UTHealth
The University of Texas Health Science Center at Tyler

PBHL5304 Occupational and Environmental Health Credit Hours: 3

Semester: Fall Year: 2021
Class Day/Time: Even Mondays/6-9 PM Class Location: H210, SOCRH

Instructor of Record: C. David Rowlett, MD, MS
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Course Description: This is an introduction to occupational and environmental health (OEH) with an emphasis on various levels of prevention and the scientific application of regulatory principles. Evaluation methods and general aspects of control measures relative to human health will also be explored. At the end of the course the student will be acquainted with the history and basic principles of occupational and environmental health programs and how they relate; be able to review relevant legal, ethical, and regulatory issues pertinent to occupational and environmental health; and be familiar with the basic tools utilized in the evaluation of occupational and environmental health issues such as epidemiology, statistics, industrial hygiene, occupational health nursing, and toxicology.

Prerequisite: None Co-requisite: None

Student Learning Outcomes (SLO or "course objective"):

1. Acquaint the individual student with the history and basic principles of occupational and environmental health programs and how they relate.
2. Review relevant legal, ethical, and regulatory issues pertinent to occupational and environmental health.
3. Introduce the student to the basic tools utilized in the evaluation of occupational and environmental health issues: risk assessment, epidemiology, biostatistics, and toxicology; and the professionals who use them: occupational medicine physicians, occupational health nurses, industrial hygienists, and toxicologists.
4. Provide the student with basic knowledge and skills in the analysis of occupational and environmental exposures including retrieval of relevant data and information resources, risk communication, and surveillance.

Course Assessment/Methods of Evaluation:

This course is an overview course that will use various instructional methods. Though it is primarily asynchronous online instruction, there will be a few synchronous meetings. This course usually included a plant walkthrough at Eastman Chemical. During the pandemic, that experience was modified. Regardless, the skillsets involved in conducting a plant walkthrough will be covered. A schedule of topics, suggested readings, and the planned delivery method(s) is attached to this syllabus. There will be weekly activities: discussion forums, posts, quizzes...most weeks, except for synchronous session weeks. There are two major exams (a midterm and a final), plus a case scenario exercise. While the exams are technically not comprehensive, the course concepts build on one another. The course grade will be determined by scores on the weekly activities, the midterm, the final, and the case scenario project. The case scenario is a

team exercise that is reported first in a written report, and then in an oral presentation. (See case scenario details, below.)

Schedule:

First day class meets:	August 23, 2021
Mid-term examination:	October 11, 2021
Last day to drop	October 23, 2021
Written case scenarios due:	October 25, 2021
Plant visit (virtual)	Wk#10 (if Covid permits* synchronous class, o/w online)
Class oral presentations:	November 22, 2021 (synchronous, in class, if possible*)
Thanksgiving Holidays:	November 25-28, 2021
Final examination:	December 6, 2021

Course Grading: 1000 points….	100%
Activities (200 points)	20%
Mid-term examination (200 points)	20%
Final examination (300 points)	30%
Case scenario (150 points)	15% (see case scenario assignment)
Class presentation (150 points)	15% (see case scenario assignment)

Final Letter Grade	% Range	Total Points
A	³90-100	³900-1000
B	³80<90	³800<899
C	³70<80	³700-799
Failing	<70	<700

The student learning outcomes listed above address the following MPH Program PLOs:

PLO1-The student will demonstrate understanding in three of the five core knowledge areas in public health: Biostatistics, Epidemiology, and mastery in Environmental Health Sciences (specifically, 1.5).
PLO2 - The student will demonstrate proficiency in the four core functions of public health, as well as be able to explain the principles and interrelatedness of the ten essential public health services.
PLO4 - The student will demonstrate proficiency in English communication in both oral (public speaking) and written forms as they pertain to conveying key concepts in public health.
PLO6 - The student will demonstrate independent and critical thinking skills.

