

**ENVR/PHNU 423: Industrial Medicine and Toxicology
Course Syllabus**

Spring 2019

Classes begin Thursday, January 10, 2019 and end Friday, April 26, 2019

Faculty: [Professor L. Nylander-French, PhD, CIH](#)

Professor, Department of Environmental Sciences and Engineering
Director, NC Occupational Safety and Health Education and Research Center
Director, Occupational Exposure Science and Industrial Hygiene Program
Office: Rosenau Hall 159
Office Hours: by appointment
Phone: 919-966-3826
leena_french@unc.edu

[Professor L.M. Ball, PhD](#)

Professor, Department of Environmental Sciences and Engineering
Occupational Health Nursing Program, UNC
Office : Rosenau Hall 159
Office Hours: by appointment
Phone: 919-966-7306
lmball@unc.edu

Course Prerequisites: None

Credits: 3

COURSE DESCRIPTION

This course will examine the impact of occupational chemical and non-chemical exposures on worker health, with particular emphasis on recognition of health effects arising from the principal hazardous agents in the workplace and the efficacy of protection measures, including exposure standards, personal protective equipment and engineering controls.

OBJECTIVES

1. Develop basic problem solving skills necessary to assess occupational and environmental health concerns.
2. Utilize expertise in industrial hygiene, nursing, epidemiology, occupational medicine, and toxicology when evaluating exposure situations.
3. Apply epidemiological, toxicological, industrial hygiene, and management skills in the problem solving process through the use of case studies.
4. Develop competency in how to obtain more information to be able to adequately address occupational and environmental issues.

COMPETENCIES

1. Fosters collaborative practice as a member of the interdisciplinary team with emphasis on occupational health and safety areas.

2. Uses written, oral, and technological strategies to communicate effectively with individuals, groups, and communities about occupational health and safety issues.
3. Develops, implements, and evaluates comprehensive occupational health and safety programs and services for diverse client populations.
4. Assumes occupational health leadership role in business, academia, government, and in the community.
5. Utilizes critical and creative thinking to identify trends in health and health care that impact workers and communities and determine appropriate intervention and prevention strategies.
6. Influences policy development and its implications on business, legislation/regulation; health care; occupational health and safety issue; and the environment.
7. Utilizes knowledge from occupational health sciences to assess and control exposures in work environments.
8. Applies ethical decision making principles, personal values and beliefs, and ethical behavior in situations requiring judgment.

REQUIRED TEXT/READINGS

LaDou, J. (2014). *Current Occupational & Environmental Medicine* (5th Ed.). New York: Lange Medical Books/McGraw-Hill.

Additional readings and video recordings will be provided on the Sakai website. All required materials are marked with an asterisk (*). Other listed materials are for additional information if you are interested or having difficulty with the topic.

TEACHING METHODS

Recorded Lectures available through Sakai site – linked under Course Schedule
Chat Sessions/Discussions
Group Presentations

CHAT SESSIONS

Chat sessions will be held every week on Sakai at a time mutually decided by faculty and students, typically a weekday afternoon or early evening, for up to one hour.

The purpose of the chat sessions will be to provide an opportunity to ask questions about the material covered in the previous week, and to discuss specific topics relevant to that material - which will be communicated to the class ahead of time.

This year our windows are Mondays 1 to 4 pm, Tuesdays and Thursdays 2 to 6 pm. What I would like to do is pick a time on Mondays and a time on Tues or Thursdays, and alternate Mondays one week and Tues/Thur the following week so that as many people as possible have an opportunity to participate. The chat function will remain open for use for one week after the "live hour".

A topic relevant to the material covered that week will be posted ahead of time which faculty will expect students to have read and be prepared to discuss. One point will be awarded for

each live chat session attended. Participation in a minimum of five (5) chat sessions is required.

