COLLEGE OF ENGINEERING
THE UNIVERSITY OF TOLEDO

University of Toledo
Mechanical Engineering Technology
Master Syllabus

Course Title: *Engineering Safety* **Course Code & Number:** *MET 4600*

Credit Hour Total: *3*

Lecture Contact Hours: *3* **Lab Contact Hours:** *N/A*

Prerequisite(s): *none*

Text: *Occupational Safety management and Engineering, 5th Edition, Hammer, 2001*

Software: *none*

Course Description: (Approved Catalog Description)
Application of human factors and engineering practices toward accident prevention and elimination of hazards. Topics include liability, standards, OSHA, hazard control, accident investigation and safety management.

Related Program Outcomes:
Outcome a. Mastery of the knowledge and techniques of the discipline as evidenced by an understanding of the basic safety topics covered in the course.
Outcome g. An ability to communicate effectively, as evidenced by the satisfactory completion of both a written report and an oral presentation (with PowerPoint accompaniment) on a safety related topic.
Outcome i. Knowledge of professional, societal, and global issues as evidenced by the procurement and synopsis of twelve current engineering-safety-related issues as documented in newspapers, newscasts, technical and professional journals, trade magazines, etc.

Course Objectives:
Upon completion of this course, the students are expected to:

1. Gain an understanding of the effects of hazards in the workplace.
2. Have an appreciation for the history of liability and safety legislation.
3. Understand the basic concepts of Worker's Compensation.
4. Have an appreciation for the history of and the requirements of the OSHA Act.
5. Be aware of the existence of standards, codes and safety documents.

6. Understand the process of registration for professional engineers.
7. Have a basic understanding of the reasons for and the process by which an all-encompassing safety program can be instituted in the workplace.
8. Become acquainted with the various types of hazards associated with the various design processes.
9. Gain an appreciation for the methods utilized in accident investigations.
10. Be aware of the nature of work-related musculoskeletal disorders.
11. Understand the effect of heat and temperature on the human body and how to assess it.
12. Have an awareness of the nature of fire in the workplace and its suppression.
13. Have an awareness of the nature of explosion in the workplace and its prevention.
14. Understand the hazards associated with toxic materials.
15. Be aware of the effects of radiation.
16. Understand the effects of noise and vibration on the human body.

Course Outline:

- Accident losses
- Liabilities and safety legislation
- Workers' Compensation
- OSHA act and its administration
- Standard, codes and other safety documents
- Engineers and safety
- Management and its responsibilities
- Changing roles of safety personnel
- Personnel
- Promoting safe practices
- Appraising plant safety
- Hazards and their control
- Planning for emergencies
- Accident investigations
- Safety analysis
- Acceleration, falls, falling objects and other impacts
- Mechanical injuries
- Work-related musculoskeletal disorders
- Heat and temperature
- Pressure hazards
- Electrical hazards
- Fires and fire suppression

- Explosions and explosives
- Hazards of toxic materials
- Environments
- Confined-space entry
- Radiation
- Vibration and noise
- Computers and safety