California State University, Fresno

Department of Health Science

Course Syllabus
HS 160: Toxicology
Spring 2004

Professor: Sandi Donohue, DPA, REHS
Phone: 559-278-4747
Email: sdonohue@csufresno.edu

Office: McLane J-Wing, Room 14
Office Hrs: MWF 9-10:00 am
MW 1-2:00 pm
M 4-7:00 pm (by appt)
Th 4-7:00 pm (by appt.)

Course Description

This course is 3 units and meets from 12:00 – 12:50 on MWF in McLane Hall Room 176. The content of the course considers the general principles and concepts of toxicology, with a particular emphasis on risk assessment; bio-mechanisms; organ and blood toxicity; carcinogens, mutagens, and reproductive toxicants; metals; pesticides; ionizing radiation; and organic solvents. This course is web enhanced.

Prerequisites

Completion of the basic science core is strongly recommended.

Course Goals and Objectives

The primary goals of this course are:
1. To introduce the student to the basic principles of toxicology,
2. To provide the student with a conceptual understanding of how industrial toxicants affect humans.

Upon completion of this course, the student will be able to:

- Discuss the significance of LD50, dose response, risk assessment, and toxicological modeling.
- Describe the bio-mechanisms that govern the action of toxicants in the human body.
- Relate the physical and chemical properties of several industrial toxicants.
- Identify the health effects associated with groupings of industrial toxicants.
- Describe exposure scenarios for several toxicants
- Outline the analytical tests and measurements that are performed to determine the level of toxicants in humans.
- Suggest exposure prevention/control methods for certain toxicants in the industrial setting.

Required Text


Examinations

There will be three exams (including the final), each worth 100 points, for an exam total of 300 points. Exams will cover all written and oral materials presented in class. Expect about 80% of the exam to come from class lecture and discussion and 20% to come from the required reading and assigned handouts. The exams will each have 30-40 multiple-choice questions (each worth 2 points) and fill-in, short answer, or
short essay questions worth 20-40 points. Students are required to provide a Scantron for the multiple-choice portion of each exam.

Students are expected to take the exams at the times and dates outlined in the schedule below. In the rare event that an emergency should arise, the student MUST notify me (by phone message or email) prior to the exam time and date that they will miss the exam. I will then arrange for the student to do a makeup. If I am not notified prior to the test, the student will receive a grade of zero points for the exam.

---

**Project**

Each student will select a toxicant of interest or importance to them and prepare a presentation and an outline handout on that toxicant. The presentation is worth 70 points and the outline is worth 30 points, for a **project total of 100 points**.

The presentation will be **8-10 minutes** in length. Visual aids are strongly encouraged, and PowerPoint presentations are required. The format (mandatory 4 parts) of the presentation is as follows:

1. **Introduction**: e.g., why you chose the topic, occurrence, general description, and/or chemical and physical properties that affect the potential hazard of the substance
2. **Exposures**: Major industrial uses or applications, and other potential exposures
3. **Toxicological Concerns**: Route(s) of exposure and toxicological effects in humans
4. **Exposure Control**: Monitoring/testing, treatment (if appropriate), and/or exposure prevention methods

The outline handout will follow the same format (mandatory 4 parts) as the presentation. This handout is to be duplicated and given to each class member and the instructor at the start of your presentation. The handout will include:

- The title of your presentation, your name, and the date.
- Detailed outline (1-2 pages).
- A reference list (in APA style) with 5 or more **scholarly** references, excluding your textbook. References must include at least one scholarly journal article and one governmental online website source.

Both your presentation and handout will be electronically transmitted to the instructor through the Blackboard Drop Box feature no later than the date of your presentation.

---

**Grading**

This course will have three exams (two midterms and one final), each worth 100 points, for an exam total of 300 points. There will also be a project worth 100 points total. Grading will be determined by a statistical curve of the **possible 400 points**.

Students may earn **extra credit (10 points maximum)** for attendance at:

- Health Science Student Club meetings/events (1 pts each)
- A professional organization’s (CEHA, NEHA, ASSE, NSC, AIHA, etc) monthly meetings, conferences, educational updates, educational symposia (2 pts each)
- Other pre-approved EOH-related events (2 pts each)

Or for membership in a profession organization (CEHA, NEHA, ASSE, NSC, AIHA, etc) (5 pts).
Course and University Policies

Course Policies and Prohibitions: Students are expected to regularly attend class, participate in discussions, and complete all required reading in a timely fashion. Unless otherwise instructed, students are also expected to work independently at all times.

