ENVH 564
RECOGNITION OF HEALTH AND SAFETY HAZARDS IN INDUSTRY
Autumn Quarter, 2016
2 Credits

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Time:	Mondays 10:30 - 12:20 (with extensions for field trips)
Place:	South Campus Center (SOCC) 350
URL:	https://canvas.uw.edu/courses/1065289

Introduction: This course is designed to provide an introduction to the recognition of occupational safety and health hazards and approaches to controlling hazards, primarily through tours of representative local industrial facilities. Lectures consist of an introduction to hazard recognition and control strategies, and discussions will address the hazards of the various industries toured.

Learning objectives: At the conclusion of this course, students will be able to:

1. Identify hazards associated with specific industrial processes.
2. Identify alternative control options for several health and safety problems in a wide range of industrial processes.
3. Develop a strategy for conducting a walkthrough assessment of an industrial process.
4. Describe hazards in clear written language associated with industrial processes using specific field observations.
5. Clearly communicate health and safety hazards to various audiences.

Student Requirements:

1. Students must attend lectures and complete assigned readings in advance. Ear plug use video on first day is required.
2. Students must be prepared and dressed appropriately for all field trips. If not dressed appropriately, student will not be allowed on site.
3. Students complete:

    A. **Industry Reviews:** A summary of each industry being visited will be due the week of that site visit for the 2nd and 5th site visits only. The summary will include the following sections (please keep them in this order): Definition of Industry, Processes, Hazards, and Exposure Controls and Applicable Health and Safety Standards. For more detail on the written reports, see page 7 of the syllabus. These documents should be less than 2 pages in length, excluding references (please use multiple references). For the 3rd and 4th site visits, the same information should be investigated, but a written report is not required. Your knowledge of the industry may be tested on the way to the sites.

B. **Walk-Through Report:** This technical report will summarize one of the tours. It should describe the company, their health and safety program structures, the company-specific production processes, raw materials used, potential for hazards and exposures, and recommendations for controls. The report should be no longer than 10 pages (excluding references) and should include appropriate bibliographic citations, including primary research sources. Assignments for who will summarize which tours will be made on the first day of class. The report will be due 2 weeks after your assigned site visit. Please use the structure shown in the guidance document where appropriate (page 8 of the syllabus) and submit the reports in the Assignment section for "Site Visit Report". Only the 3rd and 4th site visits will be assigned for these reports.

C. **Hazard Identification Exercises:** These exercises will help the students develop skills in hazard and controls identification. These short exercises will be one page or less in length and due one week after the site visits. See page 9 of the syllabus for the questions. Only four of these will be required, as one will not be required for the site visit for which you write a site visit report.

D. **There will be no final exam.**

Grading: Industry reviews (20%, 2 @ 10% each), Hazard identification exercises (30%, 4 @ 7.5% each), Walk-through report (40%), and Class participation (10%).

There will be 2 sections in the class (1 and 2). Section 1 will be responsible for a Hazard ID for site visit 3 and Site Visit Report for site visit 4. Section 2 will be responsible for a Hazard Review for site visit 4 and Site Visit Report for site visit 3. Sections will be assigned during first class.

Following is the grading scale that will be used.

# grade	Letter	%'age	# grade	Letter	%'age
4	A	100	2.8	B-	83
3.9	A	98	2.7	B-	82
3.8	A-	96	2.6	B-	81
3.7	A-	94	2.5	B-	80
3.6	A-	92	2.4	C+	79
3.5	A-	90	2.3	C+	77
3.4	B+	89	2.2	C+	76
3.3	B+	88	2.1	C	75
3.2	B+	87	2	C	74
3.1	B	86	1.9	C	73
3	B	85	1.8	C-	71
2.9	B	84	1.7	C-	70

Writing: One component of your grades for the written assignments will be your ability to clearly convey your ideas and information to the reader. If you are having difficulties, the UW has a good resource to assist students improve their writing skills (https://depts.washington.edu/owrc/). The Department of Environmental and Occupational Health Sciences also has a class on Technical writing in Environmental Health (ENVH 520). Tips for your writing:

1. The writing required in the class is not creative writing, it is technical writing.
2. All figures, graphs, photos, and tables must be numbered and have a descriptive caption. These should also be referenced in the text.

