Course Outline
CHM 420 Regulatory Protocols
May 2011

Department: Chemistry and Physical Sciences
Credit Hours: 3
Prerequisite: Permission of Instructor
General Education: 7.1 Scientific Literacy
Learning Outcomes: I.C, V.B

I. Course Description:

Studies the protocols prescribed by the Environmental Protection Agency and other Governmental agencies. Includes application of the protocols in the laboratory and in field testing. Prerequisite: Permission of Instructor. Three hour lecture.

II. Purpose of the Course:

This course is designed for Environmental Science major to familiarize them with the scope of authority of the various regulatory agencies and to provide them with the current regulations. In some cases, the reasoning behind the protocol will be investigated as will likely future changes in the regulations.

III. Learning Outcomes and Objectives

L.O. I. Knowledge of Human Cultures and the Physical and Natural World

Students will engage the big questions, both contemporary and enduring, and gain an understanding of the diversity of human experience and the physical and natural world in order to become well-educated citizens in a global society.
They can:

C. Use knowledge and the methods of inquiry and analysis appropriate to physical or natural sciences, the social sciences, and mathematics to develop well reasoned solutions to local and global issues.

L.O. V. Integrative Learning

Students will integrate learning across general and specialized areas of study in order to respond effectively to issues or situations and to address contemporary problems.
They can:

B. Apply theory to practice in responding to issues or situations and addressing contemporary problems in academic and/or other real-world settings.

IV. Course Objectives:

After completing the course, students should be able to:

1. Be familiar with the regulatory authority of the EPA. (L.O. IC, VB)
2. Know the major EPA regulations concerning air, water, and soil pollution. (L.O. IC, VB)
3. Understand the role of OSHA. (L.O. IC, VB)
4. Identify the major regulatory protocols issued by OSHA. (L.O. IC, VB)
5. Be familiar with the requirements of the Clean Air Act, the Clean Water Act and RCRA. (L.O. IC, VB)

V. Topical Outline:

I. The ABC's of Regulatory Agencies
   - A. OSHA
   - B. NIOSH
   - C. EPA
   - D. RCRA
   - E. TSCA
   - F. Clean Air Act
   - G. Clean Water Act
   - H. ISO 14000

II. Choosing the Right Protocol

III. Reporting and Record Keeping Requirements

IV. Sampling Techniques
- A. Soil
  1. Obtaining a Good Sample
  2. Preservation Techniques
- B. Water
  1. Obtaining a Good Sample
  2. Preservation Techniques
- C. Air
  1. Obtaining a Good Sample
  2. Preservation Techniques

V. Processing the Sample
- A. Holding Times
- B. Concentration of the Analyte
- C. Analysis

VI. Processing the Data
- A. Method Validation
- B. QC check standards
- C. Method Detection Limits
- D. Standard Solution Expiration
- E. Initial and Continuing Calibration
- F. Surrogate and Internal Standards
- G. Accuracy and Precision Test
- H. Blanks