

**DEPARTMENT OF CIVIL AND CONSTRUCTION ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**COURSE SYLLABUS**

**COURSE TITLE:** Environmental Engineering II      **TERM:** Spring  
**COURSE:** CE 3703      **YEAR:** 2014  
**SECTION NO.:** 001      **TIME:** MW 12:45 – 2:00 pm  
**PLACE:** M 137

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

**OFFICE HOURS:** M W 02:00 - 05:00 pm      **OFFICE PHONE:** (678) 915-3026  
\*Other hours by appointment      **CELL PHONE:** (804) 986-3120  
**E-MAILS:** [mkarim@spsu.edu](mailto:mkarim@spsu.edu)  
[makarim@juno.com](mailto:makarim@juno.com)

**DEPARTMENTAL PHONE:** (678) 915-4220;      **MY WEBSITE:** <http://educate.spsu.edu/mkarim>

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

**PREREQUISITS:** CE 3702 (Environmental Engineering I)      **COREQUISITS:** None

**COURSE DESCRIPTION:** Introduction to environmental engineering design of unit processes and pollution abatement systems including water treatment plant design, wastewater treatment plant design, sludge management, air pollution abatement systems, and solid and hazardous waste engineering management.

**REQUIRED or ELECTIVE:** Required for CE Students.

**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. **Unit Operations and Processes in Environmental Engineering** by Tom D. Reynolds and Paul A. Richards, PWS Publishing Company, Current Edition (Second Edition, 1995, ISBN: 053494884-7).
2. **Integrated Design and Operation of Water Treatment Facilities** by Susumu Kawamura, John Wiley & Sons, Inc., Current Edition (Second Edition, 2000, ISBN: 0-471-35093-1).
3. **Water Treatment Principles and Design** by MWH, John Wiley & Sons, Inc., Current Edition (Second Edition, 2005, ISBN: 0-471-11018-3).
4. **Wastewater Engineering Treatment and Reuse** by Metcalf & Eddy, Inc., McGraw-Hill Book Company, Current Edition (Fourth Edition, 2003, ISBN-13: 978-0-07-041878-3, ISBN-10: 0-07-041878-0).

5. **Wastewater Treatment Plants Planning, Design and Operation** by Syed R. Qasim, CRC Press, Current Edition (Second Edition, 1999, ISBN: 1-56676-688-5).
6. **Waste Management Practices, Municipal, Hazardous, and Industrial** by John Pitchel, CRC, Taylor & Francis Group, LLC, Current Edition (First Edition, 2005, ISBN: 0-8493-3525-6).

**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 **GeorgiaView Desire 2 Learn (D2L)** systems will be used for messages and content delivery, respectively. Students should access these sites regularly.

**COURSE OBJECTIVES:** To introduce students to the integrated science, engineering, design and management concepts of engineered environmental systems. The course will cover the design of water and wastewater treatment units, sludge treatment units, air pollution control devices, and the design concepts of solid and hazardous waste disposal units.

**COURSE LEARNING OUTCOMES:** Upon successful completion of this course, students shall be able to:

1. Analyze and design water treatment process units.
2. Analyze and design wastewater treatment process units.
3. Analyze and design conventional and land-based sludge treatment units.
4. Analyze and design air pollution control devices.
5. Identify the design parameters for solid waste disposal units.
6. Identify the design parameters for hazardous waste disposal units.

### **COURSE REQUIREMENTS:**

1. **Attendance:** Students are expected to attend the class. Advance notice of an absence should be provided whenever possible. Makeup exams, quizzes, and acceptance of late assignments will be considered only for documented medical reasons, emergency circumstances, or other university sponsored activities. The instructor can initiate withdrawal of a student from the course or fail the student in the course if a student is absent in 3 classes without any valid reason/excuse.
2. **Homework/Project:** There will be no regular homework assigned for this course. However, occasional homework may be assigned for this course to enhance the calculation ability that can help in grade at the end of the semester. Homework/Design **project** assignments must be submitted in the next class following the class in which the topic is discussed or a different date assigned by the instructor. Late homework/project **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 projects must be submitted on 8½"x11" white paper or on engineering design paper with a cover page (preferably typed and computer printed). Cover page should include student's name, course number and name, assignment number, assignment date, and due date. Show the detail works for full credit. Graded homework/project will be returned to students; however, students need to preserve them until the grades are finalized and show them to the instructor if there are any disputes in grades.

