UTTyler HEALTH SCIENCE CENTER

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PBHL 5304 Occupational and Environmental Health Credit Hours: 3

Semester: Fall Year: 2024

Class Day/Time: Mon 6-9 PM Location: Online, 2 required synch sessions.

Instructor of Record: Cynthia Ball, DO, MS, FACOEM

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Office Hours: By appointment

Cynthia Ball, DO, MS, FACOEM is a board-certified occupational medicine physician and Fellow of the American College of Occupational and Environmental Medicine, who is an Associate Professor of Medicine in the Department of Occupational and Environmental Medicine at the University of Texas Tyler Health Science Center. Her focus has been on occupational injury management with attention paid to identifying and addressing barriers to worker recovery and return to work. She is also the principal investigator on a Dept of Energy grant and teaches in the medical school Public Health System Science Course.

She earned her bachelor's degree in Biochemistry from the University of Kansas and her Doctor of Osteopathic Medicine from the Texas College of Osteopathic Medicine in Fort Worth. After a tour of duty with the Navy as a general medical officer, she completed her Occupational and Environmental Medicine residency at The University of Texas Health Science Center at Tyler. She earned a master's degree in environmental science from Stephen F. Austin State University in Nacogdoches as part of her residency training.

Prior to pursuing medicine, Dr. Ball worked as a Materials Engineer for Bell Helicopter and then spent five years in rural Japan as an ESL teacher and then as a strength coach. She enjoys hiking, biking, gardening, and attending dance, music, and theatre performances.

Co-Instructors:	**Office #:**	**Phone:**	**email**
Dr. Vanessa Casanova	H239	903 877 1408/ 903 877 5896	vanessa.casanova@uttyler.edu
Dr. Jeffrey Levin	B623	903 877 7270	jeffrey.levin@uttyler.edu
Dr. Dalia Nessim	H238	903 877 5896	dalia.nessim@uttyler.edu

Guest Content:

Rick Bure/Industrial Hygiene and Safety	dalia.nessim@uttyler
Amber Baker/Certified Occupational Health Nursing	cynthia.ball@uttyler.edu

Office Hours: By Appointment

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Course Facilitator/Contact:

Ms. Blair Zdenek,
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Vanessa Casanova, PhD earned a BA in International Studies from the University of Alabama, MS in Rural Sociology and PhD in Forestry from Auburn University with postgraduate training in the fields of labor studies and public health. She joined the faculty of the University of Texas Health Science Center at Tyler in 2013 and devotes her time to teaching, research, and service for the School of Community and Rural Health (Department of Occupational and Environmental Health Sciences).

Dr. Casanova is the director of the NIOSH-funded Southwest Center for Agricultural Health, Injury Prevention and Education. She previously served as the Applied Research Manager. Her research focuses on health and safety outcomes in forestry/logging workers. The SW Ag Center has an established record of conducting comprehensive research that addresses the needs of workers in agriculture, commercial fishing, and forestry across Public Health Region 6.

She also serves as research mentor to junior faculty, residents, and students new to the field of agricultural occupational safety and health.

JEFFREY L. LEVIN, MD, MSPH, DrPH, FACOEM, FACP is past-Chair of Occupational and Environmental Health Sciences at The University of Texas Health Science Center at Tyler (UTHSCT). He is board-certified in both internal medicine and occupational medicine. Dr. Levin is also founding and former Director of the Occupational Medicine Residency Program at Tyler, and former Medical Director of the Texas Institute of Occupational Safety and Health (TIOSH®). He holds the Jesse H. Jones Distinguished Professorship of Occupational Health Sciences and was Center Director for the NIOSH Southwest Center for Agricultural Health, Injury Prevention, and Education from 2002-2019. He was the recipient of the University of Texas System, Regents' Outstanding Teaching Award in 2016.

Dr. Levin is past-President of the Texas Occupational Medical Association and current Vice-Chair of Occupational and Environmental Medicine for the American Board of Preventive Medicine. He is a past-Chair of the Texas Medical Association Council on Science and Public Health, Alternate Responsible Official for the Public Health Laboratory of East Texas, and Public Health Authority for Smith County from 2014-2020.

