To be adopted:

Proposed changes in course requirements for Bachelor of Science and Bachelor of Arts in Environmental Science – Natural Science Option, Social Science Option, Soil Science Option, and Environmental Toxicology Option.

Present:

The major requirements for both the Bachelor of Arts and the Bachelor of Sciences degrees are as follows. Students must fulfill the core requirements and choose one of the options.

Note: With proper justification and the approval of the advisor, for any of the four options, students may substitute ENSC 197 or ENSC 198-I for one of the upper-division elective courses listed.

1. Core Requirements (39 units)
   a) ENSC 001, ENSC 002, ENSC 006, ENSC 191
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) MATH 005
   d) POSC 010
   e) CS 008 or STAT 004 or STAT 150

2. Upper-division requirements (21-23 units)
   a) ENSC 100, ENSC 101, ENSC 102
   b) ENSC 100L or SLSC 100L
   c) STAT 100A-STAT 100B or STAT 120A-STAT 120B

Proposed:

The major requirements for both the Bachelor of Arts and the Bachelor of Sciences degrees are as follows. Students must fulfill the courses listed under the lower-division and upper-division requirements and choose one of the options.

Some upper-division course work is currently being revised. Please check with the Program Office for more information.

Note: With proper justification and the approval of the advisor, for any of the four options, students may substitute ENSC 197 or ENSC 198-I for one of the upper-division elective courses listed.

1. Lower-division requirements (29 units)
   a) ENSC 001, ENSC 002,
   b) CHEM 001A-CHEM 001B-CHEM 001C
   c) MATH 005
   d) POSC 010

2. Upper-division requirements (15 units)
   a) ENSC 100, ENSC 101, ENSC 102, ENSC 191
   b) ENSC 100L or SLSC 100L

Natural Science Option (65-76 units)
1. BIOL 005A, BIOL 005B
2. PHYS 002A, PHYS 002B, PHYS 002C

3. MATH 009A-MATH 009B
4. CHEM 112A-CHEM 112B
5. GEO 001 or GEO 002
6. ENSC 172

7. Elective Courses:
   a) At least one course from the following:
      (1) BIOL 005C
      (2) CHEM 005, CHEM 112C
      (3) MATH 009C
   b) At least five courses from the following (at least three must be Environmental Sciences)
      (1) ENSC 127, ENSC 131, ENSC 135, ENSC 140, ENSC 141, ENSC 142, ENSC 144, ENSC 155, ENSC 163, ENSC 170, ENSC 176
      (2) BIOL 117, BIOL 121A-BIOL 121B, BIOL 160, BIOL 163
      (3) BPSC 130
      (4) CHEM 109
      (5) ENTX 101
      (7) SLSC 104, SLSC 107, SLSC 111

1. BIOL 005A, BIOL 005B
2. PHYS 002A, PHYS 002B, PHYS 002C
3. PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended.
4. MATH 009A-MATH 009B
5. CHEM 112A-CHEM 112B
6. GEO 001 or GEO 002
7. ENSC 006 or ENSC 143A (ECON 003 prerequisite), ENSC 172
8. STAT100A-STAT100B or STAT 120A-STAT 120B

9. Elective Courses:
   a) At least one course from the following:
      (1) BIOL 005C
      (2) CHEM 005, CHEM 112C
      (3) MATH 009C
   b) At least five courses from the following (at least three must be Environmental Sciences or Soil Science)
      (1) ENSC 127, ENSC 131, ENSC 135, ENSC 136, ENSC 140, ENSC 141, ENSC 142, ENSC 144, ENSC 155, ENSC 163, ENSC 170, ENSC 174, ENSC 176
      (2) BIOL 117, BIOL 121A-BIOL 121B, BIOL 160, BIOL 163
      (3) BPSC 130
      (4) CHEM 109
      (5) ENTX 101
      (7) SLSC 102, SLSC 104, SLSC 107, SLSC 111, SLSC 118, SLSC 124

Natural Science Option (78-89 units) Social Science Option (69-70 units)
1. BIOL 002, BIOL 003
2. MATH 022
3. GEO 001 or GEO 002
4. ENSC 020 or ENSC 174, ENSC 142 or ENSC 144, ENSC 143, ENSC 145, ENSC 170, ENSC 172
5. SOC 110A