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. Graded exams will be returned to students; however, students need to preserve them until the grades are finalized and show them to the instructor if there are any disputes in grades.
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. The instructor reserves the right to remove any student from the class if the student's behavior is of a disruptive nature or if there is an evidence of academic dishonesty.
5. **Term Paper/Presentation:** No term paper will be assigned for this course. However, group project will be assigned, as necessary, for any design works. The group design works need to be presented using PowerPoint presentations in the class for grades.
6. **Class Decorum:** No cell phone use, checking emails, eating, and/or multitasking are allowed during the class. For emergency, cell phone can be operated in vibration mode; however, students can receive an emergency call only stepping out of the class room. No feet on the table and/or on the nearby chair are allowed during the class. It is also encouraged not to bring any foods in the class.
7. **Honor Code:** SPSU has an Honor Code and a procedure for handling cases when academic misconduct is alleged. All students should be aware of them. Information about the Honor Code and the misconduct procedure may be found at <http://www.spsu.edu/honorcode/>.
8. **Grade Dispute/Appeal:** Final grade dispute/appeal must be submitted within a week of the final exam. The procedure has been outlined in the SPSU website that can be accessed via the link at [http://www.spsu.edu/business/faq\\_suggestions/gafaq.htm](http://www.spsu.edu/business/faq_suggestions/gafaq.htm).
9. **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, with the help of SPSU, will make reasonable adjustments to take into consideration the specific handicap of each student covered under the ADA." The students can also contact SPSU ADA coordinator at 678-915-7244 for additional help."
10. **Communications, Grading, and Response Timeframe:** The best way to communicate with me is by SPSU email or D2L email, then by telephone. Grading of homeworks/ assignments may take up to a week. I will try to respond to any comments/questions within 24 hours. However, I may not be available during the weekend.
11. **Contacts to get Help:**
  - For D2L Technical Support, go to <http://spsu.edu/d2l>
  - For Wimba Technical Support, go to <http://www.wimba.com/services/support/>
  - SPSU Help Desk Phone Number: (678) 915-HELP(4357).

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

<u>Class Work:</u>		<u>Total Grade:</u>			
1. Design Project	- 40%	<b>Scale, Letter Grade, and GPA</b>			
2. Project Presentation	- 10%	90% - 100%	A	4.0 (Excellent)	
3. Midterm 1	- 15%	80% - 90%	B	3.0 (Good)	
4. Midterm 2	- 15%	70% - 80%	C	2.0 (Satisfactory)	
5. Final Exam	- 20%	60% - 70%	D	1.0 (Passing)	
		< 60%	F	0.0 (Failure)	
		--	WF	0.0 (Withdrawn after deadline)	
<b>TOTAL - 100%</b>					

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 LECTURE TOPIC/OUTLINE:** The following lecture topics/outlines are subject to change by the instructor. The changes will be announced in the class.

Class/Week	Tentative Lecture Topic/Outline	Chapter
Week 1 – 4	<b>Water Treatment</b> – Flocculant (Type II) sedimentation, design considerations for water treatment plants, and design of water treatment process units (Project 1).	Chapter 4 + Handouts
Week 4	<b>Midterm 1 Exam</b>	---
Week 5 – 7	<b>Wastewater Treatment</b> – design of unit processes for primary, secondary, and tertiary/advanced treatment of wastewater (Project 2).	Chapter 6 + Handouts

<b>Class/Week</b>	<b>Tentative Lecture Topic/Outline</b>	<b>Chapter</b>
<b>Week 8</b>	<b>Sludge Management</b> – design of units for sludge treatment, dewatering, and disposal.	Chapter 6 + Handouts
<b>Week 9</b>	<b>Spring Break (Mach 3 - 7, 2014) – No Class</b>	
<b>Week 10</b>	<b>Sludge Management</b> – design of units for sludge treatment, dewatering, and disposal.	Chapter 6 + Handouts
<b>Week 10</b>	<b>Midterm 2 Exam</b>	---
<b>Week 11 - 12</b>	<b>Air Pollution</b> – design of air pollution control devices.	Chapter 7 + Handouts
<b>Week 13 - 14</b>	<b>Solid Waste Management</b> - design concepts of municipal solid waste (MSW – Subtitle D) landfill.	Chapter 9 + Handouts
<b>Week 15 - 16</b>	<b>Hazardous Waste Management</b> - design concepts of hazardous waste (Subtitle C) landfill.	Chapter 10 + Handouts
<b>Week 17</b>	<b>Final Exam</b>	---

**ABET CATEGORY:**    Engineering science: 0.5 credit hour (17%)  
   Engineering design: 2.5 credit hours (83%)