

Environmental Health and Safety for Engineers – ENGR 305, Section 01 Abilene Christian University

Credit Hours: 2

Semester and Year: Spring 2015

Pre-requisites/co-requisite: ENGL 111

Class Meeting Times and Location

This class meets Tuesday and Thursdays in Bennett 119 4:30pm to 5:20 pm.

The final exam is scheduled for 4:00 to 5:45 am on Tuesday, May 5, 2015.

Required Text

The required text for this course is *Occupational Safety and Health for Technologist, Engineers, and Managers 8th Edition*, by David L. Goetsch, Prentice Hall, 2000, ISBN 9780136742432.

Catalog Description

Provides an overview of environmental health and safety history, regulations, and their application for engineering professionals. In particular this course will include OSHA regulations and permits, MSDS's, workplace hazards and engineering safeguards. (2 Hours)

Intended Audience

This is a required course for Engineering majors and intended to be completed during their Sophomore or Junior year. Non-majors interested in workplace safety and industrial hygiene may also enroll in the course.

Contact Information

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Office Hours: M (10:00 -11:00 am) T (1:30-2:30 pm) W (10:00 – 11:00 am and 1:30 – 3:30) and Friday (1:30 – 3:30 pm). Additional office hours can be arranged as needed.

TEACHING PHILOSOPHY

Engineering is a well-respected profession. The public entrusts engineers to be honest, competent, and ethical. Many codes of ethics for these fields indicate that the commitment to protecting the health, safety, and welfare of the public is of paramount importance. These values are in harmony with Christian principles and ideals. Christian engineers should be honest (Matthew 5:37), work hard to ensure competency (Colossians 3:23), and put the public's interest ahead of his or her own (Luke 6:31). In light of these principles, this course will be taught such that you will gain an appreciation for the professional nature of engineering. It will be taught so as to give you every opportunity to begin to develop

competency in these fields. This will require homework, quizzes, tests, and group discussion. The instructor especially encourages the discussion of topics that would bear on integrating faith and professional responsibilities (cheating on licensure exams, weapons design and manufacture, environmental laws and employment opportunities in developing nations, etc.)

Learning Objectives

The activities of the course support the assessment of the following ABET Outcomes:

Criterion 3

3(f) an understanding of professional and ethical responsibility

3(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

ABET Learning Objectives	Competencies	Measurement
3(f) an understanding of professional and ethical responsibility	Examine the ethical and legal responsibilities of professional engineers regarding environmental health and safety	Homework, quizzes, and exams
	Investigate applicable safety codes and regulations for permit and design requirements	Homework, quizzes, and exams
3(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	Interpret MSDS's sheets	Homework and Exam
	Analyze system, component, or process designs for compliance with applicable environmental health and safety regulations	Project (ABET Rubric) and Homework

ACADEMIC INTEGRITY POLICY

Academic integrity is defined as academic work completed as assigned for each class by the individual or group responsible for the work. Violations of academic integrity and other forms of cheating involve the intention to deceive, mislead, or misrepresent and therefore, are a form of lying. Such actions are contrary to behavioral norms that flow from the nature of God. Academic misconduct includes, but is not limited to, the following: 1) Failure to give credit to sources used in a work in an attempt to present the work as one's own, 2) Submission of papers or projects obtained from another source (e.g., research service or club paper file) as one's own, and 3) Falsifying information orally or in writing. Academic misconduct may result in, but is not limited to, a zero on the assignment and/or an F in the course. Additionally, the department chair, Dean of the College of Arts and Sciences, and the Dean of Student Life will be notified. See the full university policy, including how to appeal a decision, by following this link: <http://www.acu.edu/campusoffices/studentlife/judicialDocuments/AcademicIntegrityPolicy.pdf>.

ATTENDANCE

Attendance is expected at all class sessions. It is also expected that you arrive promptly. If you are absent or tardy it will negatively affect your homework and quiz grades.

GRADING POLICY

Homework – (10 assignments, 25 points each)

One set of homework will be assigned on Tuesday each week and will be due at the beginning of class the following Thursday. Late Homework will not be graded.

Quizzes – (10 quizzes, 10 points each)

Quizzes will be given at the beginning of class. Thus it is important that you be in class and on time to complete the quiz in the allotted time period.

