
DIVISION OF ENGINEERING
CIVIL AND CONSTRUCTION ENGINEERING PROGRAM
COURSE SYLLABUS

COURSE TITLE: Environmental Engineering II **TERM:** Fall
YEAR: 2011

COURSE: CE 3703 **TIME:** MWF 10:00-10:50 am
SECTION NO.: 001 **PLACE:** J 220

INSTRUCTOR: Dr. M. A. Karim, P.E. **OFFICE LOCATION:** M 162D

OFFICE HOURS: MW 12:00-03:00 pm **OFFICE PHONE:** (678) 915-3026
Other hours by appointment **HOME PHONE:** TBD
E-MAILS: mkarim@spsu.edu
makarim@juno.com

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NUMBER OF CREDIT HOURS: 3-0-3 (Lecture-Lab-Total)

PREREQUISITS: CHEM 1211

COREQUISITS: None

COURSE DESCRIPTION: Environmental engineering issues, fundamental concepts, and applications including air pollution, solid and hazardous wastes management, waste site remediation, noise pollution, and ionizing radiation.

REQUIRED or ELECTIVE: Required

REQUIRED TEXT: **Introduction to Environmental Engineering** by Mackenzie L. Davis and David A. Cornwell, McGraw-Hill Book Company, Current Edition (Fourth Edition, 2008; ISBN: 978-0-7-242411-9).

REFERENCES:

1. John Pitchel, **Waste Management Practices, Municipal, Hazardous, and Industrial**, Taylor & Frances Group, LLC, 2005 Edition or Current Edition.
2. George Tchobanoglous, Theisen, H., and Vigil, S., **Integrated Solid Waste Management**, McGraw-Hill, New York, 1993 or Current Edition.

3. RCRA Orientation Manual, Developed by EPA Office of Solid Waste/Communications, Information, and Resources Management Division, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460. <http://www.epa.gov/osw/inforesources/pubs/orientat/>

OTHER MATERIALS: Handouts may be provided as needed. It is recommended that students take notes in a three ring binder since they may be receiving handouts throughout the semester. **SPSU email** and **BANNER** systems will be used for message and content delivery, respectively. Students should access these sites regularly.

LEARNING OUTCOMES: Upon completion of this course, the students should be able to -

- identify and discuss environmental engineering issues related to air and noise pollution, waste management, and ionizing radiation, also understand how Federal/State environmental regulations and standards are developed as well as their impact;
- recommend acceptable environmental treatment technologies for given situations pertaining to air and noise pollution, and waste management;
- solve fundamental problems and design common unit operations/processes pertaining to air pollution control and waste management; and
- obtain the necessary background for advanced courses in environmental engineering.

COURSE REQUIREMENTS:

1. **Attendance:** Students are expected to attend the class. Advance notice of an absence should be provided whenever possible. Makeup exams and acceptance of late assignments will be considered only for documented medical reasons, emergency circumstances, or other university sponsored activities.
2. **Homework:** All problem assignments must be submitted in the next class following the class in which the topic is discussed. Late homework WILL NOT be accepted. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidence must be presented in order to qualify for exceptions. All homework must be submitted on 8½"x11" white paper or on engineering design paper (preferable) with a cover page. Cover page should include student's name, course number and name, assignment number, assignment date, and due date. Show the detail work for full credit.
3. **Exams:** All exams are closed books and notes unless advised otherwise. NO make-up exams will be given. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidence must be presented in order to qualify for exceptions.
4. **Cheating:** Cheating on assignment and particularly on the examinations will not be tolerated. If you are caught cheating, you will get zero on the exam. You will be asked to move if you are caught looking at another student's work.

5. **Group/Individual Project:** No group/individual project will be assigned for this course.
6. **Term Paper/Presentation:** No term paper/presentation for this course.
7. **ADA Provisions:** "Students with disabilities, as defined by the Americans with Disabilities Act (ADA) of 1990, should contact the instructor during the first week of the semester regarding the accommodations necessary to complete the requirements of this course. The instructor will make reasonable adjustments to take into consideration the specific handicap of each student covered under the ADA."

GRADING POLICY: All exams and assignments must be completed satisfactorily in order to pass the course. The evaluation process described below is subject to change by the instructor. Changes will be announced in the class.

