**THE SCHOOL OF NATURAL SCIENCES AND MATHEMATICS**

Courses for a minor must be earned with a grade of **C** or better.

### BIOLOGY

**Minimum 22 credits excluding CHEM**
- BIOL 1200/05 Cells & Molecules w/lab (5)
- CHEM 2110/15 General Chemistry I w/lab (5)
- BIOL 1400/05 Biodiversity and Evolution (5)
- CHEM 2120/25 Chemistry II Organic w/lab (5)
- BIOL 2110/15 Genetics w/lab (4)
- BIOL 4600 Biology Seminar (1)
- BIOL Elective 3000 Level ___________
- BIOL Elective 3000 Level ___________

### CHEMISTRY

**Minimum 26 credits electives**

**Introductory Core: (18 credits)**
- CHEM 2110/15 Chemistry I w/lab (5)
- CHEM 2120/25 Chemistry II w/lab (5)
- CHEM 2130 Chemistry III w/lab (4)
- CHEM 2140/45 Chemistry IV w/lab (4)

**Choose ONE of the following Laboratory Intensive Courses (4 credits)**
- CHEM 3035 Survey of Instrumentation (4)
- CHEM 3110 Inorganic Chemistry (4)
- CHEM 3310 Laboratory Methods I (4)
- CHEM 3120 Lab Methods II (4)
- CHEM 3420/3425 Physical Chemistry III w/lab (4)
- CHEM 3350 Biochemical Lab Methods (4)
- CHEM 3520/3025 Advanced Organic Chemistry w/lab (4)

**Elective: One 4 credit CHEM course at the 3000 or 4000 level**

Appropriate elective courses for the CHEM minor are: Inorganic, Physical, Environmental or Biochemistry, Laboratory Methods II, and topics in Chemistry or in Chemistry or Independent Study offerings.

Intermediate/advanced Elective (4 credits)
CHEM acronym independent studies and/or internships may be used to satisfy this requirement.

Transfer students must complete credits beyond the introductory core at Stockton.

### ENVIRONMENTAL STUDIES

**Minimum Credits 24. All courses must be selected in consultation with an ENVL faculty member and must be approved in advance.**

- ENVL ___________ (4)
- ENVL ___________ (4)
- ENVL ___________ (4)
- ENVL ___________ (4)
- ENVL ___________ (4)
- ENVL ___________ (4)

### MARINE SCIENCE

**Minimum Credits 20**

**Required courses: 8 credits**
- MARS 1100 Survey of Ocean Life **OR**
- MARS 1200 Introduction to Marine Biology (4)
  *(Student may not take both)*
- MARS 1300 Introduction to Oceanography (4)

**Electives: At least 12 MARS credits, 8 of which MUST be at the 3000 or 4000 level. Students MUST complete all prerequisites for any MARS electives.**
- MARS ___________ (4)
- MARS 3000 level or greater (4)
- MARS 3000 level or greater (4)

### APPLIED PHYSICS

**Minimum Credits 22.**

**Required courses: 14-16 credits**

- PHYS 2220/25 Physics I w/lab (6) **OR**
- PHYS 2110/15 Physics for Life Sciences I w/lab (5)
- PHYS 2230/35 Physics II w/lab (6) **OR**
- PHYS 2120/25 Physics for Life Sciences II w/lab (5)
- PHYS 3010 Physics III (4)

**A choice of any two 3000 level physics courses (8 credits)**
- PHYS 3000 level ___________ (4)
- PHYS 3000 level ___________ (4)

### MATHEMATICS

**Minimum Credits 23**

**Required courses:**
- MATH 2215 Calculus 1 (5)
- MATH 2216 Calculus II (5)
- MATH 2217 Calculus III (5)
- MATH 3323 Linear Algebra (4)
- MATH 3000 Level or greater

### GEOLOGY

**Minimum Credits 22**

**Required courses:**
- GEOL 2101/05 Physical Geology w/lab
- GEOL 2102/06 Historical Geology w/lab

**At least 8 credits from the following:**
- GEOL 3000 - 4999
- BIOL/GEOL 3242 Vertebrate Paleontology (4)
- ENVL/GEOL 3430 Geomorphology (4)

**No more than 6 credits from the following:**
- GEOL 4391 Field Studies: Selected Area (4-6)
- ENVL 3432 Soil Science (4)

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17-18
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<table>
<thead>
<tr>
<th>GEOGRAPHIC INFORMATION SYSTEMS GIS CERTIFICATE PROGRAM</th>
<th>ENERGY CERTIFICATE PROGRAM</th>
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<tbody>
<tr>
<td><strong>17-18 Credits</strong></td>
<td><strong>Common Core (21 credits)</strong></td>
</tr>
<tr>
<td><em>Prerequisites for non-ENVL majors:</em></td>
<td>CHEM 2110/15 Chemistry 1 w/lab (5)</td>
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<tr>
<td>GNM 1242 Mapping the World's Natural Resources</td>
<td>Energy-related Senior Project / Internship (4)</td>
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<tr>
<td>ENVL 2400 Intro to Statistics and Computers (4)</td>
<td><strong>Choose TWO of the following courses (8 credits)</strong></td>
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<tr>
<td><strong>Common Core (10 credits)</strong></td>
<td>PHYS/ENVL 3343 Energy Planning (4)</td>
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<tr>
<td>ENVL 3302 Geographic Information Systems (Fall) (3-4)</td>
<td>PHYS/ENVL 3444 Energy Management (4)</td>
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<tr>
<td>ENVL 3303 Advanced GIS (Spring) (4)</td>
<td>PHYS Energy Phys. (Independent Study) (4)</td>
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<tr>
<td>ENVL 4622 Global Positioning Systems for GIS (Fall) (2)</td>
<td>PHYS Alternate Energy Sources (Independent Study) (4)</td>
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<tr>
<td><strong>Select ONE or TWO from following courses (4 credits)</strong></td>
<td><strong>Choose ONE emphasis from the following (14-22 credits)</strong></td>
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<tr>
<td>ENVL 3304 Remote Sensing (Spring) (4)</td>
<td>Environmental Sciences (14)</td>
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<tr>
<td>ENVL 3307 Geodatabase (Spring) (4)</td>
<td>PHYS 2110/15 Physics for Life Sciences I w/lab (5)</td>
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<tr>
<td>ENVL 4201 Spatial Statistics (Spring) (2)</td>
<td>PHYS 2120/25 Physics for Life Sciences II w/lab (5)</td>
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<td>CSIS 3222 Database Systems (4)</td>
<td>Energy-related elective (4)</td>
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<tr>
<td>GIS Sr. Project or Internship (4)</td>
<td>Physical Science (22)</td>
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<tr>
<td>ENVL 48/4900 GIS Project (4)</td>
<td>MATH 2215 Calculus I (5)</td>
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<td>MATH 2216 Calculus II (5)</td>
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<td></td>
<td>PHYS 2220/25 Physics I w/lab (6)</td>
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<td>PHYS 2230/35 Physics II w/lab (6)</td>
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