PRESENTATIONS

Two to four (2-4) students shall work as a team to evaluate one chemical exposure situation or process. The presentation should address the following components:

- General toxicity of chemical(s) where an exposure may occur
- Exposure assessment: where can an over-exposure occur
- Monitoring program (both medical/epidemiological and industrial hygiene) for the examined situation
- Measures that can be taken to prevent excessive exposure

Please review your topic with Dr. Ball before beginning the assignment. Some presentations from previous years will be posted on Sakai to give you an idea of what is expected. The list of presentation topics will be posted online by April 8th. Half of the presentations will be assigned to Week 14, the other to Week 15.

The presentation should be prepared as PowerPoint slides, then narrated as a group using Voice Thread, so all course participants can view, hear, pose questions and comments. Aim for a length of 25-30 min for each presentation. One point will be awarded for each substantive contribution (question or comment) from the audience.

RUBRIC FOR PRESENTATIONS

Evaluation criteria

Criterion	Fully Met (Weighting: 9-10)	Partially Met (Weighting 6-8.9)	Not Met (Weighting 0-5.9)
CONTENT (50 points)	<ul style="list-style-type: none"> • The project demonstrates evidence of extensive research effort and critical thinking. • Significance of issue is clear • Assertions are backed by supporting data • Complexity of subject matter is handled appropriately • Sources are credited appropriately 	<ul style="list-style-type: none"> • The project partially demonstrates evidence of research effort and critical thinking. • Significance of issue is mostly clear • Assertions are mostly backed by supporting data • Complexity of subject matter is mostly handled appropriately • The majority of the sources are credited appropriately 	<ul style="list-style-type: none"> • The project demonstrates very little evidence of research effort and critical thinking. • Significance of issue is not clear • Assertions are poorly backed by supporting data • Complexity of subject matter is not handled appropriately • Few sources are credited appropriately
ORGANIZATION	<ul style="list-style-type: none"> • Visual aids are well 	<ul style="list-style-type: none"> • Visual aids are 	<ul style="list-style-type: none"> • Visual aids (table,

<p>AND USE OF VISUAL EFFECTS (18 points)</p>	<p>prepared, informative, and are effectively used to enhance the audience's understanding of the materials.</p>	<p>generally well prepared and informative but do not always support the text.</p> <ul style="list-style-type: none"> The oral presentation does not match or follow the slides well. 	<p>graph, pictures) do not enhance the audience's understanding of the materials. The oral presentation is disconnected from the slides.</p> <ul style="list-style-type: none"> The font size is too small and cannot be read.
<p>TEAMWORK (15 points)</p>	<ul style="list-style-type: none"> The team worked well together, and the project was clearly a joint effort. The workload and variety of tasks carried out by each member seem fair. Presentation reflects thorough preparation and coordination among group members. 	<ul style="list-style-type: none"> The team worked well together most of the time, and the project was mostly a joint effort. The workload and variety of tasks carried out by each member seem mostly fair. Presentation reflects sub-optimal coordination and preparation among group members. 	<ul style="list-style-type: none"> The team did not work well together most of the time. The project workload and tasks fell disproportionately on a few members. Presentation reflects lack of practice and/or coordination among group members.
<p>DELIVERY (15 points %)</p>	<ul style="list-style-type: none"> Structure of presentation is developed appropriately and smoothly The main points stand out Attention "hooks" are not excessively cheesy Graphics are clearly legible Video is used appropriately to illustrate material that would be difficult to present otherwise. Oral presentation aligns with the 	<ul style="list-style-type: none"> Structure of presentation is mostly developed appropriately and smoothly The main points mostly stand out Attention "hooks" are a little cheesy Graphics are not always legible Video is occasionally used as a substitute for developing fresh material. Oral presentation mostly aligns with the visuals and transition is mostly 	<ul style="list-style-type: none"> Structure of presentation is disjointed The main points don't stand out Attention "hooks" are distracting rather than helpful Graphics are often not legible Video is used excessively, as a substitute for developing fresh material. Oral presentation does not aligns with the visuals, transition from one section to

