BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE - QUANTITATIVE REASONING CATEGORY III/IV AND ENG 114

120 Total Units Required
Minimum Number of Units in the Major: 68

Course Title Units

First Semester
ENG 114 Writing the First Year: Finding Your Voice (A2) 3
MATH 197 Prelude to Calculus I (Prerequisite for MATH 226) 3
GE Area A 3
GE Area C 3
GE Area D 3

Units 15

Second Semester
CHEM 180 Chemistry for the Energy and the Environment (Major Lower-Division Core, B1, B3, ES) 3
GEOG 101 Our Physical Environment (Major Lower-Division Core, B1, ES) 3
GEOG 102 The Human Environment (Major Lower-Division Core, D1, ES, GP) 3
MATH 198 Prelude to Calculus II (Prerequisite for MATH 226, B4) 3
GE Area E 3

Units 15

Third Semester
Select One (Major Lower-Division Core):
BIOL 150 The World of Plants (B2, B3, ES) 3
BIOL 170 Animal Diversity (B2, ES) 3
BIOL 313 Principles of Ecology 3
GEOG 205 Geographic Techniques (Major Lower-Division Core) 3
GEOG 160 Introduction to Environmental Science (Major Core) 4
MATH 226 Calculus I (Major Core, B4) 4

GE Area A Units 3
Fourth Semester
MATH 227 Calculus II (If taking PHYS 220/PHYS 222) 4
or SF State Studies or University Elective
Select One Set of Courses (Major Lower-Division Core):
PHYS 111 & PHYS 112 General Physics I and General Physics Laboratory (B1, B3) 4
PHYS 220 & PHYS 222 General Physics with Calculus I and General Physics Laboratory (B1, B3) 4
GE Area C - Take Two 6
GE Area D 3

Units 17

Fifth Semester
GEOG 500GW Physical and Human Dimensions of Climate Change - GWAR (Major Upper-Division Core) 3
GEOG 603 Introduction to Geographic Information Systems (Major Upper-Division Core) 3
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course) 3
SF State Studies or University Elective – Take Two 5

Units 17

Sixth Semester
Major Environmental Science Electives (12 Units Total) - Take One 3-4
Major Environmental Management Electives (12 Units Total) - Take One 3-4
Major Analytical Methods Electives (8 Units Total) - Take One 3-4
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course) 3

Units 12-15

Seventh Semester
Major Environmental Science Electives (12 Units Total) - Take One 3-4
Major Environmental Management Electives (12 Units Total) - Take One 3-4
Major Analytical Methods Electives (8 Units Total) - Take One 3-4
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course) 3

Units 12-15
### Eighth Semester

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 690</td>
<td>Senior Seminar in Geography and Environmental Science (Major Capstone)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Major Environmental Science Electives (12 Units Total) – Take Two**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>6-7</td>
</tr>
</tbody>
</table>

**Major Environmental Management Electives (12 Units Total) – Take Two**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG</td>
<td></td>
<td>6-7</td>
</tr>
</tbody>
</table>

**Total Units** 15-17

1. ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy GE Area A2 upon successful completion of ENG 105 in the second semester; multilingual students may be advised into alternative English courses.

2. Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center. Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website.

3. QR Category III students with a grade of B or higher in high school pre-calculus in the past year may be able to enroll in MATH 226. Please see a department advisor.

4. To avoid taking additional units, it is recommended that you meet SF State Studies requirements (AERM, GP, ES, SJ) within your GE or major.

5. **Environmental Science Electives (12 units)**
   - CHEM 380 Chemistry Behind Environmental Pollution (3 units) (UD-B, ES)
   - GEOG 312 Geography of Landforms (4 units)
   - GEOG 313 Earth’s Climate System (4 units)
   - GEOG 314 Bioclimatology (4 units)
   - GEOG 316 Biogeography (4 units)
   - GEOG 317 Geography of Soils (4 units)
   - GEOG 342/ERTH 442 Surface Water Hydrology (4 units)
   - GEOG 644 Water Quality (3 units)

6. **Environmental Management Electives (12 units)**
   - GEOG 421 Future Environments (3 units) (UD-D, ES, GP, SJ)
   - GEOG 427 Agriculture and Food Supply (4 units) (ES, GP)
   - GEOG 642/ERTH 642 Watershed Assessment and Restoration (4 units)
   - GEOG 646 The Geography of Marine Resources (4 units)
   - GEOG 647 Geography of Water Resources (4 units)
   - GEOG 648 Management of National Parks and Protected Areas (4 units)
   - GEOG 652/USP 652 Environmental Impact Analysis (4 units)
   - GEOG 657/ENVS 657 Natural Resource Management: Biotic Resources (4 units)
   - GEOG 666 Geography of Garbage: Recycling and Waste Reduction (3 units) (ES)

7. **Analytical Methods Electives (12 units)**
   - BIOL 458 Biometry (4 units)
   - GEOG 602 Field Methods in Physical Geography (4 units)
   - GEOG 610 Remote Sensing of the Environment I (4 units)

---

Bachelor of Science in Environmental Science - Quantitative Reasoning Category III/IV and ENG 114

- GEOG 611 Remote Sensing of the Environment II (4 units)
- GEOG 620 Geographical Information Systems (4 units)
- GEOG 621 Geographic Information Systems for Environmental Analysis (4 units)
- GEOG 625 Programming for Geographic Information Science (4 units)
- GEOG 629 Coastal and Marine Applications of GIS (3 units)