The University of North Carolina at Chapel Hill
Gillings School of Global Public Health

PHNU 787: Fundamentals of Industrial Hygiene
Distance Education Course
2016 Fall Semester

Classes begin August 23, 2016 and end December 7, 2016

Faculty: **Nelson Couch, PhD, CIH, CSP**
Office Location: I work from my home office
Office Hours: 9am to 4:30pm
Phone: 919-544-2853
Email: ncouch8@earthlink.net

Susan Randolph, MSN, COHN-S, FAAOHN
Office Location: 1700 Martin Luther King Jr. Blvd., Room 337, Chapel Hill, NC
Office Hours: 9am to 3pm
Phone: 919-966-0979
Email: susan.randolph@unc.edu

Credits: 2 hours

Course Prerequisites: None

COURSE DESCRIPTION

This course is designed as an introduction to the basic concepts of industrial hygiene and to provide students with a broad understanding of the field. Major emphasis of the course will be recognition of hazards in the workplace, evaluation or measurement of those hazards, and application of control strategies. Target audience is occupational health nurses.

OBJECTIVES

1. Discuss the role of industrial hygiene and collaboration with other members of the occupational health team.
2. Identify, describe, and integrate the principles of anticipation, recognition, evaluation, and control of potential health hazards in the workplace.
3. Apply industrial hygiene principles to hazard evaluation in the workplace.

REQUIRED TEXTBOOKS/READINGS

Plog, B.A., & Quinlan, P. (2012). Fundamentals of Industrial Hygiene (6th Ed.). Chicago: National Safety Council. Text is available at the UNC Health Affairs Bookstore and the National Safety Council.

TEACHING METHODS

Lectures/discussions (on-line)
Group work
Independent learning activities
Assigned readings
Preparation of written assignments and exercises

COURSE ASSIGNMENTS
Course assignments are due Mondays by 12noon ET.

Evaluation	Percentage of Grade	Type of Assignment	Assignments Due
1. Participation	30%		
a. Postings to Discussion Forum		Individual	
1. Occupational Health Team			Aug. 30-Sept. 6*, 2016
2. Safety Data Sheets (SDS)			Sept. 26-Oct 3, 2016
3. Hazard Control Strategy			Oct. 24-Oct. 31, 2016
b. Self-assessment quizzes		Individual	
1. Module 1			September 19, 2016
2. Module 2			October 17, 2015
3. Module 3			November 14, 2016
2. Application Exercises	30%	Individual	
a. Noise			September 12, 2016
b. TWA/TLV			October 10, 2016
c. Hazard Control			November 7, 2016
3. Virtual Walkthrough Exercise	20%	**Group**	November 28, 2016
4. Final Examination	20%	Individual	December 8-15, 2016 (noon)
5. Course Evaluation	Required	Individual	End of the course

***Assignments are due Mondays by 12noon ET; Note the exception of *Tuesday, September 6* as Monday, September 5 is Labor Day holiday.**

Participation (30%)

- Postings to the Discussion Board are one measure of your participation. You must post your own responses to the questions and respond to several postings by classmates, thus contributing to a discussion. You are not expected to comment on everyone's post. At least 3 quality postings are expected for each topic/question area. (15%)
  1. Core Disciplines in Occupational and Environmental Health
  2. Safety Data Sheets
  3. Hazard Control Strategy

- Self-assessment quizzes consisting of multiple-choice questions will be available at the end of each module. The questions will serve as one indicator of your understanding of the material and participation in the course. They will also provide you an opportunity to review for the final examination. (15%)

Application Exercises (30%)
Application exercises are another way for you to gauge your learning and understanding of certain skills.

1. Noise Exposure
2. TLV/TWA Exercise
3. Hazard Controls

Virtual Walkthrough Exercise (20%)

The class will be divided into groups and assigned a group name. The class will take a virtual walkthrough tour of a newspaper printing company. During the tour of the various departments within the company, the basic steps required in printing a newspaper will be described. You will see the printing press, plate making, insert compilation and newspaper binding, the warehouse, ink and solvent rooms, and the maintenance areas. As you take the tour, notice potential and obvious hazards and control measures taken to protect workers. Copies of Material Safety Data Sheets are provided as pdf documents.

The group will write a paper based the assignment. One question is required of all groups; each group will then select an additional question to answer. The paper should be 8-10 double spaced typed pages in 12 point font, using headings, and follow the APA format. References should be current. Assignments will be made early in the course so students will have sufficient time to complete the work. More detail is provided in the Group Assignment sheet.

Final Examination (20%)

Each student will take an on-line multiple-choice final examination based on the material covered during the course. The exam has 50 questions.

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 is listed 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.”

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.

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, which is valuable in itself and is critical to maximizing the learning that occurs in this course. Therefore, this class follows principles of inclusion, tolerance, and respect for multiple and diverse points of view.

COURSE EVALUATION

All students are required to complete the on-line course evaluation during the two week time window at the end of the course as listed on the UNC Academic Calendar. You should receive an email guiding you in the process. Course evaluations are important so we can make improvements in the course.

GRADING SCALE

Students will be graded on three main areas: Participation, Application Exercises, Walkthrough Exercise, and a Final Examination.

