMMENDED GES**

- GEOL 101 - Introduction to Geology
- HIST 290 - Nature and History: The Earth’s Environmental Past
- PWS 147 - Climate Change: Science and Solutions
- STAT 211 - Principles of Statistics

**REQUIREMENT 1**

- PWS 292R – Introduction to Mentored Learning Experience 1.0v
- PWS 399R - Research Internship 9.0v
- PWS 494R - Mentored Learning Experience 6.0v

**REQUIREMENT 2**

- PWS 250 - Field Ecology 3.0
- PWS 282 - Soil Science 3.0
- PWS 283 - Soil Science Laboratory 1.0
- PWS 305 - Watershed Ecology 3.0
- PWS 306 - Watershed Ecology Laboratory 1.0
- PWS 365 - Biogeochemistry 3.0
- PWS 366 - Biogeochemistry Laboratory 1.0
- PWS 440 - Plant Physiological Ecology 3.0
- PWS 480 - Environmental Capstone: Data Analysis and Writing 3.0

**REQUIREMENT 3**

- GEOG 222 - Statistics for Geographers 1 3.0
- STAT 121 - Principles of Statistics 3.0

**REQUIREMENT 4**

- PWS 292R - Introduction to Mentored Learning Experience 1.0v
- PWS 399R - Research Internship 9.0v
- PWS 494R - Mentored Learning Experience 6.0v

**REQUIREMENT 5**

- Complete 24.0 hours from the following option(s)

**SUSTAINABILITY CORE. COMPLETE 8-9 HOURS FROM THE FOLLOWING LIST OF GENERAL ELECTIVES.**

- RECOMMENDED GES
- STAT 121 - Principles of Statistics
- PWS 365 - Biogeochemistry
- IHUM 280R - Sophomore Seminar: Humanities and the Environment
- MSB 375 - Landscape Ecology
- PWS 330 - Research Internship
- *PWS 150 - Environmental Biology
- STAT 121 - Principles of Statistics
- CLS 155 - Environmental Management

**ENVIRONMENTAL SCIENCE CORE**

- PWS 292R - Introduction to Mentored Learning Experience
- STAT 121 - Principles of Statistics
- GEOG 222 - Principles of Statistics
- GEOG 307 - Principles of Statistics
- BIO 370 - Biostats

**SUSTAINABILITY TRACKS**

- Ecosystem Ecology Track
- Complete the following: CHEM 245, GEOG 307, BIO 350, BIO 420, BIO 542, BIO 455, PWS 215, PWS 411, PWS 417, PWS 419, and PWS 472.

- Sustainable Development Track
- Complete the following: ECON 110, HLTH 480, IAS 220, IHUM 280R, MSB 375, MSB 381, and SOC 340.

- Resource Conservation & Management Track
- Complete the following: PWS 225, PWS 330, PWS 376, PWS 405, CE EN 414, CE EN 451, CHEM 202, GEOL 420/421, and HLTH 322.

**GENERAL MAJOR ELECTIVES**

- ACC 200 - Principles of Accounting 3.0
- BIO 235 - Field Botany 3.0
- BIO 350 - Ecology 3.0
- BIO 370 - Biostats 2.0
- BIO 430 - Evolutionary Biology 4.0
- BIO 556 - Limnology 3.0
- BIO 557 - Stream and Wetland Ecology 4.0
- CCE 201 - Sustainable Infrastructure 2.0
- CE 414 - Engineering Applications of GIS 3.0
- CELL 120 - Science of Biology 3.0
- CELL 444 - BIO-Innovation and -Entrepreneurship 1 2.0
- CELL 445 - BIO-Innovation and -Entrepreneurship 2 2.0

**GENERAL MAJOR ELECTIVES**

- CHEM 223 - Quantitative and Qualitative Analysis 4.0
- CHEM 285 - Introductory Bio-organic Chemistry 4.0
- CHEM 351 - Organic Chemistry 1 3.0
- CHEM 352 - Organic Chemistry 2 3.0
- CHEM 353 - Organic Chemistry Laboratory–Nonmajors 2.0v
- CHEM 481 - Biochemistry 3.0
- ECON 110 - Economic Principles and Problems 3.0
- ECON 440 - Natural Resources and Environmental Economics 3.0

