

Environmental Science AS Major - Active

Department: Biology

Approval: February 2016

Effective Semester: Fall 2016

CCSF's Environmental Science major is designed to clearly demonstrate the breadth of content and disciplines that underlie environmental science and to prepare students for the advanced courses and projects that lie ahead should they transfer to a bachelor's degree program. The major integrates content from the life, physical and social sciences with elective coursework options that permits students to explore areas of interest in greater depth. Although Environmental Science majors should be able to complete most or all of their lower division preparation at CCSF before transfer, they should meet with a counselor to confirm their program of study and the specific requirements of the transfer institution.

Through the required units for the Environmental Science major, students will gain an understanding of core scientific concepts and their importance in understanding human impacts on the environment. Students will also be able to critically evaluate the scientific evidence and sociopolitical aspects of environmental and natural resource problems, their causes, and proposed solutions. The major also provides opportunities for experiential learning through laboratory work and field investigations.

Learning Outcomes

Upon completion of this program, students will be able to:

- Apply concepts, models, and quantitative techniques from mathematics, life sciences, and physical sciences to solve complex problems related to the natural world.
- Analyze, interpret, and evaluate quantitative and qualitative evidence regarding the causes and consequences of human impacts on the environment.
- Apply tools, practices, and quantitative reasoning to collect, analyze, and interpret environmentally relevant data both in laboratory and field settings.
- Apply concepts and models from a diverse range of scientific disciplines to both critically evaluate and formulate sustainable solutions to environmental degradation and resource depletion.
- Quantify and evaluate personal impacts on the environment and integrate and apply sustainable solutions to their own lifestyle and career choices.

See major requirements at the intended transfer institution to choose the appropriate course(s) when options are given.

Assuming students start this AS with transfer-level math and English eligibility, the minimum time for completion is 4 semesters. Completion time will vary based on student preparation and number of units completed per semester.

Courses Required for the Major in Environmental Science AS

Course	Units
Core courses:	
BIO 31/GEOG 31/SUST 31 - Introduction to Environmental Science	3.00

BIO 100A - General Biology	5.00
CHEM 101A - General College Chemistry	6.00
Total:	14.00
Choose one of the following earth science options:	
GEOL 10 - Physical Geology	3.00
and	
GEOL 10L - Physical Geology Lab	2.00
GEOL 30 - Environmental Geology	3.00
and	
GEOL 30L - Environmental Geology Lab	1.00
GEOG 1 - Physical Geography	3.00
and	
GEOG 1L - Physical Geography Laboratory	1.00
Total:	4.00 - 5.00
Choose one of the following math options:	
MATH 110A - Calculus I	5.00
MATH 100A - Short Calculus I	3.00
Total:	3.00 - 5.00
Choose one of the following physics options:	
Note that the Physics 4 series is often required for those majors with a physical science focus.	
PHYC 4A - Classical Mechanics for Scientists and Engineers	3.00
and	
PHYC 4AL - Mechanics Laboratory for Scientists and Engineers	1.00
PHYC 2A - Introductory Physics	3.00
and	
PHYC 2AL - Introductory Physics Laboratory	1.00
Total:	4.00
Choose one of the following second semester core courses:	
A second semester in ALL of these courses is HIGHLY recommended	
BIO 100B - General Biology	5.00
CHEM 101B - General College Chemistry	5.00
PHYC 4B - Electromagnetism for Scientists and Engineers	3.00
and	
PHYC 4BL - Electromagnetism Laboratory for Scientists and Engineers	1.00
PHYC 2B - Introductory Physics	3.00
and	
PHYC 2BL - Introductory Physics Laboratory	1.00
MATH 110B - Calculus II	5.00
MATH 100B - Short Calculus II	3.00
Total:	3.00 - 6.00
Choose 6 units from the following courses:	

BIO 33 - Introduction to Conservation Biology	3.00
CHEM 208A - Organic Chemistry	4.00
CHEM 212A - Organic Chemistry	6.00
BIO 20 - Introduction to Ecology	3.00
BIO 19 - Ecology	4.00
ECON 1 - Principles of Macroeconomics	3.00
ECON 3 - Principles of Microeconomics	3.00
ENRG 3 - Introduction to Alternative Energy	3.00
ENRG 3L - Introduction to Alternative Energy Laboratory	1.00
GEOG 4 - Cultural Geography	3.00
GEOG 41A - Climate Change	1.00
GEOG 110 - Introduction to GIS	3.00
MATH 80 - Probability and Statistics	5.00
Any of the previous earth science, physics, mathematics, biology, or chemistry options not already completed	
Total:	6.00
Total:	34.00 - 40.00

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