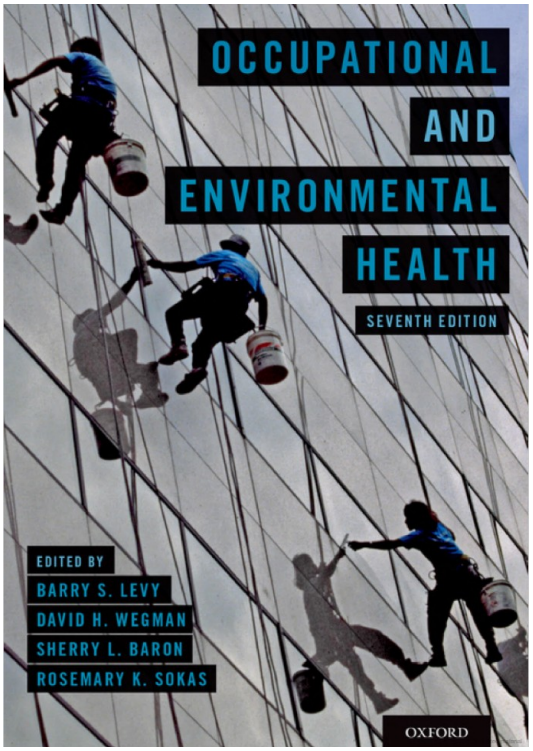
Textbook:
No single text provides an altogether comprehensive view of the diverse field of occupational and environmental health. For that reason, readings from several texts are listed. "Levy and Wegman" will be the primary text for this course as it has the broadest perspective. LaDou is the alternate text often preferred by students with a clinical background. Chapters in "LaDou" are also listed in the syllabus. You will need occasional access to LaDou either online (link below), purchased or borrowed. Two supplementary texts along with a number of articles are used throughout the course and will be referenced in individual lectures. The self-assessment text listed below (McCunney and Rountree) contains questions and review materials from which most of the test questions have been taken in prior years.

Primary: Levy, Barry S., ed. Occupational and Environmental Health: Recognizing and Preventing Disease and Injury, 7th ed. New York: Oxford University Press, 2017. ISBN# 9780190662677.

Alternate text: Ladou, Joseph, ed. Current Occupational & Environmental Medicine, 5th ed. New York: McGraw Hill Medical, 2014. ISBN# 9780071808156. (https://accessmedicine.mhmedical.com/Book.aspx?bookid=1186)

Supplementary texts: McCunney Robert J, ed. A Practical Approach to Occupational and Environmental Medicine, 3rd ed. Philadelphia: Lippincott Williams & Wilkins, 2003. ISBN# 0781736749

McCunney RJ and Rountree PP, eds. Occupational and Environmental Medicine: Self-Assessment Review, 2nd ed. Philadelphia: Lippincott Williams & Wilkins, 2004. ISBN# 0781752922. Limited availability in CD format.



The primary textbook is available from many vendors. You should be able to purchase texts via

rates. Any required supplemental readings will be provided as posts on the course site in Canvas. Additional reference materials are also available at the UT Tyler and UTHSCT library, and should be consulted for the case scenario exercises (discussed later).

Course Content: Course is roughly divided into "halves"…

- Occupational Health
  - Introduction, history, and business factors
  - Legal and ethical issues
  - Tools of population based health
  - Industrial hygiene, safety, and occupational health nursing
  - Disability and impairment
  - Surveillance
  - Regulatory issues
  - Toxicology
  - Ergonomics
  - Occupational risk assessment
- Environmental Health
  - Environmental health versus environmental medicine
  - Accessing environmental data
  - Environmental health regulation
  - Emergency response
  - Environmental risk assessment
  - Risk communication
  - The environmental, health, and safety audit
  - Suspecting occupational or environmental disease

Attendance:
Regular and punctual attendance is encouraged for scheduled synchronous sessions and the plant tour. If a student misses any scheduled class activity, the student is still responsible for the information provided in that instructional block.

Participation:
Whether online in forum posts, or in a synchronous session, participation is expected. Posts, in many instances, will be required to complete modules. Though course grading is weighted towards the weekly activities, the two major examinations, the case scenario report, and class presentations (see details below); for those students on the numeric border of a letter grade, engagement and participation will be considered. The plant walk-through exercise, in years past, has been onsite but will not be possible with the pandemic this year. However, the material covering how to do a plant walk-through is core, and will be tested. Either a classroom synchronous session or a virtual tour will be scheduled.

Other Class Policies:

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

Academic Honesty:

Cheating

Dishonesty of any kind involving examinations, assignments, alteration of records, wrongful possession of examinations, and submission of duplicate papers for multiple classes or unauthorized use of keys to examinations is considered cheating. Cheating includes but is not limited to:

- Using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class.
- Falsifying or inventing any information, including citations, on an assigned exercise.
- Helping or attempting to help another in an act of cheating or plagiarism.

Plagiarism

Plagiarism is presenting the words or ideas of another person as if they were your own. Materials, even ideas, borrowed from others necessitate full and complete acknowledgment of the original authors. Offering the work of another as one's own is plagiarism and is unacceptable in the academic community. A lack of adequate recognition constitutes plagiarism, whether it utilizes a few sentences, whole paragraphs, articles, books, audio-visual materials, or even the writing of a fellow student. In addition, the presentation of material gathered, assembled or formatted by others as one's own is also plagiarism. Because the university takes such misconduct very seriously, the student is urged to carefully read university policies on Misconduct in Research and Other Scholarly Activity 05.00. Examples of plagiarism are:

- Submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another.
- Submitting a work that has been purchased or otherwise obtained from an Internet source or another source.
- Incorporating the words or ideas of an author into one's paper without giving the author due credit.

