Environmental science

ENVIRONMENTAL SCIENCE - ENVSC

Joseph Gorga, Dean
Sciences Division
Physical Sciences Building, Room 263

Possible career opportunities
Career opportunities in the field of environmental studies have grown with the increase of human population and the need to document and study the relationship between humans and nature. Environmental scientists are needed to monitor, interpret, analyze and enforce the guidelines of governmental policies. Careers include working for the government at all levels, working for companies in science and technology, as well as working in companies in energy fields. Such specialties include pollution prevention, resource conservation and environmental restoration, environmental stewardship, and newly emerging fields such as energy management technology, geospatial technology, and biodiversity preservation. Individuals studying in this field are trained to provide both public and private environmental services in a variety of settings: private business, consulting services and government agencies.

Associate in science degree

Environmental science
Students completing the program will be able to...
A. differentiate between different biotic and abiotic components of the environment.
B. explain and analyze man-made impacts on the environment.
C. apply the scientific method for environmental analysis.
D. explain, illustrate and analyze chemical bonds and reactions.
E. apply environmental science concepts and analytical procedures in various fields.

The associate in science degree in environmental science offers a distinctive program of interdisciplinary study. It is a field of inquiry exploring energy and climate systems and their complex relationships with the world’s diverse human cultures. To achieve this goal, students and faculty work together across disciplines to develop an understanding of environmental sustainability in all its dimensions. The program focuses on current environmental concerns that have far-reaching implications for the fate of human society, ecological systems, and energy diversity. This involves an integration of knowledge from a variety of disciplines to understand the function of the ecological system and human impact upon these systems at a local, regional, and global scale.

Students are advised that there are a wide range of environmental science areas of emphasis offered at the university level. Therefore, while choosing electives, students are advised to consult with a counselor or faculty advisor to select courses that will meet the requirements of an area of emphasis at their selected transfer institution. DVC environmental science students who intend to transfer must consult with a program advisor or counselor to ensure that the requirements for transfer to four-year institutions of their choice are met. Students who intend to transfer are advised to select either General Education Option 2 (IGETC) or Option 3 (CSU GE). General Education Option 1 (DVC General Education) is appropriate for students who do not intend to transfer.

To earn an associate in science degree, students must complete each required course with a "C" grade or higher and complete general education requirements as listed in the catalog. Degree requirements can be completed by attending classes in the day, evening, online, or a combination of those. Certain classes may satisfy both major and other general education requirements; however, the units are only counted once.

major requirements: units
BIOSC-170 Environmental Science ......................... 3
GEOG-140 Introduction to Weather .......................... 3
GEOL-120 Physical Geology .................................. 3

plus at least 4 units from:
CHEM-108 Introductory Chemistry ........................... 4
CHEM-120 General College Chemistry I ..................... 5

plus at least 4 units from:
MATH-142 Elementary Statistics with Probability .......... 4
MATH-192 Analytic Geometry and Calculus I ............... 5

plus at least 9 units from:
ARCHI-207 Environmental Control Systems ................ 3
BIOSC-126 Ecology and Field Biology ........................ 4
ENGIN-130 Energy, Society, and the Environment .......... 3
ENSYS-120 Introduction to Energy Systems .................. 3
ENSYS-125 Building Envelope and Systems .................. 3
GEOG-124 Thinking and Communicating Geospatially .... 3
GEOG-125 Introduction to Geographic Information Systems (GIS) ........................................... 3
GEOG-129 Field Data Acquisition and Management ....... 3
GEOG-160 Introduction to Remote Sensing .................. 4
PHYS-120 General College Physics I .......................... 4
PHYS-121 General College Physics II ........................ 4
PHYS-130 Physics for Engineers and Scientists A: Mechanics and Wave Motion ......................... 4
PHYS-230 Physics for Engineers and Scientists B: Heat and Electro-Magnetism .......................... 4

total minimum units for the major .................. 26
**Associate in science in environmental science for transfer**

Students completing the program will be able to...

A. recognize and understand chemical components in physical and biological aspects of ecosystems.
B. apply the scientific method to collect data on environmental problems, and use data to analyze and solve quantitative and qualitative problems.
C. evaluate the relationship of organisms to each other and to their changing chemical and physical environment.
D. demonstrate environmental and economic issues.
E. demonstrate environmental and economic issues.