Dr. Levin retired from his position as Senior Vice President for Academic Affairs and Provost, UTHSCT, in August of 2020. Presently, he is Professor of Occupational and Environmental Medicine, Director of the Population Health and System Science Course in the UT Tyler, School of Medicine, and Provost Emeritus (UTHSCT).

His research background has focused on occupational respiratory diseases and occupational health in agriculture and commercial fishing, with particular attention to vulnerable populations. As a native Texan having spent many formative years along the U.S.-Mexico border and in Central Mexico, he is fluent in Spanish.

Dalia Nessim, MD, MPH, FACOEM is the interim department chair for the Occupational and Environmental Medicine Department. She joined the Occupational and Environmental Health Science Department at the UT Health Science Center at Tyler in September 2014 as an assistant professor. She has since participated in resident teaching, and clinical activities in the Occupational Health Clinic (OHC) and Eastman Chemical Company TXO, Longview TX. She was the residency Associate Program Director July 2016-June 2017 and transitioned into the role of Program Director in July 2017. She came from a strong background in Occupational Medicine, as after receiving her M.D. from Ain Shams University, Cairo, Egypt, she worked in the field of occupational medicine in Cairo, Egypt for more than 10 years, before arriving to the USA. She completed her occupational medicine residency training and MPH Degree at the UT Health Science Center in Houston, TX in June 2014. Dr. Nessim is board certified in occupational medicine and is actively engaged as a resident preceptor in the OHC, an AOEC clinic, performing preplacement exams and surveillance exams, managing work related injuries for the institution, as well as Eastman Chemical Company. She is a course instructor for the UT Tyler MPH program, supervises and mentors residents and MPH students in their research projects, and Capstone and Practicum experiences. Her primary focus is building healthy work environments for rural and vulnerable populations. In addition to English, Dr. Nessim is also fluent in Arabic Language.

Course Description: This is an introduction to occupational and environmental health (OEH) with an emphasis on risk assessment, various levels of prevention, and the scientific application of regulatory principles. Evaluation methods and general aspects of control measures impacting human health, and the environment 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 and how they relate; be able to review relevant legal, and regulatory issues pertinent to occupational and environmental health; and be familiar with the basic information on tools utilized in the evaluation of occupational and environmental health issues such as epidemiology, toxicology, risk assessment, risk communication and management and their application in occupational medicine, occupational health nursing, safety, and industrial hygiene.

Prerequisite: None Co-requisite: None

Student Learning Outcomes (SLO) At course completion, students will be able to

1. Discuss the history and basic principles of occupational and environmental health programs and laws and how they relate in clinical and public health settings.
2. Identify relevant legal and regulatory issues pertinent to occupational and environmental health.
3. Utilize basic tools in the evaluation of occupational and environmental health issues: epidemiology, surveillance, biostatistics, and toxicology, risk assessment, risk communication and risk management.
4. Communicate effectively with the multidisciplinary professionals involved in public health and safety such as occupational medicine physicians, occupational health nurses, industrial hygienists, safety professionals,

epidemiologists, toxicologists, community leaders and the public.

MPH Program Competencies:
The student learning outcomes (SLOs) listed above address the following MPH Program Competencies identified in **BOLD**

CEPH Competencies

Evidence-based Approaches to Public Health

1. Apply epidemiological methods to settings and situations in public health practice
2. Select quantitative and qualitative data collection methods appropriate for a given public health context
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming, and software, as appropriate
4. Interpret results of data analysis for public health research, policy, or practice

Public Health & Health Care Systems

5. Compare the organization, structure, and function of health care, public health, and regulatory systems across national and international settings
6. Discuss the means by which structural bias, social inequities, and racism undermine health and create challenges to achieving health equity at organizational, community and systemic levels

Planning & Management to Promote Health

7. Assess population needs, assets, and capacities that affect communities' health
8. Apply awareness of cultural values and practices to the design, implementation, or critique of public health policies or programs
9. Design a population-based policy, program, project, or intervention
10. Explain basic principles and tools of budget and resource management
11. Select methods to evaluate public health programs