Adding/Dropping:

The official deadline for adding and dropping courses is published in the academic calendar and Graduate Bulletin (and has been given in). However, students are strongly encouraged to meet with their graduate advisor or the Program Coordinator prior to adding/dropping courses. Movement into and out of classes after the 4th class day requires approval of the Program Director. Students can drop until mid-semester without a WP or WF. Drops after mid-semester require approval of the Dean. Each student is responsible for their own enrollment status with the university.

Disability Accommodations:

UTHSCT abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities. If you have a disability and may require some type of instructional and/or examination accommodations, please contact us early in the semester so that we can provide or facilitate provision of accommodations you may need. If you have not already done so, you will need to register with the Student Services Office (located on the UT Tyler Campus). You may call 903-566-7079 for more information.

Resources and Logistics:
Internet and Related References:

http://www.acoem.org/ -- This web site links to the American College of Occupational and Environmental Medicine (ACOEM). The site identifies numerous resource materials for occupational and environmental health and related disciplines.

http://www.osha.gov/ -- Occupational Safety and Health Administration

http://www.cdc.gov/niosh/ -- National Institute for Occupational Safety and Health

http://www.epa.gov/ -- United States Environmental Protection Agency

http://www.atsdr.cdc.gov/ -- Agency for Toxic Substances and Disease Registry

Other web sites will be identified as the course progresses; however, if you find a good site please do not hesitate to share it with the instructor and the rest of the class.

Course Facilitator/Contact:
Ms. Amanda Watkins, Program Manager, Occupational &Environmental Health Sciences
Phone: 903-877-1418, Second Floor, SOCRH
E-mail: Amanda.Watkins@uthct.edu

Case Scenarios:

The intent of the case scenario exercise is to allow the student an opportunity to make practical use of the knowledge gained in this course. The case scenario might be treated as a consultant question. Imagine that you are working in any variety of capacities for a company, a private consulting firm, a government agency, a research firm, etc. Provided below are three brief case scenarios with which you might be confronted. Students may choose to work independently, although this detracts from the "real world" nature of "team" projects. We encourage the class to divide itself into groups of 3-6 students. Each group (or student, for those working independently) is to select one case scenario from the three and prepare a consultant's report. Students can communicate by meeting in person, by phone, through e-mail, through "snail" mail, or other methods, or any combination of these. Each student should play one or two roles as industrial hygienist, health care provider, human resources manager, legal counsel, public relations representative, director, etc. The report should include, at minimum, the following information:

1) A brief review of relevant scientific and related information regarding the issue in question. Note the word "relevant". Please do not attempt to make a comprehensive review of the literature.

2) Address applicable and/or pertinent legal, ethical, and regulatory issues.

3) Outline necessary steps to further define exposure risks.

4) Develop preliminary recommendations for addressing the situation in question.

For students working in groups, each section of the written report should clearly indicate the student responsible for authorship of that section to demonstrate that each student has participated actively and meaningfully in the project. Although documentation and detail are important, a group who hires a consultant frequently desires an answer to the question "what should we do?" Treat this as an executive summary and keep your report to five to seven double-spaced, type-written pages or less. References may be listed separately. Use standard 8 ½ by 11 inch paper with one inch margins, and standard 10 or 12 pitch letter quality font. For those who may be unfamiliar with summary reports of this nature, you may review examples at:

http://www.atsdr.cdc.gov/HAC/PHA/index.asp and
http://www.cdc.gov/niosh/pubs/alerts_date_desc_nopubnumbers.html

These are only examples of how such a report might be formatted and should serve strictly as a guide. There is no absolute right or wrong format and the style of the report may depend upon the point of view from which the case is approached.

Timely responses are also requested of the consultant. The due date for your written report should be strictly adhered to. There will be no exceptions. The reports should be delivered either electronically (preferred) or by hardcopy by that date. Please keep a copy of your documents (and email, if sent electronically). The instructor cannot be responsible for loss.

These are real-world case scenarios and addressing them as a team in this exercise mirrors a real-world circumstance. You may select from one of these three case scenarios:

Case Scenario #1

A 45 year-old, right-handed male has worked for two years for a locally owned company of 300 employees which assembles small motors. The employee's job is to build wiring harnesses which includes the use of special pliers to tie a plastic wrap around the harness. He uses his right hand to grip the pliers approximately 30 times per hour. There are five other employees performing the same task.