H: 93 to 100
P: 85 to 92
L: 80 to 84
F: Below 80

MODULE 1 – Anticipation and Hazard Recognition **August 23 – September 19, 2016**		
Module Dates	**Lecture**	**Text Readings/Materials**
	1. Evaluating Worker Exposure Optional: Legal Aspects and Intro to OSHA (no audio)	Ch. 1, Overview of IH (pp. 3-33) Ch. 15, Evaluation (pp. 487-505)
	2. Hazard Communication and Plant Walkthrough Surveys	Ch. 6, Industrial Toxicology (pp. 145-147) **Scan Chapters 24-29** 24, The industrial hygienist (pp. 701-724) 25, The safety professional (pp. 725-746) 26, The occup/env medicine physician (pp. 747-757) 27, The OHN (pp. 759-780) 28, Environmental health and safety (pp. 781-789) 29, The IH program (pp. 791-803)

Module Dates	Lecture	Text Readings/Materials
Aug 30 - Sept 6	**Discussion Forum**: Core Disciplines in Occupational and Environmental Health	
	3. Physical Hazards	Review Appendix B Contaminants (pp. 1003-1130)
	a. Noise	Ch. 9, Industrial Noise (pp. 1013-1017) NIOSH webpage Noise and Hearing Loss Prevention
Sept 12	**Application Exercise**: Noise	
	b. Thermal Stress	Ch. 12, Thermal Stress (pp. 335-361) Appendix B, Thermal Stress (pp. 1083-1101) NIOSH webpage Heat Stress
	c. Radiation	Ch. 10, Ionizing Radiation (pp. 261-284)
	d. Ergonomics (optional)	Ch. 13, Ergonomics (pp. 363-409)
	e. Non-ionizing Radiation (optional)	Ch. 11, Non-ionizing radiation (pp. 285-334) Appendix B, Electromagnetic Radiation (pp. 1018-1058) Ch. 17, Direct Reading Instruments for Gases, Vapors, and Particulates (pp. 547-570)
	f. Indoor Air Quality (optional)	Ch. 21, General Ventilation of Nonindustrial Occupancies (pp. 631-647) NIOSH webpage Indoor Environmental Quality
	g. Confined Spaces (optional)	NIOSH webpage Confined Spaces
	4. Chemical Hazards	Ch. 7, Gases, Vapors, and Solvents (pp. 149-170) Ch. 8, Particulate Matter (pp. 171-222)
	5. Biological Hazards	Ch. 14, Biological Hazards (pp. 411-483)
Sept 19	**Self-Assessment Quiz**: Module 1	

MODULE 2 -- Hazard Evaluation

September 20 – October 10, 2016

Module Dates	Lecture	Text Readings/Materials
	1. PELs, TLVs, and OELs	Ch. 6, Industrial Toxicology (pp. 123-147) Ch. 15, Evaluation (pp. 517-520) Appendix B, Statement of position regarding TLVs and BEIs (pp. 877-890; 893-898; 955-975; 989-993)

Module Dates	Lecture	Text Readings/Materials
Sept 26-Oct 3	**Discussion Forum**: Safety Data Sheets	
	2. Sampling Methods and Techniques a. Sampling Strategy	Review Ch. 15, Evaluation (pp. 517-520)
Oct 10	**Application Exercise**: TLV-TWA	
	b. Air Sampling	Ch. 16, Air Sampling (pp. 523-545)
	c. Direct Reading Instruments for Gases, Vapors, and Particulates	Ch. 17, Instruments for Gases, Vapors, and Particulates (pp. 547-570)
Oct 17	**Self-Assessment Quiz**: Module 2	

MODULE 3 – Control Measures

October 18 – November 14, 2016

Module Dates	Lecture	Text Readings/Materials
	1. Basic Controls	Ch. 18, Methods of Control (pp. 573-595)
	2. Engineering Controls	Review Ch. 18, (pp. 580-595) Ch. 19, Local Exhaust Ventilation (pp. 597-616) Ch. 20, Dilution Ventilation of Industrial Workplaces (pp. 617-647)
Oct 24-Oct 31	**Discussion Forum**: Hazard Control Strategy	
	3. Administrative Controls	Review Ch. 18 (pp. 585-588)
	4. Personal Protective Equipment	Review Ch. 18 (pp. 588-592) Ch. 23, Personal Protective Equipment (pp. 649-685) Packham, C. (2006). Gloves as Chemical Protection—Can They Really Work (4 pg)
Nov 7	**Application Exercise**: Hazard Control	
	5. Respiratory Protection	Ch. 22, Respiratory Protection (pp. 649-685) NIOSH webpage NIOSH Respirator Selection Logic, 2004
Nov 14	**Self-Assessment Quiz**: Module 3	

GROUP ASSIGNMENT	
Nov 28	**Group Virtual Tour Exercise**: Printing Plant
	There are 4 sections of questions for the case study, of which each group must answer two. See details on Sakai. • Each group completes Section 1; • then each group selects one more section: #2 – Platemaking #3 – Press and Packaging, or #4 – Maintenance Shops Submit your responses in a Word document using APA format, not to exceed 8-10 double spaced typed pages with 12 point font, using headings. References should be current. Clearly identify which sections you have selected and answer all questions.
FINAL EXAMINATION	
Dec 8-Dec 15 noon	**Final Exam**—online 50 question multiple choice exam (similar to self-assessment quizzes)
COURSE EVALUATION	
End of Semester	**Course Evaluation** – all students must complete the course evaluation. Please complete when you receive the online link via email from SPH.