BACHELOR OF SCIENCE IN ENVIRONMENTAL STUDIES: CONCENTRATION IN NATURAL RESOURCE MANAGEMENT AND CONSERVATION

The Bachelor of Science in Environmental Studies with a concentration in Natural Resource Management and Conservation provides students with the theoretical and applied knowledge and skills in ecology, conservation biology, and natural resources they need to address natural resource management and conservation issues. Required courses provide knowledge in ecology, conservation biology, statistics, and natural resource management and provide students with a solid background in both quantitative and qualitative problem-solving techniques. Students choose additional coursework in ecology, biodiversity studies, applied methods, and management of specific resources.

Environmental Studies (B.S.): Concentration in Natural Resource Management and Conservation — 62-72 units

Required Courses (41–44 units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 115</td>
<td>General Chemistry I: Essential Concepts of Chemistry or CHEM 180</td>
<td>3-5</td>
</tr>
<tr>
<td>BIOL 230</td>
<td>Introductory Biology I</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 240</td>
<td>Introductory Biology II</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 458</td>
<td>Biometry</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 530</td>
<td>Conservation Biology</td>
<td>3</td>
</tr>
<tr>
<td>ENVS 130</td>
<td>Environmental Studies</td>
<td>3</td>
</tr>
<tr>
<td>ENVS 224</td>
<td>Research Methods for Environmental Studies</td>
<td>4</td>
</tr>
<tr>
<td>ENVS 450GW</td>
<td>Environmental Law and Policy - GWAR</td>
<td>3</td>
</tr>
<tr>
<td>ENVS 680</td>
<td>Environmental Studies Internship</td>
<td>1</td>
</tr>
<tr>
<td>ENVS 690</td>
<td>Senior Seminar in Environmental Studies</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>3-4</td>
</tr>
<tr>
<td>GEOG 603</td>
<td>Introduction to Geographic Information Systems</td>
<td></td>
</tr>
<tr>
<td>GEOG/USP 652</td>
<td>Environmental Impact Analysis</td>
<td></td>
</tr>
<tr>
<td>GEOG/USP 658</td>
<td>Land-Use Planning</td>
<td></td>
</tr>
<tr>
<td>GEOG/ENVS 657</td>
<td>Natural Resource Management: Biotic Resources</td>
<td></td>
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</tbody>
</table>

Elective Courses (21-28)

Students must consult with a faculty advisor prior to selection of elective courses to determine which courses are most appropriate for the students' particular program. Choose one course from each category.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERTH 230</td>
<td>Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 101</td>
<td>Our Physical Environment</td>
<td>3</td>
</tr>
</tbody>
</table>

Sustainability and Social Justice

- ENVS/ECON 306 Economics and the Environment 3
- ENVS 570 Applied Local Sustainability 3
- PHIL 470 Environmental Ethics 3
- USP 514 Sustainable Development in Cities 4
- USP 515/ GEOG 667 Environmental Justice: Race, Poverty, and the Environment 4

Global/International

- ENVS/I R 331 Global Environmental Crisis 4
- ENVS 470 Climate Politics and Policy 3
- I R/GEOG 428 International Political Economy of Food and Hunger 4

Ecology

- BIOL 482 Ecology 4
- BIOL 529GW Plant Ecology - GWAR 4
- BIOL 532 Restoration Ecology 3
- BIOL 534 Wetland Ecology 4
- BIOL 582 Biological Oceanography 4
- BIOL 585 Marine Ecology 3

Biodiversity

- BIOL 470 Natural History of Vertebrates 4
- BIOL 475GW Herpetology - GWAR 3
- BIOL 478GW Ornithology - GWAR 4
- BIOL 504 Biology of the Fungi 4
- BIOL 514 Plant Taxonomy 5
- BIOL 570GW Biology of Fishes - GWAR 4

- Or a second course chosen from the Ecology section

Resources

- CHEM 380 Chemistry Behind Environmental Pollution 3
- GEOG 317 Geography of Soils 4
- GEOG 427 Agriculture and Food Supply 4
- GEOG 646 The Geography of Marine Resources 4
- GEOG 647 Geography of Water Resources 4
- GEOG 666 Geography of Garbage: Recycling and Waste Reduction 3
- RPT/ENVS 640 Recreational Use of National Parks and Protected Areas 3

Resource Policy and Techniques

- ENVS 470 Climate Politics and Policy 3
- ENVS 530 Environmental Leadership and Organizing 3
- ENVS 570 Applied Local Sustainability 3
- ENVS/ECON 306 Economics and the Environment 3
- GEOG/USP 652 Environmental Impact Analysis 4
- GEOG/USP 658 Land-Use Planning 4

General Education Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Course Level</th>
<th>Units</th>
<th>Area Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral Communication</td>
<td>LD</td>
<td>3</td>
<td>A1</td>
</tr>
<tr>
<td>Written English Communication</td>
<td>LD</td>
<td>3</td>
<td>A2</td>
</tr>
<tr>
<td>Critical Thinking</td>
<td>LD</td>
<td>3</td>
<td>A3</td>
</tr>
<tr>
<td>Physical Science</td>
<td>LD</td>
<td>3</td>
<td>B1</td>
</tr>
</tbody>
</table>

1
Life Science | LD | 3 | B2
Lab Science | LD | 1 | B3
Mathematics/Quantitative Reasoning | LD | 3 | B4
Arts | LD | 3 | C1
Humanities | LD | 3 | C2
Arts or Humanities | LD | 3 | C1 or C2
Social Sciences | LD | 3 | D1
Social Sciences: US History | LD | 3 | D2
Social Sciences: US & CA Government | LD | 3 | D3
Lifelong Learning and Self-Development (LLD) | LD | 3 | E
Physical and/or Life Science | UD | 3 | UD-B
Arts and/or Humanities | UD | 3 | UD-C
Social Sciences | UD | 3 | UD-D

**SF State Studies**

Courses certified as meeting the SF State Studies requirements may be upper or lower division in General Education (GE), a major or minor, or an elective.