Production has been up during the last two months of the third quarter in response to company sales. The pace has increased in harness assembly and wire tying such that all employees in the department are using the pliers device at double the previous rate.

The employee in question now presents with a one week history of night-time awakening with painful numbness in the index and middle fingers of his right hand as well as pain in his wrist radiating along his forearm. Your team is asked to investigate.

Case Scenario #2

Your local city government is responsible for maintaining various public buildings. One of these buildings is City Hall. In performing some routine maintenance, a worker notes that he must remove a considerable amount of insulation material in one of the first floor public restrooms. He raises this as a concern to management who, upon testing the material, discovers that it is asbestos. You are contacted to address issues of exposure for both the worker and the public.

Case Scenario #3

A local clinic sees a 30-year-old Hispanic male with complaint of nausea, abdominal discomfort, and irritability. He and his 28-year-old wife of four years have no children and have experienced difficulty conceiving. For the last two years, the patient has been working at a battery reclamation facility in a rural Texas community with 100 employees. Two other employees, including the plant manager, have been identified with lead poisoning. The patient has a gingival lead line and a blood lead level of 125 micrograms/deciliter. The clinic reports the case to the Texas Department of Health. Nearby residents are also expressing concern about the handling of waste by the company. OSHA and the U.S. EPA have been notified. You are hired by the company as a consultant to make preliminary recommendations and to speak with concerned workers and community members.

Group Oral Presentations:

Oral class presentations of the case scenario chosen, have been required for the last several years for two reasons: 1) There is increasing emphasis on oral presentation skills in the occupational and environmental health fields. Good risk communication depends largely on conveying technical information orally to a non-technical audience; and 2) Many students have requested more than three graded items for the course. Others have asked for an opportunity to correct errors in their case scenarios. The oral class presentation allows for both of these. These presentations will fall a few weeks after the scenarios have been graded and returned and one week before the final exam. By then all the course material should have been assimilated allowing a polished presentation of a case that is now quite familiar.

Virtual Plant Walk-Through Visit: (May do as a synchronous classroom session via video or, hopefully, an actual visit): Eastman Chemical Longview, Week 10,

In years past, the facility tour at Eastman Chemical in Longview has been a highlight for students. It mirrors, to some degree, the steps in the case scenario. Both activities afford the student opportunity to apply their understanding of principles taught in the course. In years past, the onsite walk-through visit has been led by Mr. Rick Bure, CIH, CSP who often teaches the IH and Safety lecture in this course. An onsite walk-through was not possible Fall 2020 due to Covid-19. Regardless, whether done onsite, in a synchronous session, or via asynchronous video; the course materials and skills for performing a walk-through site visit are core, and will be tested, as noted above.

For that reason, we will strive to make a virtual tour as realistic as possible. If onsite or in a synchronous session, we will do everything just as if we were going onsite. Safety training will be required before the virtual tour, just as it would have been onsite. Students will be instructed on wear of personal protective equipment that would have been required at the plant. Had we been able to go onsite, plant entry requirements would have been enforced...so we will do the same for the virtual tour. Please bring government issued picture ID and be prepared to sign an access log, if requested. Casual but professional clothing is acceptable, but legs should be covered and closed toed shoes worn. No sandals or flip-flops. Avoid jewelry, particularly jewelry that may be entangled in rotating equipment.

Below is a sample list of questions to review before touring any manufacturing facility. Though this will be done virtually, please review these. We will also allow time afterwards to debrief, and possibly discuss the virtual walkthrough at a later class session, as well.

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Sample Walk-through Questions at a Manufacturing Facility

- Can you explain/show us the various steps of the manufacturing process?
- What methods are currently in use for exposure monitoring at the site? How are results communicated to employees?
- What do you consider to be your most significant hazards?
- Are there production areas which use hazardous chemicals? Where do you keep your SDSs? What type of hazard communication training do employees receive?
- Do you have any blood borne pathogen exposure risks?
- What types of personal protective equipment are required? Do you use respirators? Are there dust hazards?
- Do you have areas of the plant that are particularly noisy? How do you control noise exposure? Is there a program to check for hearing loss? How do you enforce the use of hearing protection?
- Do you have a program that focuses on ergonomics?
- What do you consider to be some of your most unique and/or state-of-the-art engineering measures?
- Do you perform pre-placement testing when new employees are hired? What kinds of successes have you had with handling workers' compensation?
- Do you have a modified duty policy? If so, how does it work?
- Who maintains your OSHA 300 log? What is the purpose of the log?
- Is the employee workforce unionized? How does that impact safety and health?
- When do you conduct employee safety training?
- How does your medical services department work?
- Do you offer wellness programs to employees such as smoking cessation and flu shots?