

**SAFM 502**  
**Controlling Environmental and Personnel Hazards**  
**Fall 2015**

INSTRUCTOR: XIAOPENG NING  
OFFICE: 333D MRB  
PHONE: 304-293-9474

CLASS MEETING: Monday 4:00pm-6:50pm  
CLASS LOCATION: 107 MRB

OFFICE HOUR: By appointment

Textbook (required): BRAUER, ROGER L., "Safety and Health for Engineers", 2006.

CLASS FORMAT: Lecture, Homework, Presentations, Exams

The instruction of this course will be primarily through lectures, although open class discussions will be strongly encouraged. Students will be expected to have reviewed the relevant material for each class before that class session begins. Quizzes will be given at the beginning of some classes to facilitate class preparation, as well as encourage regular and timely attendance.

Sufficient (and minimal) individual and group assignments will be assigned throughout the semester. Two MID-TERM exams will be given to gauge your progress and overall aptitude in this field. The FINAL exam will be cumulative, including the material presented after Mid-term #2 and related material presented and discussed earlier in the semester.

**Grade Allocation**

Exam #1:	20%
Exam #2:	20%
Final (Exam #3):	20%
Written Assignment:	10%
Presentation:	20%
Performance:	10%
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Grand Total:	100%

Grades will be assigned based on 10% delineations (A > 90%, 89% > B > 80%, etc.). **REMEMBER** that 10% of your grade is based on (my perception of) your participation during the semester, which includes your attendance (which will not be taken), quiz answers, your participation in class discussions, and your professionalism.

Class Meeting	Lecture Topics
12-Jan	Safety Intro, Fundamental Concepts, Regulations
19- Jan	<b>Martin Luther King Day</b>
26- Jan	Product Liability
2- Feb	Mechanics/Structures
9- Feb	Materials Handling
16- Feb	<b>MIDTERM #1,</b>
23- Feb	Walking/Working Surfaces
2-Mar	Heat & cold, High/low Pressure
9-Mar	Electrical Safety, Noise/Vibration
16-Mar	<b>MIDTERM #2</b>
23-Mar	<b>Spring Recess</b>
30-Mar	(Non-) Ionizing Radiation
6-Apr	Human Behavior, Ergonomics
13-Apr	System Safety
20-Apr	Personal Protective Equipment, Review
27-Apr	<b>Final Exam</b>

### Course Goals for Student Outcomes

1. Define and apply specific problem concepts covered in the course, from basic sciences and engineering, relating to hazard potential in the work environment
2. Be able to list work environment design principles which may be used in incident and hazard control planning and practice
3. Be able to list the predominating hazards associated with objects, facilities, equipment and work practices in the work environment and list appropriate control procedures and devices to be considered for specific hazards

4. Be able to identify possible personnel resources to tap from the fields of engineering, industrial hygiene, ergonomics, public health and medicine, and others as appropriate, in devising needed work environmental adjustments
5. Exhibit persuasiveness in selling to management the need for continuing workplace (1) environmental surveillance; (2) modifications to reduce loss potential, and (3) design and implementation of a corrective measures identification and follow-up program

## **Student Learning Objectives for Course and Assessment Techniques**

Students are expected to develop competencies that enable them to:

1. Be able to select appropriate engineering approaches that are available to supplement and enhance the effectiveness of behavior-based safety
  - **Assessment:** Exams; presentation of relevant topics, emphasis on providing specific examples from commercial and government activities
2. Demonstrate competency with a few key management techniques useful in safety programs, including accident investigations, planned inspections, job safety analysis, performance criteria, job descriptions and fault tree analysis
  - **Assessment:** Exams; problems; presentation of relevant topics; volunteer oral reports on relevant media articles
3. Be able to select appropriate precautions to take in situations involving elevated work, hazards of unusual pressures, explosion hazards and electrical safety
  - **Assessment:** Exams; presentation of relevant topics; observations and photographs on field trip to factory and on team building inspection projects; team function evaluation form; oral presentation evaluation form
4. Demonstrate the ability to create a material safety data sheet, based on chemical data information
  - **Assessment:** Class exercise to fill in OSHA MSDS form
5. Use management and engineering tools to assist in decisions for using mechanical material handling devices
  - **Assessment:** Take-home problems to apply original and revised NIOSH lifting equations to specific situations
6. Determine criteria by which to implement machine guarding
  - **Assessment:** Exam
7. Exhibit proficiency in locating relevant topics, summarizing and presenting
  - **Assessment:** Submit and orally present results of surfing

8. Be able to identify the key elements of a product liability program and principal parties involved
  - o **Assessment:** Exams; development of product stewardship team project topic, with persuasive oral presentation and paper convincing authorities to approve and fund; team function evaluation form
9. Participate actively in preparing a technical team safety project, both as a formal written team report and as a technical team presentation to class, analyzing a safety scenario and developing a program, to correct the problem and prevent recurrences
  - o **Assessment:** Persuasive oral presentation and paper; team function evaluation form

## **Cheating**

**"Cheating: If you cheat** (copy someone else's answers on a test, knowingly allow someone to copy your test, use someone else's term paper, etc.), **then you can receive a failing grade in the class and could be subject to further disciplinary measures"**. (Mountie, 1998, p. 15)

**"Plagiarize ... vb.. to steal and pass off** (the ideas or words of another) **as ones own:use** (a created production) **without crediting the source ~ vi : to commit literary theft : present as new and original an idea or product derived from an existing source"**(Webster's New Collegiate Dictionary, 1979, p. 870)

In order to protect yourself from being accused of cheating you must reference (cite) any thought, idea, or fact that is not your original thinking. This means noting in the body of your paper (project report, etc.) the source of the fact or idea, and, if you are quoting a source directly, including the page number where the quote may be found. In this course we will use the Publication Manual of the American Psychological Association as a guide for citing works (APA, 1984).

To further protect yourself (and your grade), you must be sure that any work you hand in contains a substantial amount of your own thinking. It is not acceptable to paraphrase another's work (even if you refer to that work and give the author credit) and submit it as your work. Originality on your part is required to pass this course.

## **Social Justice**

West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our University

does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to further such positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in class, please advise me and make appropriate arrangements with Disability Services (293-6700).