

# 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.

## Program Learning Outcomes

1. Demonstrate understanding of the relationships between social justice and environmental problems in local, national, and global contexts.
2. Demonstrate understanding of chemical, biological, and social processes related to environmental problems and the ability to integrate these with the understandings and critical evaluations of descriptive statistics commonly used in environmental literature.
3. Communicate clearly and accurately both orally and in writing and be able to conduct research appropriate to the area of emphasis.
4. Demonstrate a basic understanding of civic activities and processes, and of methods of engagement in those processes.
5. Demonstrate readiness to enter the professional job market by preparing/training students in developing appropriate job market skills (e.g., resume and cover letter writing, interview preparation, writing well and engagingly, acquiring professional experience via internship).
6. Demonstrate understanding of ecological and conservation biology theories and how they relate to natural resource management and conservation decisions.
7. Demonstrate understanding of natural resource management techniques and approaches.

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

### Required Courses (41–44 units)

Code	Title	Units
CHEM 115	General Chemistry I: Essential Concepts of Chemistry	3-5
or CHEM 180	Chemistry for the Energy and the Environment	
BIOL 230	Introductory Biology I	5
BIOL 240	Introductory Biology II	5
BIOL 458	Biometry	4
BIOL 530	Conservation Biology	3

ENVS 130	Environmental Studies	3
ENVS 224	Research Methods for Environmental Studies	4
ENVS 450GW	Environmental Law and Policy - GVAR	3
ENVS 680	Environmental Studies Internship	1
ENVS 690	Senior Seminar in Environmental Studies	3
Select one of the following:		3-4
GEOG 603	Introduction to Geographic Information Systems	
GEOG/USP 652	Environmental Impact Analysis	
GEOG/USP 658	Land-Use Planning	
GEOG/ENVS 657	Natural Resource Management: Biotic Resources	4

## 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.

Code	Title	Units
<b>Physical Environment</b>		
ERTH 230	Environmental Geology	3
GEOG 101	Our Physical Environment	3
<b>Sustainability and Social Justice</b>		
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
<b>Global/International</b>		
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
<b>Ecology</b>		
BIOL 482	Ecology	4
BIOL 529GW	Plant Ecology - GVAR	4
BIOL 532	Restoration Ecology	3
BIOL 534	Wetland Ecology	4
BIOL 582	Biological Oceanography & Limnology	4
BIOL 585	Marine Ecology	3
<b>Biodiversity</b>		
BIOL 470	Natural History of Vertebrates	4
BIOL 475GW	Herpetology - GVAR	3
BIOL 478GW	Ornithology - GVAR	4
BIOL 504	Biology of the Fungi	4
BIOL 514	Plant Taxonomy	5
BIOL 570GW	Biology of Fishes - GVAR	4
Or a second course chosen from the Ecology section		
<b>Resources</b>		
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
<b>Resource Policy and Techniques</b>		
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

Requirement	Course Level	Units	Area Designation
Oral Communication	LD	3	A1
Written English Communication I	LD	3	A2
Critical Thinking	LD	3	A3
Physical Science	LD	3	B1
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
<b>SF State Studies</b>			
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
<b>ENG 114</b>	Roadmap A ( <a href="http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-i-ii-eng/">http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-i-ii-eng/</a> )	Roadmap C ( <a href="http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-iii-iv-eng/">http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-iii-iv-eng/</a> )
<b>ENG 104/ENG 105</b>	Roadmap B ( <a href="http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-i-ii-stretch/">http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-i-ii-stretch/</a> )	Roadmap D ( <a href="http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-iii-iv-stretch/">http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/roadmap-iii-iv-stretch/</a> )

\*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.

### Transfer Student Roadmap (2 Year)

For students with an AS-T in **Biology**. This roadmap opens in a new tab. (<http://bulletin.sfsu.edu/colleges/health-social-sciences/environmental-studies/bs-environmental-studies-concentration-natural-resource-management-conservation/biol-adt-roadmap/>)

### 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://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;
- Which courses at a CCC satisfy CSU GE, US History, and US & CA Government requirements.

Remedial courses are not transferable and do not apply to the minimum 60 semester units/90 quarter units 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 (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 [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-admissions/>).

- 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.