EES 3040: Introduction to Environmental Engineering

Spring 2001 – TR 1:15 - 2:30 pm, CEB Room B136
Department of Civil and Environmental Engineering
FAMU-FSU College of Engineering
Credits: 3. Prerequisites: CHM 1045, CHM 1045L
Co-requisite lab: EES 3040L (required for Civil and Environmental Eng. majors)

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Office: CEB Room 136
Office Hours: Monday/Wednesday 2:30pm-4pm;
Tuesday/Thursday 11am-12pm; or by appointment

Required Textbook:
Supplementary material will be available in the CoE Reading Room or on the course Web page, as needed.

Course Web page:
http://campus.fsu.edu/courses/EES3040-01.sp01/
FSU students should use their ACNS garnet/mailer username and password to login.

FAMU students should use their Engineering account, with the “_eng” appended to their username. Example: if eng.fsu.edu username is jsmith, then CourseInfo username is jsmith_eng; password is the same). The first time you log onto this page, click “Enroll in This Course” so that this course will appear in your “My Blackboard” page.

Alternative Web page: http://www.eng.fsu.edu/~abchan/ees3040/ees3040.html

Course Description
A broad introduction to environmental engineering, with focus on water, air, and solid waste systems. Management of these major environmental components is examined, with considerations to health and ecological needs, social impacts, and technical limitations.

Course Objectives

1. Apply knowledge of mathematics, physics and chemistry to solve and analyze environmental engineering problems related to hydrology, groundwater, water and wastewater treatment, solid and hazardous waste management, and air pollution.
2. Describe design procedures for water/wastewater treatment and laboratory experiments to analyze water quality.

3. Describe the interdisciplinary and multidisciplinary nature of environmental engineering problems.

4. Identify, formulate and solve practical environmental engineering problems.

5. Practice effective technical communications.

6. Apply broad skills necessary to understand the impact of engineering solutions in a global and societal context, as related to environmental issues.

7. Use resources which engage the student in lifelong learning of environmental engineering issues.

8. Describe contemporary environmental engineering issues.

9. Use techniques, skills, and engineering tools, such as spreadsheets and data analysis, to solve and analyze environmental engineering problems.

Proposed Course Outline

- **Introduction** (Chapter 1): background, unit analysis, materials balance.

- **Aquatic Chemistry** (Chapter 2): stoichiometry, chemical equilibria.

- **Risk Assessment** (Chapter 4): definition of risk, measuring risk.

- **Hydrology**: (Section 5.2 and notes) fundamentals, rainfall and runoff analysis.

- **Water Pollution** (Chapter 5): oxygen demand, water quality in rivers and lakes.

- **Groundwater** (Chapter 5): groundwater hydrology, well hydraulics, contaminant transport, remediation.

- **Water Treatment** (Chapter 6): water chemistry, water treatment methods.

- **Wastewater Treatment** (Chapter 6): unit operations and processes of treatment.

- **Hazardous Waste Management** (Chapter 6): regulations, treatment.

- **Solid Waste Management** (Chapter 9): collection, landfills, waste-to-energy.

- **Air Pollution** (Chapter 7): regulations, transport models, air pollution control.

- **Global Atmosphere Change** (Chapter 8): greenhouse effect, ozone depletion
Attendance

Your attendance is expected at all classes. If you miss a class, for any reason, it is *entirely your responsibility* to find out what you missed. I suggest you borrow notes from two class members. Handouts will be available outside my office after each class. If you are absent on a date that graded work is returned, you must pick it up from me outside of class. Attendance is required for exams, group projects, and field trips.

Honor Code

The honor codes of both Florida A & M University and Florida State University are taken seriously. This course will be conducted in compliance with these honor codes. Cheating, dishonesty, and/or unethical behavior *will not* be tolerated in any component of this course. As a student and a person, you will gain the most by adhering to the honor code.

Unless stated otherwise, you may discuss homework problems with other class members. Nevertheless, you are expected to completely understand and have actively participated in the preparation of all assignments for this course. Clearly, teaching a concept to another class member is different from allowing him/her to copy your homework. If computer programs, such as spreadsheets, are used as tools to complete assignments, each student must prepare his/her own computer files and output (spreadsheets, graphs, etc.). Turning in duplicates of a single output *is not acceptable*. When completing assignments, you *may not* refer to assignments, solutions or exams from previous years. However, such material may be used when studying for exams.

Assignments must be pledged; write “I have abided by the honor code of FAMU/FSU” and sign your name. With your pledge, list the names of anyone with whom you worked.

Course Grading

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
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<tr>
<td>Term Project</td>
<td>15%</td>
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<tr>
<td>Quizzes (3)</td>
<td>9%</td>
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<tr>
<td>Exams (2)</td>
<td>26%</td>
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<td>Final Exam</td>
<td>20%</td>
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This course is not graded on a curve. Each student is compared to a standard that I set for achievement. In general, semester grades of 90-100% will receive a final grade of A, 80-89.9% B, 70-79.9% C, 60-69.9% D, and 59.9% or lower F.

Homework

Homework assignments will consist predominantly of problem sets, short papers, and library and Internet research work. There will be between 8 and 10 homework assignments. All homeworks will be weighted equally, unless stated otherwise.
All assignments should be prepared in a professional manner; they should be neat and legible. Show all your work and include the given information, assumptions, and equations used. When using computer tools (spreadsheets, etc.), be sure to state the equations used for the calculations. Box or circle your final answers, when appropriate. If your method is unclear, partial credit cannot be given.

All homework assignments must be submitted at the beginning of class on the given due date. Each student is permitted one homework extension during the semester. A late homework is due at the next class meeting. Group work may not be extended. If an assignment is due shortly before an exam and the solutions are discussed in class on the assignment due date, then this homework may not be turned in late. You will be forewarned is this occurs.

Quizzes and Exams

There will be 3 in-class quizzes, 2 in-class exams (in mid-February and late March), and one comprehensive final exam. All quizzes and exams will be closed book and closed notes; however, necessary equations will be provided. Of course, all quizzes and exams must be completed independently.

Field Trips

There will be two mandatory field trips during the semester: (1) wastewater treatment plant and (2) landfill. These fields serve to enhance the material discussed in the course. They will be scheduled during the laboratory (EES 3040L) meeting times.

Term Project

This project will consist of an in-depth evaluation of a current environmental engineering problem or case study. This will be a combination of individual and team work. The project will conclude with a team presentation of your topic to the class.