6. Elective Courses six courses from at least two of the following groups:
   a) Law/Ethics
      (1) PHIL 186
      (2) POFC 101, POFC 166
   b) Management
      (1) ECON 102A, ECON 102B, ECON 160
      (2) POFC 183
   c) Planning/Policy
      (1) GEO 156, GEO 157, GEO 158, GEO 160A, GEO 160B
      (2) POFC 172, POFC 181, POFC 186
      (3) SOC 143, SOC 184

Social Science Option (85-92 units)

7. STAT 100A-STAT 100B or STAT 120A-STAT 120B or SOC 110A-110B (SOC 110A prerequisite)- SOC 110C
8. Elective Courses:
   a) At least one course from the following:
      1) ENSC 140, ENSC 141, ENSC 142, ENSC 144, ENSC 155, ENSC 163, ENSC 176
      2) SLSC 102, SLSC 104, SLSC 107, SLSC 111, SLSC 118, SLSC 124
   b) At least six courses from the following:
      1) Economics
         (a) ECON 102A, ECON 102B, ECON 148, ECON 156, ECON 160
      2) Society and Culture
         (a) ANTH 132, ANTH 134, ANTH 135, ANTH 186
         (b) PHIL 117
         (c) SOC 137, SOC 143, SOC 182, SOC 184
      3) Regulation and Law
         (a) BSAD 182
         (b) POFC 101, POFC 166, POFC 181, POFC 183
      4) Management
         (a) BSAD 121, BSAD 122
         (b) GEO 156, GEO 158, GEO 167, GEO 179
         (c) MATH 120

Soil Science Option (67-75 units)
1. BIOL 005A, BIOL 005B
2. CHEM 112A-CHEM 112B
3. MATH 009A-MATH 009B
4. PHYS 002A, PHYS 002B, PHYS 002C
5. GEO 001 or GEO 002
6. Elective Courses:
   a) At least four courses from the following:
      (1) ENSC 127, ENSC 131
      (2) SLSC 102, SLSC 104, SLSC 105, SLSC 107, SLSC 111, SLSC 118
   b) At least one course from the following:
      (1) CHEM 005, CHEM 112C
      (2) MATH 009C
   c) At least two courses from the following:
      (1) ENSC 140, ENSC 141, ENSC 142, ENSC 155, ENSC 163, ENSC 176
      (2) BPSC 103, BPSC 130, BPSC 143, BPSC 146
      (3) GEO 030, GEO 156, GEO 157, GEO 160A, GEO 160B, GEO 162A-GEO 162B

Environmental Toxicology Option (65-66 units)

1. BIOL 005A, BIOL 005B
2. CHEM 005 or BIOL 005C; CHEM 112A-CHEM 112B
3. ENTX 101, ENTX 154
4. MATH 009A-MATH 009B
5. PHYS 002A, PHYS 002B, PHYS 002C
6. BCH 100 or BCH 110 A-BCH 110 B; BIOL 102 or BIOL 121 A-BCH 110 C or BIOL 107

Soil Science Option (80-90 units)

1. BIOL 005A, BIOL 005B
2. CHEM 112 A-CHEM 112 B
3. MATH 009 A-MATH 009 B
4. PHYS 002 A, PHYS 002 B, PHYS 002 C
5. PHYS 02 LA, PHYS 02 LB, PHYS 02 LC are recommended.
6. GEO 001 or GEO 002
7. Elective Courses: At least one course from
Individual changes are presented below. Many of the changes are relatively minor and are in response to certain courses no longer being available or to the availability of new or revised courses that add flexibility to the student’s choice of electives. Some of the more significant changes, such as the replacement of ENSC 143 “Natural Resource Economics,” and ENSC 145 “Environmental Economics,” requirement with the revised and expanded sequence ENSC 143A “Environmental Economics,” ENSC 143B “Natural Resource Economics,” and ENSC 143C “Ecological Economics and Environmental Valuation,” are the result of the desire to add additional structure and rigor to the Social Science Option.

The unit requirements are summarized in Table 1. In general, the total number of units and the number of required upper-division units have not changed significantly. The number of required upper-division units in the Social Science Option has increased by four due to the increased rigor in the required courses. All options have been developed to provide breadth and depth in the student’s training in the environmental sciences including the need for preparation in the social sciences. As a result, we did not add the units necessary to allow the program to meet either the requirements of the Life Sciences Curriculum or the proposed Physical Sciences Curriculum.

