



DEPARTMENT OF CIVIL AND CONSTRUCTION ENGINEERING
SOUTHERN POLYTECHNIC COLLEGE OF ENGINEERING AND ENGINEERING TECHNOLOGY
COURSE SYLLABUS

COURSE NUMBER AND TITLE: CE 4363 Environmental Engineering Chemistry

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

PREREQUISITS: CE 3702 (Environmental Engineering I) or Instructor's Permission

COREQUISITS: None

<u>Instructor Details</u>		<u>Course Details</u>	
Instructor:	Roneisha W. Worthy, Ph.D	Term:	Spring 2017
My Office:	L-159	Time:	MW 11:00 – 11:50 AM
Email address:	rworthy@kennesaw.edu		
Office Phone:	(678)915-3076		

COURSE DESCRIPTION: This course provides a review of general chemistry topics that are relevant to environmental engineering. These topics include physical chemistry, organic chemistry, analytic chemistry (including instrumental methods), and colloid and surface chemistry. In addition, the course deals with natural or global cycles and their interactions, and the life cycle, or biosphere, which involves human activity and its detrimental effects on the environment. Basic atmospheric chemistry and upper atmosphere chemistry is presented and chemical toxicology and noise pollution is addressed.

REQUIRED TEXT: **Chemistry for Environmental Engineering and Science** by Clair Sawyer and Perry McCarty and Gene Parkin, 5th Edition.

LEAD FACULTY: **Dr. Roneisha Worthy**

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

1. Describe important chemical reactions in the atmosphere, including important chemical reactions in connection with smog formation, ozone chemistry and acid rain chemistry.
2. Outline the molecular basis for the greenhouse effect.
3. Have knowledge of water chemistry and water pollution.
4. Have knowledge of the problems in connection with the use of fossil fuels.
5. Be familiar with alternative energy sources.
6. Know the major pesticides.
7. Identify toxic pollutant such as PCBs, PAHs, CFCs, PCDDs and PCDFs.

COURSE REQUIREMENTS:

1. **Attendance:** Research has proven that there is a correlation between attendance and both student retention and achievement. Any class session or activity missed, regardless of cause, reduces the opportunity for learning and may adversely affect a student's achievement in the course. Class attendance is required beginning with the first class meeting, and students are expected to attend all class sessions for which they are registered. 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.
2. **Homework:** All assignments must be submitted on the due date outlined on the D2L Calendar. 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). Homework should be submitted through Dropbox by scanning OR photographing each page. A detailed format that all homework should follow is included on D2L. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED. Any homework assignment that is not submitted in this format WILL NOT BE ACCEPTED.
3. **Exams/Quizzes:** All exams/Quizzes 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 leave 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:** See D2L for presentation/term paper details.
6. **Class Decorum:** No cell phone use, 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.
7. **Honor Code:** KSU 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 <https://web.kennesaw.edu/scai/content/ksu-student-code-conduct>

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 KSU website.

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 KSU, will make reasonable adjustments to take into consideration the specific handicap of each student covered under the ADA. The students can also contact KSU ADA coordinator at 678-915-7244 for additional help."

10. **Library Assistance:** "The KSU Library System assists all students, faculty and staff with their research, including using library databases to find articles, accessing books and other materials in our catalog, and for specialized research needs. Librarians are available for in-person walk-up assistance at library help desks, one-on-one research appointments, and 24x7 via library chat. For more information on library locations, hours, and how to access our services please visit <http://library.kennesaw.edu/>."

GRADING POLICY:

<u>Class Work:</u>		<u>Total Grade:</u>			
1. Homework	- 20%	Scale, Letter Grade, and GPA			
2. Quiz	- 20%	90%	-	100%	A 4.0 (Excellent)
3. Discussions	- 15%	80%	-	89.4%	B 3.0 (Good)
4. Midterm Exam	- 20%	70%	-	79.4%	C 2.0 (Satisfactory)
6. Final Exam	- 25%	60%	-	69.4%	D 1.0 (Passing)
			<	60%	F 0.0 (Failure)
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TOTAL - 100%					

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

TENTATIVE LECTURE TOPIC/OUTLINE: The following lecture topic will be covered in the course.

Topic 1: Physical Chemistry
 Topic 2: Organic Chemistry
 Topic 3: Analytical Chemistry
 Topic 4: Colloid and Surface Chemistry
 Topic 5: Lithosphere – Fossil Fuels
 Topic 6: Lithosphere – Alternative Energy Sources
 Topic 7: Lithosphere – Nuclear Power
 Topic 8: Atmosphere – Structure and Properties
 Topic 9: Atmosphere – Air Pollution

Topic 10: Hydrosphere – Water Properties and Groundwater
 Topic 11: Hydrosphere – Natural Water and Pollution
 Topic 12: Hydrosphere – Water Treatment
 Topic 13: Pedosphere – Soil Chemistry
 Topic 14: Pedosphere – Hazardous Waste and Remediation
 Topic 15: Biosphere – Geochemical Aspects
 Topic 16: Biosphere – Toxicology and Risks