Present

Course Requirements:

1. Lower-division requirements (67 units)
   a) BIOL 005A, 005LA
   b) CHEM 001A-CHEM 001B-CHEM001C
   c) CS 10
   d) EE 001A, EE 01LA
   e) MATH 009A-MATH 009B-MATH 009C, MATH 010A, MATH 010B, MATH 046
   f) ME 010
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division Requirements (95 units)
   a) CHEM 112A-CHEM 112B-CHEM 112C
   b) CHEM 100, CHEM 114, CHEM 120
   c) ENGR 118
   d) ENVE 120, ENVE 133, ENVE 135, ENVE 142, ENVE 144/ENSC 144, ENVE 146, ENVE 160B, ENVE 160C, ENVE 171, ENVE 175A, ENVE 175B
   e) ENVE 130/CHE 130, ENVE 160A/CHE 160A
   f) ME 110

Option requirements: choose one option
   (1) Air Pollution Control Technology option (12 units)
      a) CHE 102
      b) ENVE 134, ENVE 138, ENVE 145
      c) ENSC 135/CHEM 135/ENTX 135

(2) Water Pollution Control Technology option (12 units)
   a) ENVE 121, ENVE 140, ENVE 145
   b) ENSC 127, ENSC 140/SWSC 140
      ENSC 155, ENSC 163

Proposed

Course Requirements:

1. Lower-division requirements (65 units)
   a) BIOL 005A, 005LA
   b) CHEM 001A-CHEM-001B-CHEM001C
   c) CEE 010
   d) CS 010
   e) MATH 009A-MATH 009B-MATH 009C, MATH 010A, MATH 010B, MATH 046
   f) ME 010
   g) PHYS 040A, PHYS 040B, PHYS 040C

2. Upper-division Requirements (74 units)
   a) CEE 158
   b) CHEM 112A-CHEM 112B
   c) CHE 100, CHE 114, CHE 120
   d) ENGR 118
   e) ENSC 100/100L
   f) ENVE 120, ENVE 133, ENVE 135, ENVE 142, ENVE 146, ENVE 160B, ENVE 160C, ENVE 171, ENVE 175A, ENVE 175B
   g) ENVE 130/CHE 130, ENVE 160A/CHE 160A

3. Option requirements: choose one option (12 units)
   a) Air Pollution Control Technology option
      (1) CHE 116
      (2) ENVE 134
      (3) Choose one from: CEE 125, CEE132, CHE 102, ENSC 135/155/ENTX 135, ENVE 144/ENSC 144, ENVE 138, ENVE 145
   b) Water Pollution Control Technology option
      (1) Either CHE 124 or ENVE 121
      (2) Choose one from: CEE 125, CHE 116, ENSC 136, ENSC 163, ENVE 140
      (3) Choose one from: CEE 132, ENSC 155, ENVE 144/ENSC 144, ENVE 145
Justification:

1) CEE faculty carefully reviewed the environmental engineering curricula. This included consultation with students who recently graduated, and careful review of the content of each required course. One conclusion was that Electrical Engineering 1A/1AL (Engineering Circuit Analysis/Circuits Lab), Mechanical Engineering 110 (Mechanics of Materials), and Chemistry 112C (Organic Chemistry) were not as relevant for environmental engineering majors as originally thought. The concepts covered in EE 1A/1AL courses are not reinforced later in the curriculum and the benefits to student's level of understanding and professional development is low. ME 110 and CHEM 112C are relatively detailed for environmental engineering majors, and with recent changes in the Accreditation Board for Engineering and Technology (ABET) requirements, new courses (e.g., soil science) need to be introduced which forces us to drop other courses deemed less necessary.

2) Introduction to Chemical and Environmental Engineering (CEE 10, 2 units) aims to enrich students appreciation of chemical, biochemical, and environmental engineering. The course will help increasing the retention of environmental engineering majors, and will inform non-engineering majors. The new course Professional Development for Engineers (CEE 158, 2 units) will cover selected topics to prepare chemical and environmental engineering majors for the Fundamentals of Engineering (FE) exam. Other topics such as ethics, risk management and environmental health and safety, regulatory issues not covered elsewhere and required for ABET accreditation will also be addressed.

3) Environmental Sciences 100/100L addresses important aspects of soil science, which is a new requirement for ABET accreditation.

4) The repositioning of CHE 116 and ENVE 144/ENSC 144 to Technical Elective status allows for greater selection of technical electives in the Water Quality option while reducing the number of required courses.

5) The separation of technical electives requirements into a distinct Arabic numeral provides clarity, and consistency with the Department's other undergraduate degree.

6) CEE 125 (Analytical Methods for Chemical and Environmental Engineers) and CEE 132 (Green Engineering) are new technical elective courses that are relevant to all environmental engineering students.

7) The faculty carefully reviewed the content of ENSC 127 (Transport through Soils) and ENSC 140 (Limnology) and concluded that these courses should be removed from the list of available technical electives because of their overlap with other required courses and their lower benefit to the student's engineering education.

8) CHE 124 Biochemical Engineering Principles was added as an option for environmental engineering students following the Water Pollution Control Technology option. Previously, students would take ENVE 121 (Biological Unit Processes), however, the ENVE 121 offerings have been irregular because of low student enrollment. Students can now elect to take either CHE 124 or ENVE 121, which avoids scheduling problems. CHE 124 deals with many of the biochemical principles fundamental to the understanding of biological unit processes. It is taught from a biochemical engineering perspective and is an adequate alternative to ENVE 121.

9) ENSC 136 (Chemistry of Natural Waters) is a newly allowed technical elective courses which is relevant to environmental engineering students in the in the Water Quality option.

Effective: Fall 2002

Approved by the Executive Committee, Bourns College of Engineering on 3/13/02
Approved by the Committee on Educational Policy on 4/19/02