The associate in science in environmental science for transfer degree is designed as a two-year program that offers an introduction to the basic principles of environmental science, which includes an integration of knowledge from a variety of disciplines to understand ecological systems and human impacts on these systems.

In order to earn the degree, students must:

- Complete 60 CSU-transferable units.
- Complete the California State University-General Education pattern (CSU GE); or the Intersegmental General Education Transfer Curriculum (IGETC) pattern, including the Area 1C requirement for Oral Communication.
- Complete a minimum of 18 units in the major.
- Attain a minimum grade point average (GPA) of 2.0.
- Earn a grade of "C" or higher in all courses required for the major.

Students transferring to a CSU campus that accepts the degree will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree may not be the best option for students intending to transfer to a particular CSU campus or to university or college that is not part of the CSU system, or those students who do not intend to transfer.

Some courses in the major satisfy both major and CSUGE/IGETC general education requirements; however, the units are only counted once toward the 60-unit requirement for an associate's degree. Students are advised for this major, they may use the IGETC for STEM (Science, Technology, Engineering and Mathematics) pattern. This pattern allows students to complete one course in area 3A; one course in Area 3B; and two courses in Area 4 from two different disciplines. Some variations in requirements may exist at certain four-year institutions; therefore, students who intend to transfer are advised to refer to the catalog of the prospective transfer institution and consult a counselor.

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**major requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOSC-170</td>
<td>Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td>ECON-221</td>
<td>Principles of Microeconomics</td>
<td>3</td>
</tr>
<tr>
<td>MATH-142</td>
<td>Elementary Statistics with Probability</td>
<td>4</td>
</tr>
<tr>
<td>MATH-192</td>
<td>Analytic Geometry and Calculus I</td>
<td>5</td>
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</tbody>
</table>

**select 1 of 2 options:**

**Option 1: Biology sequence**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>BIOSC-130</td>
<td>Principles of Cellular and Molecular Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOSC-131</td>
<td>Principles of Ecology, Evolution and Organismal Biology</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-120</td>
<td>General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-121</td>
<td>General Chemistry II</td>
<td>5</td>
</tr>
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</table>

**plus 4 units from:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>GEOL-120</td>
<td>Physical Geology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL-122</td>
<td>Physical Geology Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>GEOG-120</td>
<td>Physical Geography</td>
<td>3</td>
</tr>
<tr>
<td>GEOG-121</td>
<td>Physical Geography Laboratory</td>
<td>1</td>
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</table>

**Option 2: Chemistry sequence**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOSC-130</td>
<td>Principles of Cellular and Molecular Biology</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-120</td>
<td>General Chemistry I</td>
<td>5</td>
</tr>
<tr>
<td>CHEM-121</td>
<td>General Chemistry II</td>
<td>5</td>
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</table>

**plus 8 units from:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS-120</td>
<td>General College Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS-121</td>
<td>General College Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS-130</td>
<td>Physics for Engineers and Scientists A: Mechanics and Wave Motion</td>
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<tr>
<td>PHYS-230</td>
<td>Physics for Engineers and Scientists B: Heat and Electro-Magnetism</td>
<td>4</td>
</tr>
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</table>

**total minimum units for the major**

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**ENVSC-100 Exploring Environmental Science and Engineering**

1 unit P/NP

- 5 hours lecture/35 hours laboratory per term

This course introduces students to current issues and careers in environmental science and engineering. Topics include climate change, wetland ecology and water quality in the Sacramento-San Joaquin River Delta. Students gain hands-on experience both in the laboratory and during field trips as well as explore careers and work readiness skills related to the fields of environmental science and engineering. CSU
ENVSC-295  Occupational Work Experience  
Education in ENVSC  
2-4 units  SC  
• May be repeated eight times  
• Variable hours  
• Note: In order to enroll in ENVSC-295, students must be employed, register for the course, complete an online Employment Form, and participate in an orientation. Incomplete grades are not awarded for this course.  

ENVSC-295 is supervised employment that extends classroom learning to the job site and relates to the student’s chosen field of study or area of career interest. Under the supervision of a college instructor, students will engage in on-the-job and other learning experiences that contribute to their employability skills and occupational or educational goals. Each unit represents five hours work per week or 75 hours of work per term. Students may earn up to a total of 16 units in any combination of WRKX courses. Repetition allowed per Title 5 Section 55253. CSU