BS in Environmental Sciences with Emphasis in Land and Soil

Degree Program Description
The Environmental Science degree with an emphasis in Land and Soil combines interests in monitoring environmental change, conserving and managing soil and biological organisms, sustainably managing soil, improving environmental quality with the shaping of new policies and educating others about the natural environment and environmental issues. Example careers include Environmental Specialist, Environmental Technician, Land Manager, and Soil Scientist. Employment may occur in a variety of sectors, including federal, state, county and city government agencies, non-government agencies (NGOs), and private consulting firms.

Major Program Requirements
The degree combines interests in monitoring environmental change, conserving and managing soil and biological organisms, sustainably managing soil, and improving environmental quality with the shaping of new policies and educating others about the natural environment and environmental issues. Example careers include Environmental Specialist, Environmental Technician, Land Manager, and Soil Scientist. Employment may occur in a variety of sectors, including federal, state, county and city government agencies, non-government agencies (NGOs), and private consulting firms.

Students earning a Bachelor of Science in Environmental Sciences are required to complete all University general education (http://catalog.missouri.edu/academicdegreerequirements/ generaleducationrequirements/), University graduation (http://catalog.missouri.edu/academicdegreerequirements/ universityrequirements/), and degree requirements, including selected foundational courses, which may fulfill some University general education requirements.

Foundational

MATH 1100 College Algebra 3-5
or MATH 1160 Precalculus Mathematics
MATH 1400 Calculus for Social and Life Sciences I 3-5
or MATH 1500 Analytic Geometry and Calculus I
CHEM 1320 College Chemistry I 4
Business Elective (select from ABM, FINPLN, MANGMT, MRKTNG) 3
ABM 2123 Quantitative Applications in Agricultural and Natural Resource Sciences 3
or STAT 1200 Introductory Statistical Reasoning
ENV_SC 1100 Introduction to Environmental Science 3
AGSC_COM 2220 Verbal Communication in Agriculture, Food and Natural Resources 3
ATM_SC 1050 Introductory Meteorology 3
NAT_R 2325 Introduction to Geographic Information Systems 3
or GEOG 3040 Introduction to Geographic Information Systems GIS

Core Emphasis Area

Biological Science
BIO_SC 1200 General Botany with Laboratory 3
or PLNT_SC 2110 Plants and their Cultivation
BIO_SC 1500 Introduction to Biological Systems with Laboratory 5
FOREST 4320 Forest Ecology 5
or BIO_SC 3650 General Ecology

Chemistry
CHEM 1320 College Chemistry II 4
Geology
GEOL 1100 Introduction to the Earth with Laboratory 4
or GEOL 1200 Environmental Geology with Laboratory
GEOL 2400 Surficial Earth Processes and Products with Laboratory 4

Policy/Regulation
NAT_R 4353 Natural Resource Policy/Administration 3
or ENV_SC 4400W Environmental Law, Policy, and Justice - Writing Intensive

Soil Science
SOIL 2100 Introduction to Soils 3
SOIL 2106 Soil Science Laboratory 2

Physics
SOIL 4305 Environmental Soil Physics 3
SOIL 4306 Environmental Soil Physics Laboratory 4
or PHYSCS 1210 College Physics I

Additional Emphasis Area Requirements
FOREST 2151 Dendrology 4
ENV_SC 2600 Sustainability Foundations: An Introduction to Sustainability 3
ENV_SC 3250 Pollutant Fate and Transport 3
SOIL 4313 Soil Fertility and Plant Nutrition 3-4
or FOREST 4330 Practice of Silviculture
or F_W 4600 Ecosystem Management
ENV_SC 4940 Environmental Science Internship 3

Upper Level Disciplinary Electives 15
Select from the following courses to achieve an additional 15 credits.

Must take at least one Atmospheric, Environmental, or Soil Science course, and one course that involved computer modeling.