Projects – (1 Project, 250 points each)

The semester project will be conducted in groups assigned by the instructor. Each group will be assigned a specific regulation and entity to review for compliance with applicable state and federal regulations and industry best management practices. The final results of the project will also include recommendations for the entity to come into compliance and best management practices for maintaining an in-compliance status.

Exams – (3 Exams, 100 points each)

Exams will consist of a combination of essay, multiple choice, vocabulary, and calculation questions. All exams will be closed book and notes.

Final Exam – (1 Exam, 100 points each)

The final exam is comprehensive and will be essay and multiple choice

Calculation of Final Course Grade-

Homework	250 points
Quizzes	100 points
Exams	300 points
Project	250 points
<u>Final Exam</u>	<u>100 points</u>
Total	1,000 points

90% and above	A
80% - 89%	B
70% - 79%	C
60% - 69%	D
59% and below	F

ADA COMPLIANCE STATEMENT

"Abilene Christian University is dedicated to removing barriers and opening access for students with disabilities in compliance with ADA and Section 504 of the Rehabilitation Act. The Alpha Scholars Program facilitates disability accommodations in cooperation with instructors. In order to receive accommodations, you must be registered with Alpha Scholars Program, and you must complete a specific request for each class in which you need accommodations. If you have a documented disability and wish to discuss academic accommodations, please call our office directly at 325-674-2667."

THE MISSION OF ACU:

To educate students for Christian service and leadership throughout the world.

THE MISSION OF THE COLLEGE OF ARTS AND SCIENCES:

To educate students for worldwide Christian service and leadership through programs of study and other learning experiences that blend a liberal arts education with professional and career education

THE MISSION OF THE ENGINEERING AND PHYSICS DEPARTMENT:

The ACU engineering program strongly supports the university's mission of educating students for Christian service and leadership throughout the world. In support of this mission, ACU engineering graduates will attain:

a deep and broad understanding of engineering principles and practices as evidenced by professional employment, continued professional development, and graduate study in engineering or other professional fields.

an extensive knowledge of the innovative design processes unique to engineering professionals as demonstrated by using critical thinking skills to contribute to the scientific and technical literature, patents and intellectual property, professional societies, and creative designs.

a thorough understanding of Christian service and leadership as shown in their commitments to professionalism, ethics, and service and leadership within the engineering profession, the church, and society.

COURSE SCHEDULE

Date	Week	Chapters	Topics and Events
1/13/2015	1		Introduction and Syllabus
1/15/2015	1	1	Accident Cost
1/20/2015	2	2	OSHA – History and Applicability
1/22/2015	2	2	OSHA – Rules and Regulations Homework 1 Due
1/27/2014	3	3	Worker's Compensation (Federal)
1/29/2014	3	3	Worker's Compensation (State) Homework 2 Due
2/3/2014	4	4	Ergonomics Hazards, Repetitive Strain Injuries
2/5/2015	4	5	Stress Hazard Homework 3 Due s
2/10/2015	5	6	Mechanical Hazards and Machine Safeguarding
2/12/2015	5		Exam I Chapters 1-5
2/17/2015	6	7	Falling Hazards and Protection Equipment
2/19/2015	6	7	Lifting Hazards and Protection Equipment Homework 5 Due
2/24/2015	7	8	Temperature and Pressure Hazards
2/26/2015	7	9	Electrical and Fire Hazards Homework 6 Due
3/3/2015	8		ADA Regulations and Guidelines
3/5/2015	8		ADA Regulations and Guidelines Homework 7 Due
3/10/2015	9		Spring Break
3/17/2015	10		EPA and OSHA Permits
3/19/2015	10		Exam 2 Chapters 6-9
3/24/2015	11	10	Toxic Substances
3/26/2015	11	10	Confined Spaces Homework 8 Due
3/31/2015	12	11, 14	Radiation Hazards
4/2/2015	12	14	Bloodborne Pathogens Homework 9 Due
4/7/2015	13	12	Noise and Vibration Hazards
4/9/2015	13	13	Automation and Technology Hazards Homework 10 Due
4/14/2015	14	15	Environmental Safety and ISO 14000
4/16/2015	14	16	Violence in the Workplace
4/21/2015	15	17, 18	Emergency Preparation and Accident Investigation
4/23/2015	15		Exam 3 Chapters 10-15
4/28/2014	16		Promoting Safety Project Due
4/30/2015	16		Final Review
5/5/2014	17		Final Exam 4-5:45 p.m.

Instructor reserves the right to modify the course schedule as necessary