Policy in Public Health

12. Discuss the policy-making process, including the roles of ethics and evidence
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes
14. Advocate for political, social, or economic policies and programs that will improve health in diverse populations
15. Evaluate policies for their impact on public health and health equity

Leadership

16. Apply leadership and/or management principles to address a relevant issue
17. Apply negotiation and mediation skills to address organizational or community challenges

Communication

18. Select communication strategies for different audiences and sectors
19. Communicate audience-appropriate (i.e., non-academic, non-peer audience) public health content, both in writing and through oral presentation
20. Describe the importance of cultural competence in communicating public health content

UTTyler HEALTH SCIENCE CENTER

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Interprofessional and/or Intersectoral Practice

21. Integrate perspectives from other sectors and/or professions to promote and advance population health

Systems Thinking

22. Apply a systems thinking tool to visually represent a public health issue in a format other than standard narrative

UT Tyler MPH Program Competencies

23. Utilize community assessment and analysis tools to address factors that contribute to disparities in rural populations

24. Develop a risk assessment and management plan relevant to public health or occupational health issues.

25. Develop strategies for obtaining resources for PH programs, projects, and services

26. Discuss the potential health effects of an environmental factor.

27. Examine occupation as a social determinant of health.

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 two required synchronous sessions and one optional synchronous session on Mondays 6-9 pm. This course usually included an actual plant walkthrough at Eastman Chemical, Longview. During the pandemic, that experience was moved to a virtual, optional, but highly encouraged (synchronous) meeting in conjunction with industrial hygiene lecture, however the skillsets involved in conducting an onsite plant walkthrough will still be covered.

For grading purposes, this course includes weekly graded activities, a midterm exam, and a culminating group case scenario with two grades, one for the written report and one for the oral presentation. Three certificates are imbedded within the weekly activities, AAOHN Respiratory Protection Program Certificate, Tox Tutor Certificate, and FEMA Incident Command Training Certificate.

Key Dates:

First class required synchronous:	Aug 26, 2024, Mon 6-9 pm
Virtual plant tour opt synchronous:	Sep 23, 2024, Mon 6-9 pm
Mid-term examination:	Oct 14, 2024
Case Scenario Report due:	Nov 11, 2024
Thanksgiving Holidays:	Nov 25-29, 2024
Case Presentation synchronous:	Dec 02, 2024, Mon 6-9 pm

No Final

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Course Grading:	**100%**
Activities/Weekly Assignments	35%
Mid-term examination	25%
Case Scenario Report	20% (see case scenario assignment)
Case Presentation	20% (see case scenario assignment)

Final Letter Grade	% Range
A	90-100
B	80<90
C	70<80
Failing	<70

Textbook:

While no single text provides an altogether comprehensive view of the diverse field of occupational and environmental health, "Levy and Wegman" 7th edition will be the text for this course as it has a broadest perspective. "Current 6th Edition" is optional FYI only.

Levy is free through the university library.

Supplementary articles (or online materials) are used throughout the course. These will be included in individual modules where the text readings are deficient, or not current.

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

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

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https://go.openathens.net/redirector/uttyler.edu?url=https%3A%2F%2Febookcentral.proquest.com%2Flib%2Futhct-ebooks%2Fdetail.action%3FdocID%3D5504410

CURRENT Diagnosis & Treatment Occupational & Environmental Medicine, 6th Edition
McGraw Hill, June 23, 2021
ISBN-13: 978-1260143430

Course Content: This course is roughly divided into "halves"

1. Occupational Health

- Introduction to Occupational and Environmental Medicine and Health
- Role of Government and Regulatory issues
- Recognizing and Preventing Occupational Disease and Injury
- Occupational Health Nursing and OSHA Standards
- Industrial hygiene and safety and the Plant Walkthrough
- Introduction to Epidemiology and Occupational Surveillance
- Occupational Risk and Risk Communication

2. Environmental Health

- Environmental Health and Medicine
- Environmental Health Regulations
- Introduction to Toxicology
- Environmental Risk Assessment, Management and Communication
- Introduction to Emergency Response and Management
- Environmental Social Justice
- Impacts of Climate Change

Attendance:
Attendance is encouraged for scheduled required and optional synchronous sessions. 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. Course grading is weighted towards the weekly activities, the one major exam, and the case scenario.