Text Book

Highly Recommended

Burgess, WA. Recognition of Health Hazards in Industry: A Review of Materials and Processes. 2nd edition, New York, John Wiley and Sons. 1995

Academic Integrity (http://sph.washington.edu/students/academicintegrity/)

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity. Assignments may be evaluated using Turnitin, which is a tool to help evaluate the integrity of written assignments.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington **Student Conduct Code** (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the **SPH Academic Integrity Policy**. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington **Community Standards and Student Conduct** website.

Access and Accommodation (http://depts.washington.edu/uwdrs/faculty-resources/syllabus-statement/):

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or disability.uw.edu. DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Inclusion
The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. We encourage students with concerns about classroom climate to talk to your instructor, your advisor, a member of the departmental or SPH Diversity Committee and/or the program director. DCinfo@uw.edu is a resource for students with classroom climate concerns.

Class Schedule Fall 2015 – See next page for section-based assignments table

#/ Date	Topic	Readings/Assignment	Industry Reviews	Exercises & Reports Due
1 10/3	Introduction/Walkthrough/ Hazard Recognition (MC) Resources & Foundry Processes/Hazards (MC)	**Read:** Burgess, Chapter 1 **Videos:** Earplugs (required) & AIHA Haz. Eval.		
2 10/10	**Factory Tour 1: Northstar Casteel Foundry**	**Read:** Burgess, Chapter 8		
3 10/17	**Review:** Foundry tour Health and Safety Programs/Regulations (NS)	**Read:** Roach and Rappaport, 1990 OSHA Whitepaper		Northstar Hazard ID exercise
4 10/24	**Factory Tour 2: Strasser Woodenworks**	**Read:** Brauer, Machine Guarding **Video:** Saw Stop	Woodworking	
5 10/31	**Review:** Cabinet shop Control Strategies including Ventilation (MC)	**Read:** Burton, Chapter 31		Strasser Haz. ID exercise
6 11/7	**Factory Tour 3: Commercial Building Construction**		Commercial Bldg Construction **(written not required)**	
7 11/14	**Review:** Construction hazards Personal Protective Equipment (MC)	**Read:** Neitzel, HPD effectiveness **Video:** Respirator fit test		**Section 1:** Construction Haz. ID exercise
8 11/21	**Factory Tour 4: Dyno Battery**		Lead-acid battery Mfg **(written not required)**	**Section 2:** Construction Site Visit Report (No Construction Haz ID due)
9 11/28	**Review:** Battery hazards Hazard Communication (MC)	**Read:** Burgess, Chapter 2		**Section 2:** Dyno Battery Haz. ID exercise
10 12/5	**Factory Tour 5: Nucor Steel**		Steel mill	**Section 1:** Battery Site Visit Report (No Battery Haz ID due)
11 12/12	**Time and Location TBA Review:** Steel Mill			Nucor Haz. ID exercise

- **Only reviews for the 2nd and 5th site visits are required**
- **One site visit report is required for either for the 3rd or 4th site visit**
- **4 of the 5 Hazard ID Exercises are required. One is not required for your site visit report site.**

Section Assignments

	Section 1	Section 2
Hazard ID	Construction	Batteries
Site Visit Report	Batteries	Construction
Skip Hazard ID	~~Batteries~~	~~Construction~~

References (available on Canvas site)

Burgess WA Recognition of health hazards in industry: a review of materials and processes. 2nd edition. 1995. New York:John Wiley.

Burton JD. "General Methods for Control of Airborne Hazards" Chapter 31. In The Occupational Environment: its evaluation, control, and management. DiNardi (ed). AIHA, Fairfax, VA.