ATM_SC 3600 Climates of the World
AG_S_TCH 4360 Precision Agriculture Science and Technology
AG_S_TCH 4420 Surface Water Management
ENV_SC 4305 Environmental Soil Physics
ENV_SC 4306 Environmental Soil Physics Laboratory
ENV_SC 4312 Environmental Soil Microbiology
ENV_SC 4318 Environmental Soil Chemistry
ENV_SC 4320 Hydrologic and Water Quality Modeling
ENV_SC 4450 Environmental Hydrology
F_W 4500 Animal Population Dynamics and Management
ENV_SC 4600W Sustainability Science Problem Solving - Writing Intensive
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>F_W 4600W</td>
<td>Ecosystem Management - Writing Intensive</td>
<td>3</td>
</tr>
<tr>
<td>FOREST 3207</td>
<td>Forest Fire Control and Use</td>
<td></td>
</tr>
<tr>
<td>FOREST 4380</td>
<td>Forest Resource Management</td>
<td></td>
</tr>
<tr>
<td>FOREST 4390</td>
<td>Watershed Management and Water Quality</td>
<td></td>
</tr>
<tr>
<td>GEOG 3610</td>
<td>Physical Geography of the United States</td>
<td></td>
</tr>
<tr>
<td>GEOG 3630</td>
<td>Earth Surface Systems</td>
<td></td>
</tr>
<tr>
<td>GEOG 3830</td>
<td>Remote Sensing</td>
<td></td>
</tr>
<tr>
<td>GEOG 4710</td>
<td>Spatial Analysis in Geography</td>
<td></td>
</tr>
<tr>
<td>GEOG 4940</td>
<td>Advanced Geographic Information Systems (GIS II)</td>
<td></td>
</tr>
<tr>
<td>NAT_R 4110</td>
<td>Natural Resource Biometrics</td>
<td></td>
</tr>
<tr>
<td>NAT_R 4385</td>
<td>Landscape Ecology and GIS Analysis I</td>
<td></td>
</tr>
<tr>
<td>PLNT_SCI 3270</td>
<td>Forage Crops</td>
<td></td>
</tr>
<tr>
<td>PLNT_SCI 3275</td>
<td>Grain Crops</td>
<td></td>
</tr>
<tr>
<td>SOIL 4313</td>
<td>Soil Fertility and Plant Nutrition</td>
<td></td>
</tr>
<tr>
<td>SOIL 4320</td>
<td>Genesis of Soil Landscapes</td>
<td>4</td>
</tr>
</tbody>
</table>

**Capstone Experience**

Electives approved by professional advisor to complete 120 total credits.

## Semester Plan

**First Year**

### Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 1100 or POL_SC 1100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ENV_SC 1100 | | 3
| BIO_SC 1200 | | 5
| ATM_SC 1050 | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| ENGLSH 1000 | | 3
| MATH 1100 | | 3
| SOIL 2100 | | 3

**Total Credits: 14**

### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| CHEM 1320 | | 4
| AGSC_COM 2220 | | 3
| FOREST 4320 | | 5
| ENV_SC 2600 | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| CHEM 1330 | | 4
| Emphasis Area Elective | | 3
| GEOL 1200 | | 4
| SOIL 2106 | | 2

**Total Credits: 15**

## Second Year

### Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| STAT 1200 | | 3
| FOREST 2151 | | 4
| ABM 1200 | | 3
| ENV_SC 3290 | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| NAT_R 2325 | | 3
| ENV_SC 3250 | | 3
| MATH 1400 | | 3
| Humanities Elective-Lower Level WI Elective | | 3

**Total Credits: 13**

### Spring

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| ENV_SC 4306 | | 2
| 2 Humanities Elective | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| NAT_R 4353 | | 3
| SOIL 4330 | | 3

**Total Credits: 16**

## Third Year

### Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| STAT 1200 | | 3
| FOREST 2151 | | 4
| ABM 1200 | | 3
| ENV_SC 3290 | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| NAT_R 2325 | | 3
| ENV_SC 3250 | | 3
| MATH 1400 | | 3
| Humanities Elective-Lower Level WI Elective | | 3

**Total Credits: 13**

### Summer

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| ENV_SC 4306 | | 2
| Humanities Elective Upper Level WI | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| NAT_R 4353 | | 3
| SOIL 4330 | | 3

**Total Credits: 16**

## Fourth Year

### Fall

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| SOIL 4320 | | 4
| ENV_SC 4305 | | 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>CR</th>
</tr>
</thead>
</table>
| 4 FOREST 4330 | | 4
| Emphasis Area Elective-Upper Level WI | | 3

**Total Credits: 16**