

# **INTRODUCTION TO INDUSTRIAL AND ENVIRONMENTAL TOXICOLOGY AND PHYSIOLOGY OEHS 6752**

**COURSE DIRECTOR:** Rod Handy, MBA, PhD, CIH

**Course Overview:** The course is intended to provide public health and safety professionals a basic understanding of toxicological principles and information about the toxicity of a variety of chemicals likely to be encountered in the workplace and/or the environment.

**Credits: 3**

Prerequisites: Fundamentals of Industrial Hygiene (or permission of course director)

Structure: Lecture/Discussion on Tuesday/Thursday @ 1:00PM-2:20PM (375 – RM 105)

**Reference Materials:**

Required:

1. “Toxicology Principles for the Industrial Hygienist”  
Edited by: W.E. Luttrell, W.W. Jederberg, K.R. Still  
Published by: AIHA Stock # BTOR08-738 ISBN # 978-1-931504-88-1
2. ACGIH TLV Booklet” (<http://www.acgih.org/store/ProductDetail.cfm?id=1913>)

Recommended desk resource:

1. Clinical Environmental Health and Toxic Exposures, Second Edition.  
John B Sullivan Jr. and Gary R. Krieger (Eds.), Lippincott  
Williams & Wilkins (2001). Please note, last updated in 2001.
2. Environmental and Occupational Medicine, Fourth Edition. William B. Rom  
(Ed.), Lippincott Williams & Wilkins (2007).

**Objectives:**

- 1) Be able to describe the various relationships between the dose of chemicals and the effects that are exerted on various physiologic and environmental systems.
- 2) Be able to identify and describe concepts (kinetics) of routes of entry (absorption), distribution, metabolism and excretion of toxic chemicals.
- 3) Be able to describe the carcinogenic, genetic, behavioral, reproductive, acute and chronic effects of select solvents, metals and other chemical groups.
- 4) Be able to discuss exposure and risk assessments as well as the process of establishing Occupational Exposure Limits (OELs) as well as their strengths and weaknesses. This includes their appropriate application in evaluating and controlling workplace exposures to toxic chemicals.

## **COURSE SCHEDULE**

<b><u>WEEK</u></b>	<b><u>TOPIC</u></b>	<b><u>Chapters</u></b>
1/10	Introduction to Toxicology; Routes of Entry	1-2
1/17	Dose Response; Mechanisms; Disposition	3-4
1/24	Respiratory Toxicology; Dermal Toxicology	5-6
1/31	Systemic Effects; Sensory Organ Toxicology	7-8
2/07	<b>EXAM I (Thursday, 2/10)</b>	
2/14	Neurotoxins; Hepatotoxins	9-10
2/21	Teratogens; Immunotoxins; Reproductive Toxins	11-12, 15
2/28	Mutagenesis; Carcinogenesis	13-14
3/14	Toxicology of Organics Solvents and Heavy Metals	16-17
3/21	<b>EXAM II (Thursday, 3/24)</b>	
3/28	Toxicology of Pesticides and PM	18-19
4/04	Toxicology of Gases and Radionuclides	20-21
4/11	Exposure Assessment and Derivation of OELs	23-24, 28
4/18	Toxicology in Emergency Response	26-27
4/25	<b>EXAM III (4/26 – Final Exam Review, Final Exam Due: 4/29)</b>	

**FORMAT:** If we change to on-line only due to COVID, I plan to use Microsoft Teams, and an invitation will be sent out to all of you for the balance of the semester prior to the first class. Since I know many of you have schedules that do not permit you to attend every live lecture, last year's lectures are posted on Canvas. I will also offer an hour long help session for Thursday afternoon. This will be a live interactive session on Teams. More information on this soon.

**NOTE:** Strict adherence to scheduled content of lectures may vary from lecture to lecture. We will take time to examine a list of the most common occupational stressors found in the workplace for their applications and toxicology. An in depth analysis will take place for some of the currently used toxicants for potential replacements and alternative comparisons. We will look at > 300 of the common stressors found in the international work environment today.

## STUDENT EVALUATIONS

### Course grade

The course grade will be based on the following:

Exam I	30%
Exam II	30%
Exam III	30%
Homeworks/Quizzes	10%

Exams are not “comprehensive” in the pure sense of the word. However, concepts are introduced and an understanding is expected to stay with the student throughout the course. The homework(s) and quizzes will be announced at least one week prior to their due date or occurrence. They will be scheduled periodically throughout the semester.

**Faculty and Student Responsibilities:** All students are expected to maintain professional behavior in the classroom setting according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. According to Faculty Rules and Regulations, it is the faculty responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

<http://www.regulations.utah.edu/academics/6-400.html>

**The Americans with Disabilities Act (ADA):** The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

**Addressing Sexual Misconduct:** Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677 (COPS).

**Campus Safety:** The University of Utah values the safety of all campus community members. To report suspicious activity, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit [safeu.utah.edu](http://safeu.utah.edu).

*Note: This syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.*