Disruptive Classroom Behavior: Any disruptive or distracting behavior is prohibited, including, but not limited to: Side conversations during lecture, cell phone usage, tape-recording of lecture, bringing visitors or guests to class, use of inappropriate language, or in any way demeaning or disturbing others in the class. (Please refer to the University Policy on Disruptive Classroom Behavior, which can be found in the University Catalog).

Students with Disabilities: Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in Madden Library 1049 (278-2811).

Cheating and Plagiarism: “Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one’s grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term ‘cheating’ not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating that consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one’s own work.” Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University’s policy regarding cheating and plagiarism, refer to the University Catalog (Policies and Regulations).

Computers: “At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation (including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services (http://www.csufresno.edu/ITS/) or the University Bookstore. In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University’s information resources.”

Subject to Change

The syllabus and course schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.
Course Schedule
HS 160: Toxicology
Spring 2004

Important Course Dates
- January 19: Martin Luther King Jr. Day, no class
- February 16: President’s Day Holiday, no class
- March 31: Cesar Chavez Holiday, no class
- April 5-9: Spring Break, no class

Weekly Assignments

<table>
<thead>
<tr>
<th>Week of</th>
<th>Class Assignment</th>
<th>Reading Assignments (chapters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 22-23</td>
<td>Introduction</td>
<td>Chap. 20 &amp; 22 (pp. 523-529)</td>
</tr>
<tr>
<td>Jan. 26-30</td>
<td>Basic concepts in toxicology</td>
<td>1</td>
</tr>
<tr>
<td>Feb 2-6</td>
<td>Risk assessment/industrial applications of tox</td>
<td>18, 19, 21</td>
</tr>
<tr>
<td>Feb. 9-13</td>
<td>Bio-mechanisms</td>
<td>2 (35-45, 51-53)</td>
</tr>
<tr>
<td>Feb. 16-20</td>
<td>Bio-mechanisms</td>
<td>3 (57-65, 70-74)</td>
</tr>
<tr>
<td>Feb. 23-27</td>
<td>Exam I - 2/25 (+ start for next exam)</td>
<td></td>
</tr>
<tr>
<td>Mar 1-5</td>
<td>Liver</td>
<td>5</td>
</tr>
<tr>
<td>Mar 8-12</td>
<td>Kidney</td>
<td>6 (129-135, 137-143)</td>
</tr>
<tr>
<td>Mar 15-19</td>
<td>Blood/immune and nervous systems</td>
<td>4 (87-97), 10 (189-193, 199-205), 7</td>
</tr>
<tr>
<td>Mar 22-26</td>
<td>Skin and lungs</td>
<td>8 &amp; 9</td>
</tr>
<tr>
<td>Apr 5-9</td>
<td>Spring Break - no class</td>
<td>12 (239-241, 257); 13 (268-278, 301-302, 304-321)</td>
</tr>
<tr>
<td>Apr 12-16</td>
<td>Exam II – 4/14 (+ start for next exam)</td>
<td>14 (325-336)</td>
</tr>
<tr>
<td>Apr. 19-23</td>
<td>Overview: metals, pesticides, solvents</td>
<td>15 (345-355); 16 (367-377)</td>
</tr>
<tr>
<td>Apr. 26-30</td>
<td>Student presentations</td>
<td></td>
</tr>
<tr>
<td>May 3-7</td>
<td>Student presentations</td>
<td></td>
</tr>
<tr>
<td>May 10-12</td>
<td>Student presentations</td>
<td></td>
</tr>
<tr>
<td>May 17</td>
<td>Exam III – 5/19, 1:15 pm</td>
<td></td>
</tr>
</tbody>
</table>

Resource Materials

InfoComp: CSU, Fresno/Bakersfield Information Competency Website in the Social Sciences
http://www.csub.edu/~jross/projects/infocomp/
http://www.csub.edu/~jross/projects/infocomp/toolbox/InfoCmpToolBx.htx

http://webster.commnet.edu/apa/apa_intro.htm