American Ethnic and Racial Minorities | LD or UD | 3 | AERM
Environmental Sustainability | LD or UD | 3 | ES
Global Perspectives | LD or UD | 3 | GP
Social Justice | LD or UD | 3 | SJ

Note: LD = Lower-Division; UD = Upper-Division.

**First-Time Student Roadmap (4 Year)**

Find the correct roadmap (A, B, C, or D):

1. Select the row that matches your English Course choice for A2.*
2. Select the column that matches your QR Category (found at your student center under Math Alert).
3. Click the Roadmap that lines up with your row and column.

For example, if you are taking ENG 104 as your first English course and your student center math alert says you are QR Category III, you should choose Roadmap D.

Pathway | QR Cat I/II | QR Cat III/IV
--- | --- | ---
ENG 114 | Roadmap A | Roadmap C
ENG 104/ENG 105 | Roadmap B | Roadmap D

*Composition for Multilingual Students: If taking ENG 209 as your first English course, choose the ENG 114 row. If taking ENG 204 for your first English course, choose the ENG 104/ENG 105 row.

**General Advising Information for Transfer Students**

1. Before transfer, complete as many lower-division requirements or electives for this major as possible.
2. The following courses are not required for admission but are required for graduation. Students are strongly encouraged to complete these units before transfer; doing so will provide more flexibility in course selection after transfer.
   - a course in U.S. History
   - a course in U.S. & California Government

For information about satisfying the requirements described in (1) and (2) above at a California Community College (CCC), please visit [http://www.assist.org](http://www.assist.org). Check any geographically accessible CCCs; sometimes options include more than one college. Use ASSIST to determine:

- Which courses at a CCC satisfy any lower-division major requirements for this major;

Remedial courses are not transferable and do not apply to the minimum 60 units/90 quarters required for admission.

Additional units for courses that are repeated do not apply to the minimum 60 units required for upper-division transfer (for example, if a course was not passed on the first attempt or was taken to earn a better grade).

Before leaving the last California Community College of attendance, obtain a summary of completion of lower-division General Education units (IGETC or CSU GE Breadth). This is often referred to as a GE certification worksheet. SF State does not require delivery of this certification to Admissions, but students should retain this document for verifying degree progress after transfer.

Credit for Advanced Placement, International Baccalaureate, or College-Level Examination Program courses: AP/IB/CLEP credit is not automatically transferred from the previous institution. Units are transferred only when an official score report is delivered to SF State. Credit is based on the academic year during which exams were taken. Refer to the University Bulletin in effect during the year of AP/IB/CLEP examination(s) for details regarding the award of credit for AP/IB/CLEP.

Students pursuing majors in science, technology, engineering, and mathematics (STEM) disciplines often defer 6-9 units of lower-division general education in Areas C and D until after transfer to focus on preparation courses for the major. This advice does not apply to students pursuing associate degree completion before transfer.

**Transferring From Institutions Other Than CCCs or CSUs**

Review SF State’s lower-division General Education requirements. Note that, as described below, the four basic skills courses required for admission meet A1, A2, A3, and B4 in the SF State GE pattern. Courses
that fulfill the remaining areas of SF State’s lower-division GE pattern are available at most two-year and four-year colleges and universities.

Of the four required basic skills courses, a course in critical thinking (GE A3) may not be widely offered outside the CCC and CSU systems. Students should attempt to identify and take an appropriate course no later than the term of application to the CSU. To review more information about the A3 requirement, please visit [http://bulletin.sfsu.edu/undergraduate-education/general-education/lower-division/#AAEL](http://bulletin.sfsu.edu/undergraduate-education/general-education/lower-division/#AAEL).

Waiting until after transfer to take a single course at SF State that meets both US and CA/local government requirements may be an appropriate option, particularly if transferring from outside of California.

**All Students Must Meet the Transfer Eligibility Requirements Outlined Below for Admission.**

For more information, visit the [Undergraduate Admissions section](http://bulletin.sfsu.edu/undergraduate-education/general-education/lower-division/#AAEL).

- Complete 60 or more transferable semester units or 90 or more quarter units
- Earn a college grade point average of 2.0 or better in all transferable courses. Non-local area residents may be held to a higher GPA standard.
- Be in good standing at the last college or university attended
- Complete 30-semester units (45-quarter units) of general education, including four basic skills courses:
  a. One course in oral communication (same as CSU GE Area A1)
  b. One course in written composition (same as CSU GE Area A2)
  c. One course in critical thinking (same as CSU GE Area A3)
  d. One course in mathematics or quantitative reasoning (same as CSU GE Area B4)
- The four basic skills courses and a minimum of 60 transferable semester units (90-quarter units) must be completed by the spring semester prior to fall admission, or by the fall semester prior to spring admission. Earn a “C-“ or better grade in each basic skills course.