I. Course Title
   Environmental Chemistry

II. Course Prefix/Number
   CHEM 334

III. Credit Hours
   2

IV. Prerequisites
   CHEM 331

V. Catalog Description
   Chemistry 334 is designed to introduce the student to a series of topics including
   stratospheric chemistry, air pollution, global warming, climate change, renewable energy,
   pesticides, water pollution, and heavy metal pollution.

VI. Curricular Relationships
   CHEM 334 is required for all BA Chemistry (Science Education) – Secondary Teacher
   Licensure

VII. Student Learning Outcomes
   • Students will be able to explain the chemistry of the atmosphere and its effects on the
     transport and production of atmospheric pollutants.
   • Students will be able to discuss and intelligently debate the existence of global warming.
   • Students will be able to explain the importance, current problems, and future advantages
     of alternative fuels.
   • Students will be able to describe the chemistry of natural waters and its effects on the
     transport and distribution of pollutants.
   • Students will be able to describe the source, transport, and toxicology of several
     important heavy metals including mercury, lead, and arsenic.
   • Students will be able to describe the chemistry of soil and its effects on the transport and
     distribution of pollutants.

VIII. Content Outline
   • Atmospheric Chemistry
   • Air Pollution
• The Greenhouse Effect, Global Warming, and Climate Change
• Renewable Energy Sources: Problems and Promises
• Water Chemistry
• Water Pollution
• Toxic Heavy Metals: Sources, Distribution, and Toxicology
• Soil Chemistry
• Soil Pollution

IX. Course Procedures/Policies/Grading Scale
• Students are expected to attend all lecture sessions. Homework is assigned and graded. In addition, online quizzes are administered every week. A persuasive paper and formal debate is required. Typically, four or five hour exams and a comprehensive final exam are given for this course
• Normal grading is used for this course.

Grading Scale: >90 = A; 80-89 = B; 70-79 = C; 60-69 = D; <60 = F

X. Required/Recommended Readings
• The typical text used for this course is the current edition of Environmental Chemistry by Colin Baird and Michael Cann.

• A supplementary text for this course is the current edition of An Introduction to Environmental Chemistry by Julian Andrews et al.

XI. Issues Unique to this Course

• Co-Requisite: CHEM 334L, unless the student has successfully completed (grade of C or better) the laboratory in a previous semester.

• This course is typically offered in the spring semester of even years.

XII. Additional Departmental Issues

None