<u>Class Work:</u>		<u>Total Grade:</u>			
		<u>Scale, Letter Grade, and GPA</u>			
1. Mid Term 1	- 15%	90%	-	100%	A 4.0 (Excellent)
2. Mid Term 2	- 20%	80%	-	90%	B 3.0 (Good)
3. Mid Term 3	- 20%	70%	-	80%	C 2.0 (Satisfactory)
4. Final Exam	- 30%	60%	-	70%	D 1.0 (Passing)
5. Homework/Quiz	- 15%		<	60%	F 0.0 (Failure)
TOTAL		--	--		WF 0.0 (Withdrawn after deadline)

The following symbols are approved for use in the cases indicated, but will not be included in the determination of the grade point average.

"I" This symbol indicates that the student was doing satisfactory work but, for non-academic reasons beyond his control, was unable to meet the full requirements of the course. The requirements for removal of an "I" are left to the respective institutions; however, if an "I" is not satisfactorily removed after three quarters of residence, the symbol "I" will be changed to the grade "F" by the appropriate official. (See Southern Tech policy - Removal of an Incomplete "I", on page 2).

"W" This symbol indicates that a student was permitted to withdraw without penalty. Withdrawals without penalty will not be permitted after the mid-point of the total grading period (including final examinations) except in cases of hardship as determined by the appropriate official of the respective institution.

"V" This symbol indicates that a student was given permission to audit this course. Students may not transfer from audit to credit status or vice versa.

"K" This symbol indicates that a student was given credit for the course via a credit by examination program approved by the respective institution's faculty (CLEP, AP, Proficiency, etc.)

SCHEDULE: Two 75-minute classes or **3-50 minute classes** or 1-150 minutes class per week

TENTATIVE COURSE TOPIC/OUTLINE: The following course topic/outline is subject to change by the instructor. Changes will be announced in the class.

Week	Tentative Course Topic/Outline	Chapter
Week 1	Introduction and legislations/regulations related to air pollution, noise pollution, and solid and hazardous waste management	Chapter 1 + Handouts
Week 2 – 4	Air Pollution Control - definition, sources and types of air pollution, atmospheric chemistry, plume dispersion, packed tower height, adsorption, separation, and fate transport. <i>Review for Mid Term Exam 1.</i>	Chapter 7 + Handouts
Week 4	Mid Term Exam 1	---
Week 5 - 8	Solid Waste Management - definition and types of solid waste from technical and regulatory points of view, characteristics of solid waste, generation rate of solid waste in different regions and climate, process for storage, collection, treatment, final disposal of solid wastes, perspectives, waste processing, minimization, and separation in the source, recycling and reuse of waste, and environmental impacts. <i>Review for Mid Term Exam 2.</i>	Chapter 9 + Handouts
Week 8	Mid Term Exam 2	---
Week 9 – 11	Hazardous Waste Management - Definition of hazardous wastes from technical and regulatory points of view, Introduction to RCRA: waste management act and provisions/subtitles, evolution of RCRA legislation, components of RCRA, RCRA and its interrelationship to other environmental statutes; Identification of hazardous waste, hazardous waste exclusions and exemptions, types of hazardous waste: listed and characteristic hazardous wastes, mixture rule, hazardous waste recycling and universal wastes, hazardous waste generators and transporters, hazardous waste treatment, storage, and disposal facilities (TSDFs), land disposal restrictions, combustion, and permitting for TSDFs, and risk perception, assessment, and management; Waste site remediation. <i>Review for Mid Term Exam 3.</i>	Chapter 10 + Handouts
Week 11	Mid Term Exam 3	---
Week 12 - 13	Noise Pollution Control – Introduction, effects of noise on people, rating systems, community noise sources and criteria, transmission of sounds outdoors, traffic noise prediction, and noise control.	Chapter 8 + Handouts

Week	Tentative Course Topic/Outline	Chapter
Week 14 - 15	Ionizing Radiation – Fundamentals, biological effects of ionizing radiation, radiation standards, radiation exposure, radiation protection, and radioactive waste. <i>Review for Final Exam.</i>	Chapter 11 + Handouts
Week 16	Final Exam - Comprehensive	---

ABET CATEGORY: Engineering science: 70%
 Engineering design: 30%