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 Integrity:

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.

Academic Integrity Module: UTT now requires completion of this module for all enrollees by the 4th course week. *For my course, the due date is Sep 8th 11:59 pm. Please see the assignment in the PBHL 5304 Welcome Module.*

Adding/Dropping:

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

Disability Accommodations:

UT Tyler 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 accommodation, please contact us early in the semester so that we can provide or facilitate the provision of accommodation 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

https://www.bls.gov – Bureau of Labor Statistics

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 should be treated as a consultant question. Imagine that you are working for a company, a private consulting firm, a government agency, or a research firm, etc. In these settings, project teams are usually assembled, as the projects are by their very nature, multidisciplinary. So, the case scenario exercise is a team project. Provided below are three brief case scenarios with which you might be confronted. Teams of students will select one case scenario from the three and prepare a consultant's report. Students on each team should play one or two roles, such as industrial hygienist, occupational health nurse, physician, human resources manager, legal counsel, public relations representative, etc. **You are highly encouraged to work ahead and complete week 12 content early as it will be helpful as you develop your written report as well as for preparation for oral presentation.**

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 of risk assessment process to characterize risk.

4. Develop preliminary risk management recommendations for addressing the situation in question to include communication strategies throughout process.

The grading rubric for the written report and oral case will be included within instructions in module that corresponds to their due dates. Week 12 for written report and week 15 for oral presentations.

A group who hires a consultant frequently desires an answer to the question "what should we do?" While documentation and detail are important, treat this as an executive summary (no books, please) and keep your report to five to seven double-spaced, type-written pages or less (~250 words per page or 1250-1750 words, total). 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

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 is meant to mirror a real-world circumstance. Your instructor(s) will provide feedback on the report. Your final oral presentation is expected to incorporate updates or changes based on critique. (This is your opportunity to raise your case scenario grade!) 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 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 plier’s 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 has been 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 had trouble 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.

Virtual Plant Walk-Through: synchronous online session.

In years past, the walk-through has been a highlight for students. It mirrors, to some degree, the steps in the case scenario. Both activities afford the student the opportunity to apply their understanding of principles taught in the course. Regardless, whether done onsite, or in a virtual synchronous session; the course materials and skills for performing a walk-through site visit are core, and will be tested partly in the case scenario, and on the final.

Below is a sample list of safety & health questions to review before touring a plant facility. (Most apply to any type of facility, but manufacturing is most common.) Though this will be done virtually, please review these questions. We will also allow time afterwards to debrief, and possibly discuss the virtual walkthrough in a later class session, as well.

Sample Walk-through Questions at a Plant Facility

1. Can you explain/show us the various steps of the manufacturing process?
2. What methods are currently in use for exposure monitoring at the site? How are results communicated to employees?
3. What do you consider to be your most significant hazards?
4. Are there production areas which use hazardous chemicals? Where do you keep your SDSs? What type of hazard communication training do employees receive?

5. Do you have any blood borne pathogen exposure risks?
6. What types of personal protective equipment are required? Do you use respirators? Are there dust hazards?
7. 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?
8. Do you have a program that focuses on ergonomics?
9. What do you consider to be some of your most unique and/or state-of-the-art engineering measures?
10. Do you perform pre-placement testing when new employees are hired? What kinds of successes have you had with handling workers' compensation?
11. Do you have a modified duty policy? If so, how does it work?
12. Who maintains your OSHA 300 log? How do you use the OSHA 300 log?
13. Is the employee workforce unionized? How does that impact safety and health?
14. When do you conduct employee safety training?
15. How does your medical services department work?
16. Do you offer wellness programs to employees such as smoking cessation and flu shots?