**ENVIRONMENTAL SCIENCE AND SUSTAINABILITY (285824)**

**2021-2022 Program Requirements (60 Credit Hours)**

- ENT 381 - Entrepreneurship Lecture Series 1.0
- ENT 382 - Entrepreneurship Lecture Series 1.0
- FIN 201 - Principles of Finance 3.0
- GEOL 101 - Global Environment: Understanding Physical Geography 3.0
- GEOL 212 - Introduction to Geographic Information Systems 3.0
- GEOG 303 - Biogeography 3.0
- GEOG 306 - Global Conservation Designations 3.0
- GEOG 307 - Landscape Ecology 3.0
- GEOG 310 - Introduction to Urban and Regional Planning 3.0
- GEOG 101 - Introduction to Geology 3.0
- GEOL 111 - Physical Geology 4.0
- GEOL 420 - Geological Field Methods 2.0
- GEOG 421 - Geological Mapping 2.0
- GEOL 435 - Introduction to Groundwater 3.0
- HLTH 322 - Environmental Health 3.0
- HLTH 324 - Occupational Health and Safety 3.0
- HLTH 480 - International Health 3.0
- IAS 351R - Model United Nations Preparation 3.0v
- IHUM 280R - Sophomore Seminar: Humanities and the Environment 3.0
- MKTG 201 - Marketing Management 3.0
- MMOB 221 - General Microbiology 3.0
- MMOB 240 - Molecular Biology 3.0
- MMOB 241 - Molecular and Cellular Biology Laboratory 1.0
- MSB 375 - Social Impact: Do Good Better 3.0
- PHIL 205 - Introduction to Logic and Critical Thinking 3.0
- PHIL 413R - Topics in Ethics 3.0
- PHSCS 106 - General Physics 2 3.0
- PHSCS 107 - General Physics Lab 1 1.0
- PHSCS 108 - General Physics Lab 2 1.0
- POLI 321 - The Media in American Politics 3.0
- POLI 325 - Politics of Wilderness, National Parks, and Public Land Management 3.0
- PWS 100 - Plants in the Environment 3.0
- *PWS 150 - Environmental Biology 3.0
- PWS 180 - Climate Change: Science and Solutions 3.0
- PWS 215 - Principles of Range Management 3.0
- PWS 225 - Principles of Wildlife and Fisheries Management 3.0
- PWS 275 - Genetics and Reproduction 3.0
- PWS 303 - Soils Conservation and Resources 3.0
- PWS 325 - Fisheries and Wetlands Management 3.0
- PWS 330 - Rangeland Plant Identification and Ecology 3.0

- Complete 3.0v
- Complete 6.0v
- Complete 9.0v
- Complete 24.0 hours from the following list of general electives.
- 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 24 hours.

- Complete the following: PWS 225, PWS 330, PWS 376, PWS 405, CE EN 414, CE EN 451, CHEM 202, GEOL 420/421, and HLTH 322.

- Complete 24.0 hours from the following course(s)
- Complete the following: PWS 225, PWS 330, PWS 376, PWS 405, CE EN 414, CE EN 451, CHEM 202, GEOL 420/421, and HLTH 322.

- Complete 24.0 hours from the following course(s)
- Complete 24.0 hours from the following option(s)

- General Electives: PWS 292R - Introduction to Mentored Learning Experience 1.0v
- PWS 399R - Research Internship 9.0v
- PWS 494R - Mentored Learning Experience 6.0v

- Complete the following: CHEM 245, GEOG 307, BIO 350, BIO 420, BIO 542, BIO 455, PWS 215, PWS 411, PWS 417, PWS 419, and PWS 472.

- Complete the following: ECON 110, HLTH 480, IAS 220, IHUM 280R, MSB 375, MSB 381, and SOC 340.

- Complete the following: PWS 225, PWS 330, PWS 376, PWS 405, CE EN 414, CE EN 451, CHEM 202, GEOL 420/421, and HLTH 322.

**OPTION 5.1**

- Complete 24.0 hours from the following course(s)

- Complete 24.0 hours from the following course(s)

- Complete 24.0 hours from the following course(s)

- Complete 24.0 hours from the following course(s)

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- Complete 24.0 hours from the following course(s)
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
Brigham Young University
2060 Life Sciences Building
Provo, UT 84602
Telephone: (801) 422-3042
lifesciences@byu.edu

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### BS in Environmental Science and Sustainability (285824)

#### 2021-2022 Program Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PWS 331</td>
<td>Science of Plant Pest Control</td>
<td>3.0</td>
</tr>
<tr>
<td>PWS 340</td>
<td>Genetics</td>
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<tr>
<td>PWS 344</td>
<td>Natural History of Wildlife</td>
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<tr>
<td>PWS 350</td>
<td>Rangeland Ecology</td>
<td>3.0</td>
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<td>PWS 355</td>
<td>Rangeland Vegetation Measurements and Analysis</td>
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<td>PWS 402</td>
<td>Soils and Water in the Urban Environment</td>
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<td>PWS 405</td>
<td>Environmental Chemistry Laboratory</td>
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<td>PWS 411</td>
<td>Watershed Management</td>
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<td>PWS 416</td>
<td>Rangeland Improvement and Restoration</td>
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<td>PWS 417</td>
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<td>Forest Management and Ecology</td>
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<td>International Agricultural Development</td>
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<td>PWS 431</td>
<td>Plant Health Diagnostics</td>
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<td>PWS 440</td>
<td>Plant Physiological Ecology</td>
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<td>Conservation Genomics</td>
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<td>PWS 505</td>
<td>Aquatic and Terrestrial Biogeochemistry</td>
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