	visuals and transition is smooth from one section to another <ul style="list-style-type: none"> • Presentation was within the assigned time limit. 	smooth from one section to another <ul style="list-style-type: none"> • Presentation ran a little (2-4 min) over (or under) the assigned time limit. 	another is not smooth <ul style="list-style-type: none"> • Presentation ran seriously (>5 min) over (or under) the assigned time limit.
RESPONSE TO FEEDBACK (2 points)	<ul style="list-style-type: none"> • Presenters respond appropriately to questions from the audience 	<ul style="list-style-type: none"> • Presenters mostly respond appropriately to questions from the audience 	<ul style="list-style-type: none"> • Responses to questions from the audience reflect lack of knowledge /understanding of the subject

EVALUATION

Evaluation	Percent of Grade	Assignment Due
Two Exams (take home/open book): 2 @ 20 % Covering material presented in the previous five weeks	40%	Exam 1 Feb 13-Feb 20 Exam 2 March 27-April 3
Powerpoint Slide Presentation using Voice Thread <ul style="list-style-type: none"> ▪ Guidelines are listed above 	20%	April 15-26, 2018
Chat Sessions (1 % per attended session, minimum of 5) + Feedback on Presentations (1 % per presentation)	10%	Date of Chat Session (TBA)
Final Exam (take home/open book): Answers and short essays based on case histories	30%	May 7, 2019 (available May 2, 2019)
Course Evaluation (required)	N/A	End of course

GRADING SCALE

The following grading scheme is used:

Percent (%)	Descriptor	Graduate Grade	Undergraduate Grade
95 - 100	Outstanding	H	A
90-94.9	Excellent		A-
85 - 89.9	Very good	P	B+
80 - 84.9	Good		B
75 - 79.9	Satisfactory		B-
70 - 74.9	Adequate		C

60 - 69.9	Marginal	L	D
50 - 59.9	Insufficient	F	F

ENVR/PHNU 423 Industrial Toxicology Spring Semester 2019 Draft Schedule

Dates	Topics	Resources and Lecturers
Week 1 Jan 9 - 11	Introduction, course organization, expectations, trial chat	LMB
Week 2 Jan 14 - 18	Chemical Exposures in the Workplace: ADME	LMB
Week 3 Jan 21 - 25	Major toxic responses: Respiratory, dermal, sensitization, neurological, renal, second generation. Mechanisms of responses, how to recognize effects.	LMB. Ladou Chapters 22. Upper Respiratory Tract Disorders, 23. Occupational Lung Diseases, 21. Occupational Skin Disorders, 27. Neurotoxicology, 26. Renal Toxicology, 28. Female Reproductive Toxicology, 29. Male Reproductive Toxicology
Week 4 Jan 28 – Feb 1		
Week 5 Feb 4 - 8	Workplace exposure standards, measurement of exposure, sampling and sampling equipment	LNF. Ladou Chapters 38. Occupational Safety, 39. Industrial (Occupational) Health
Week 6 Feb 11 - 15	Specific concerns: carcinogens	LMB Ladou Chapter 19. Occupational Cancer
Exam 1 Feb 13-Feb 20	On-line, through Sakai	Covering Weeks 1-5
Week 7 Feb 18 - 22	Specific concerns: dusts, fibres, silicosis	LMB
Week 8 Feb 25 - 29	Specific concerns: metals (Beryllium, mercury, lead)	LMB Ladou Chapter 30. Metals
Week 9 March 3 - 8	Specific concerns: solvents	LMB
March 11 - 15	Spring Break	
Week 10 March 18 - 22	Case studies: Evaluating the impact of PPE, engineering controls, use of biomarkers	LNF
Week 11 March 25 -	Case studies: Protecting the	

29	sensitized worker	
Exam 2: March 27- April 3	On-line, through Sakai	Covering weeks 6-10
Week 12 April 1 - 5	Case studies	
Week 13 April 8 - 12	Case studies	
Week 14 April 15 - 19	Student Projects	
Week 15 April 22 - 26	Student Projects	
Final exam 8 am Thursday May 2 nd - 7 pm Tuesday May 7	On-line via Sakai	