Brauer, RL. Chapter 13, Tools and Machines, in *Safety and Health for Engineers*. 1990, Van Nostrand Reinhold, New York., 1990.

Neitzel R, Seixas, N. The Effectiveness of Hearing Protection Among Construction Workers. J Occup Environ Hyg 2: 227–238, 2005.

Bernard, T. Chapter 12, Thermal Stress, in *Fundamentals of Industrial Hygiene*. National Safety Council Press, 5th Edition, 2002.

Roach SA and Rappaport SM. "But they are not Thresholds: a critical analysis of the documentation of threshold Limit Values". American Journal of Industrial Medicine. 1990. 17:727-753.

SUGGESTED OUTLINE FOR INDUSTRY REVIEWS

Reviews should be no longer than 2 pages in length; excluding references (please use multiple references).

The purpose of these documents is for you to learn about the industry in general, **NOT** the specific company that we'll be visiting. If you write about the specific company, that is incorrect.

I. Definition of Industry

a) Products
b) Employment
c) Characteristic of the organizational or management structures (if possible)

II. Process

a) Overview of processes
b) Flow of raw materials, intermediates (if any), and end product

III. Health and Safety Hazards (Focus on high priority risks and hazards unique to this industry)

a) Process-specific hazards (health, safety and musculoskeletal disorder hazards)
b) Potential outcomes from hazards

IV. Controls and Standards

a) Industry-specific (vertical) health or safety standards (e.g. sawmills, grain handling, etc.)
b) Hazard-specific (horizontal) health or safety standards (e.g. methylene chloride, formaldehyde, etc.)
c) Engineering controls typically used in this industry
d) PPE required

V. References

SUGGESTED OUTLINE FOR WALK-THROUGH REPORTS

Write-ups should be concise yet complete, written as a report (not bullet points), and should not exceed 10 pages. Not all listed sub-sections may be applicable to your chosen sites.

The purpose of this document is to help the company understand some of their exposures and methods to control those exposures. Consider it like a consultation report to the company, so it should cover the company's specific processes and hazards. All figures and tables need titles and need to be referred to in the text of your document.

I. Introduction

a) Company name, location and contact persons
b) Purpose and scope of walk-through
c) Summary of your pre-walk through industry review

II. Managing Health and Safety

a) Personnel: number by area or job, salary and hourly, shifts, etc.
b) Union/non-union; if union shop, which unions are represented
c) Health and safety management organization
   - IH and Safety
   - Medical/nursing
   - Employee involvement through committees, etc.
d) Required employee training
e) Health and safety programs
f) Accident and injury rates; workers compensation modification factor
g) OSHA or DOSH citations (aka. Violations)

III. Overview of site and process (sketches or maps may be helpful)

a) Site layout, size and construction of buildings
b) Process Flow
c) Raw Materials, Intermediates, Products, Waste or By-products

IV. Process details

a) Machine descriptions
b) Work station design
c) Personnel present / tasks or responsibilities
d) Potential hazards identified or expected (emissions, safety hazards, etc.)
e) Observed controls

V. Notable health or safety hazards/exposures (Choose 2-3 processes or hazards in IV, d and provide more detail)

a) Potential hazard, location, conditions
b) Applicable standards or guideline
c) Known health effects, or possible result of injury
d) Recommendations: program enhancements, evaluation, controls, on-going surveillance

VI. References

Hazard Identification Exercise

(One page or less, brevity is good, explain each response from observed evidence)

For the previous site visit, answer the following questions (be sure to put the company name in the header of your work):

1) List 3 abated or unabated hazards observed during the site visit.
2) For each of the hazards listed in 1), list a control used or one that could be used to reduce the hazard.
3) Which of the 3 hazards would you prioritize for immediate attention and why?
4) List a management, demographic, or social issue that may positively or negatively impact the workers' health and safety at the site.