**Requirements for all Environmental Science Majors**

Courses required of all Environmental Science majors no longer include CS 008 “Introduction to Computing,” STAT 004 “Interactive Programming in BASIC,” or STAT 150 “FORTRAN Programming,” because commercially available computer software has reduced the need for programming capability and afforded students expanded opportunities to become familiar with computers prior to enrolling in the Environmental Science Program. The STAT 100A – STAT 100B, “Introduction to Statistics,” or STAT 120A – 120B
“Experimental Techniques for Biologists,” courses are moved to the requirements of the options within the curriculum so students in the Social Science Option have the opportunity to receive more focused training in statistics by taking SOC 110B “Methods of Sociological Inquiry,” and SOC 110C “Multivariate Analysis.” The ENSC 006 “Man, Scarcity, and the Environment,” requirement is moved to the requirements of the options within the curriculum so students in the Social Science Option have the opportunity to receive more extensive training in economics by taking ECON 003 “Introduction to Microeconomics.”

Natural Science Option

Courses required of students selecting the Natural Science Option include ENSC 006, STAT 100A – STAT 100B or STAT 120A – STAT 120B as a result of them being eliminated from those required of all Environmental Science majors. The ENSC 143A enables students who have previously completed a course in microeconomics to receive training in environmental economics without duplicating material previously covered. Course requirements include the recommendation to take PHYS 02LA-02LB-02LC “General Physics Lab.” Experience indicates this practice helps many students, although the large total unit requirement speaks against making this a requirement.

The selection of elective courses available in the Natural Science Option includes ENSC 136 “Chemistry of Natural Waters,” ENSC 174 “Law, Institutions, and the Environment,” SLSC 102 “Soil Conditions and Plant Growth,” SLSC 118 “Soil Morphology and Classification,” and SLSC 124 “Soils of Wildland Ecosystems,” to increase curriculum flexibility and enhance students’ ability to focus their training in areas of their interests. GEO 160B “Global Climate Change,” is removed from the electives because it will no longer be offered.

Social Science Option

Courses required of students selecting the Social Science Option no longer include ENSC 143 and ENSC 145 since these courses will no longer be offered. The ENSC 142 “Water Quality,” and ENSC 144 “Solid Wastes,” courses are moved to the menu of elective courses to increase students’ ability to focus their training in areas of their interests. New requirements in the Social Science Option include a yearlong sequence ENSC 143A, 143B, and 143C to enhance the rigor of economics training. The ECON 003 is added to ensure students have adequate economics background prior to enrolling in ENSC 143A. The ECON 111 “Research Methods in Business and Economics,” alternative to SOC 110A “Methods of Sociological Inquiry,” provides the opportunity for students to study research methods in business and economics as well as in sociology. The rationale for including STAT 100A – STAT 100B or STAT 120A – STAT 120B or SOC 110B – SOC 110C was addressed in changes to courses required of all Environmental Science majors.

The mix of elective courses available in the Social Science Option is reorganized for clarity and modified to reflect deletion of courses which have been discontinued, and the addition of new and existing courses which have become relevant to the evolving field of environmental science.
Soil Science and Environmental Toxicology Options

Changes in the course requirements of both the Soil Science Option and the Environmental Toxicology Option reflect the previously discussed ENSC 006 or ENSC 143A and STAT 100A – STAT 100B or STAT 120A – STAT 120B, and PHYS 02LA-02LB-02LC.

Elective courses in the Environmental Toxicology Option included ENSC 136 and ENTX 150 “Cancer Biology,” so that students can receive more specialized training in water chemistry and cancer biology, respectively.

**TABLE 1.** A comparison of the unit requirements for a typical student moving through either the current or the proposed curriculum.

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<thead>
<tr>
<th>Option</th>
<th>Total Units</th>
<th>Upper-Division Units</th>
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<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Proposed</td>
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<td>Environmental Toxicology</td>
<td>156</td>
<td>156</td>
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Approved by faculty of Department of Soil and Environmental Sciences 3/16/98.
Approved by CNAS Executive Committee: 4/8/98
Approved by Committee on Educational Policy: 4/20/98