

Syllabus
Chem 315 – Environmental Toxicology
Spring 2006 – Marian College

Instructor: Dr. John A. Buben
Phone: 955-6065
Email: jbuben@marian.edu

Office Hours: MWF 10 – 11 am; T 1:30 – 2:30 pm
and by appointment (250 MH)

Class: T/Th 11:00 am – 12:15 pm (355 MH)

Course Description: This course is designed for Junior and Senior level science students who wish to learn about the impact of environmental toxicants on living systems. The course will focus on types of exposure, acute and chronic effects, response differences among individuals and species, and will include a survey of the major classes of chemical agents commonly encountered in our living environment.

Credit: (3) credit hours

Prerequisites: Che 310 or permission of instructor

Course Objectives: Upon completion of the course, students should:

1. Understand the basic scope of toxicology, and the various kinds of effects that chemicals can cause in living systems.
2. Understand the principles of exposure, distribution, the ways that organisms eliminate toxicants, and how these processes influence species differences in their susceptibility to toxic agents.
3. Understand how the physical/chemical properties of chemicals influence their toxicity.
4. Understand the differences between acute and chronic effects and subsequent risk, and the key target organ toxicities that occur.
5. Understand the mechanisms of carcinogenesis, mutagenesis, teratogenesis, and the effects of radiation.
6. Become familiar with the common sources of environmental toxicants: air pollution, water pollution, pesticides, and heavy metals.
7. Understand how chemicals are tested and regulated.
8. Develop some expertise in a topic of interest related to environmental toxicology.

Required Text: Toxic Substances in the Environment, B.Magnus Francis, John Wiley & Sons, Inc. (1994).

<u>Basis of Grading:</u>	Midterm Exams (3)	45%
	Quizzes/Assignments	15%
	Project Presentation	15%
	Final Exam	25%

<u>Grading Scale:</u>	A : 90%	B+ : 84%	C+ : 74%	D+ : 64%
	A- : 87%	B : 80%	C : 70%	D : 60%
		B- : 77%	C- : 67%	

Course Outline: Key topics to be covered in the course include:

An overview of toxicology; acute and chronic effects; The ADME principle (adsorption, distribution, metabolism, excretion); a brief study of the chemistry of toxic chemicals; survey of environmental agents: air pollutants, water pollutants, pesticides, heavy metals; the mechanism of carcinogenesis, mutagenesis, teratogenesis; target organ toxicity; ecotoxicology and phytotoxins; and the testing and regulation of chemicals.

Exam Schedule: Dates of midterm exams will be announced approximately one week in advance. The final exam will be comprehensive.

Attendance:

Regular attendance at class is expected. Missing more than 15% of the classes will result in a grade reduction. Unexcused absences from an exam will generally result in a grade penalty.