The schedule may undergo changes due to unforeseen circumstances. University closings due to local driving conditions should not impact this course, but widespread power outages in the Triangle area will necessarily impact both delivery and receipt of instructional materials. In the event of such interruptions

EXPECTATIONS

Students completing this course will develop basic problem solving skills necessary to assess occupational and environmental concerns. This course is based on case studies and will give students opportunities to interact with students in various occupational health disciplines. These case studies will demonstrate the usefulness of epidemiological, toxicological, industrial hygiene and management skills in the problem solving process. Although the content portion of this course focuses on toxicology and industrial medicine, it is an expectation that these same problem solving skills will be useful in addressing any occupational or environmental health issue. Students will be able to interact effectively with practitioners with expertise in the areas of industrial hygiene, epidemiology, industrial medicine and toxicology when addressing such problems. Students will develop competencies in how to obtain more information to be able to adequately address concerns.

HONOR CODE

The University of North Carolina at Chapel Hill has had a student-administered honor system and judicial system for over 100 years. The system is the responsibility of students and is regulated and governed by them, but faculty share the responsibility. If you have questions about your responsibility under the honor code, please bring them to your instructor or consult with the office of the Dean of Students or the Instrument of Student Judicial Governance. This document, adopted by the Chancellor, the Faculty Council, and the Student Congress, contains all policies and procedures pertaining to the student honor system. Your full participation and observance of the honor code is expected.

Information about the Honor Code can be found in the Student Handbook. All written work should be submitted with the following pledge with your signature: "On my honor, I have neither given nor received unauthorized aid on this assignment."

VALUING DIVERSITY

Promoting and valuing diversity in the classroom enriches learning and broadens everyone's perspectives. Inclusion and tolerance can lead to respect for others and their opinions and is critical to maximizing the learning that occurs in this course. This may challenge our own closely held ideas and personal comfort zones. The results, however, create a sense of community and promote excellence in the learning environment.

Diversity includes consideration of (1) the variety of life experiences other have had, and (2) factors related to "diversity of presence", including, among others, age, economic circumstances, ethnic identification, disability, gender, geographic origin, race, religion, sexual orientation, social position.

This class follows principles of inclusion, respect, tolerance, and acceptance that support the values of diversity.

The University of North Carolina at Chapel Hill is committed to equality of educational opportunity. The University does not discriminate in offering access to its educational programs and activities on the basis of age, color, creed, disability, gender, gender expression, gender identity, genetic information, national origin, race, religion, sex, sexual orientation, or veteran status. The Equal Opportunity and Compliance Office (100 E. Franklin Street, Unit 110, CB #9160, Chapel Hill, NC 27599-9160 or (919) 966-3576) has been designated to handle inquiries regarding the University's non-discrimination policies. <http://policies.unc.edu/policies/nondiscrim/>

OTHER

1. By enrolling as a student in this course, you agree to abide by the UNC-Chapel Hill policies related to the Acceptable Use of online resources. Please consult the Acceptable Use Policy (<http://help.unc.edu/1672>) on topics such as copyright, net-etiquette, and privacy protection.
2. As part of this course, you may be asked to participate in online discussions or other online activities that may include personal information about you or other students in the course. Please be respectful of the rights and protection of other participants under the UNC-Chapel Hill Information Security Policies (http://its.unc.edu/ITS/about_its/its_policies/index.htm) when participating in online classes.
3. When using online resources offered by organizations not affiliated with UNC-Chapel Hill, such as Google or Youtube, please note that the Terms and Conditions of these companies and not the University's Terms and Conditions apply. These third parties may offer different degrees of privacy protection and access to rights to online content. You should be well aware of this when posting content to sites not managed by UNC-Chapel Hill.
4. When links to sites outside of the unc.edu domain are inserted in class discussions, please be mindful that clicking on sites not affiliated with UNC-Chapel Hill may pose a risk for your computer due to the presence of malware on such sites.