# South Carolina State University

**Environmental Sciences Field Station at Savannah River**
**COURSE SYLLABUS**
**Summer Session I**

**Instructor's Name:** Dr. Joniqua Howard
**College:** Science, Mathematics and Engineering Technology
**Department:** Biological & Physical Sciences
**Course Title & Number:** ENV 420: Environmental Chemistry
**Office Hours:** after each class
**Email Address:** joniquahoward@gmail.com
**Classroom: SRESFS**
**Required Texts:** Stanley E. Manahan, "Environmental Chemistry, 8th edition", Lewis Publishers, CRC Press, Boca Raton, FL, 2004. Online Verision: http://www.chemistry.uoc.gr/courses/xhm405/01%20Environmental%20Chemistry%20Manahan.pdf

## I. COURSE DESCRIPTION

This course is designed to develop a working level knowledge of: (1) systems thinking (2) fundamental chemistry; and (3) the basic principles and concepts of environmental chemistry. The participant will also acquire a familiarity level knowledge of: (1) field sample collections, (2) sample preparations, (3) analytical field analysis and, (4) water treatment.

**Prerequisites:**

1. All students are required to pass a General Employee Training (GET) multiple-choice exam as a condition of retaining your internship. A 3-4 hour training course will precede the exam. Passing the exam is not difficult and only requires your attention during the training course.

## II. COURSE OBJECTIVES

ENV 420 will cover chapters 1-3, 5-9, 13-14, 16- 17, and 19 of the text (and are subject to change at the instructors discretion). At the end of the course students will be expected to achieve the following objectives:

1. Ensure that students understand basic and advanced principles of chemistry as it relates to atmospheric, marine and freshwater, and terrestrial systems,
2. Survey environmental law (historical and updated laws), specifically relating to regulations that affect current industrial practices and the chemical basis for their promulgation,
3. Survey current remediation technologies for contaminated sites, propose a remediation scheme for a given site and defend it.
4. Survey industrial designs that could prevent or limit the production of hazardous waste by industry.

## III. COURSE COMPETENCIES

Students will successfully complete course objectives.

## IV. EXPECTED MEASURABLE OUTCOMES

Students will have a general understanding of both basic and advance principles of chemistry as it relates to atmospheric, marine and freshwater, and terrestrial systems. Students will also gain general knowledge of environmental law, remediation technologies, and industrial design as well as the history of SRS.

## V. TENTATIVE OUTLINE OF COURSE CONTENT (Chapter order is subject to change)

***Please Meet in the Lobby at 0845 AM, dressed in Field attire with Packed lunch and SRS Badge unless otherwise directed by the instructor. ***

| Date | Topic | Review Questions/ Assignments |
|---|---|---|
| Week 1 | Chapter 1 (Principles of Env Chem) | Presentation 1: Bio Sketch & About Me |
| | Chapters 1 and 2 | Questions:<br>Chpt 1: 8, 9, 10<br>Chpt 2: 20 |
| | Chapter 7 | Chpt 7: |
| Week 2 | Chpt 3,<br>Chpt 5<br>Chpt 6 | Presentation 2<br>Chpt 3: 3, 16, 18<br>Chpt 5: 11, 14, 23<br>Chpt 6: 1, 2, 10 |
| | Exam 1<br>Chapter 16 | Exam: Chpts 1, 2, 3, 5-7 |
| | Chapter 17 | 6, 9,19 |
| Week 3 | Chapters 9, 13 and 14 | Presentation 3<br>Chpt 9 - 10,14<br>Chpt 13 – 2, 14, 17<br>Chpt 14 – 1, 3 |
| | Chapter 19 | 3, 4, 31 |
| | Chapter 8 | 1, 4, 9 |
| Week 4 | Exam 2 | Presentation 4 |

**REVIEW QUESTIONS ARE DUE MONDAY BY 11:59PM, PLEASE SUBMIT VIA EMAIL UNLESS OTHERWISE DIRECTED.**

Please name your files using the following naming structure. This makes file management easier.

**YYYY.MM.DD-TitleofAssignment_LastName**

The date should **correspond to the date** in which the assignment is **due**.

**Title of assignments:**
Review Questions: RQ1, RQ2, ...
Presentations: Presentation1…
Field Excursion/Reports: FER1, FER2…

**Ex: 20170527-Presentation1_Howard**

**VI. FIELD EXCURSIONS/LAB ACTIVITY (20 pts)**
*Name file: YYYYMMDD-FER1, FER2…_LastName*

After each field experience, students will be required to submit a 1-2 page single-spaced written report. Reports are due by the next class meeting. Reports should highlight what student has learned, the pros, cons, and rooms for improvement.

**PLEASE SUBMIT ALL ASSIGNMENTS VIA EMAIL. NO PAPER UNLESS IT IS REQUESTED.**

**VII. CLASS PRESENTATION (30 pts)**
*Name file: YYYYMMDD-Presentation1…_LastName; Due the day before the presentation by 11:59pm unless otherwise directed*

**There will be three (3) to four (4) classroom presentations required.**

**Presentation 1: About Me**
**Due 27 MAY 2017 (Week 1)**
Students will be required to present a five (5) minute presentation and provide a paragraph bio sketch to be read aloud. The biosketch will be used to introduce the student to the class. The presentation should highlight and showcase the student's personality as he/she describes their life goals, expectations for the course, academic classification, anticipated date of graduation, major, and at least two (2) interesting facts.

**Presentation 2: SRS Environmental Contamination History**
**Due: _03 JUNE 2017_ (Week 2)**
Student teams designated by the instructor will discuss the environmental history of an assigned area within SRS/or surrounding community. Data results from conducting a literature review or research on the chemistry of the area should be included. This will be helpful later on for your program presentations! Presentations should be 10-15 minutes per group. Presentation attire is required.

**Presentation 3: SRS and Our Data – What does it mean?**

**Due: 10 JUNE 2017 (Week 3)**
Students will take what they have learned about the area and compare/contrast it to the data collected in the field. Student teams are required to prepare a presentation that discusses the similarities, differences and possible reasons that may contribute to analytical findings. Presentations should be 15-20 min per group. Presentation attire is required.

**Presentation 4: My Summer Experience**
**Due: 17 JUNE 2017 (Week 4)**
Students are required to select one field trip and present a 10 minute PowerPoint presentation on the final day of class.

## VIII. SPECIAL COURSE REQUIREMENTS

Students may vary in their competency levels on required abilities. You can expect to acquire these abilities only if you honor all course policies, attend classes regularly, complete all assigned work in good faith and on time, and meet all other course expectations of you as a student or team member in this course.

A. Attendance: You are expected to do all of the assigned readings and attend all class sessions. Excused absences will be permitted. For an absence to be excused, it must be brought to my attention and discussed/approved by me prior to the day in which you are to miss class, with the exception of emergencies.
ake-up Exams: Arrangements to take a make-up exam must be made prior to the scheduled examination date. Only medical, death-related, or other serious circumstances suffice as reasons to reschedule an exam. No credit is received for missed exams. Make-up exams for individuals without an excused absence may be given during the class's final examination period at the end of the semester. Several exams on one day do not constitute an excused absence. There will be no make up for pop quizzes.

B. Office hours: Immediately following class or by appointment.

C. Academic integrity: All students shall refer to the most current South Carolina State University Handbook for instructions on Academic Integrity. Cheating includes plagiarism, which refers to *using the work, ideas, or knowledge of other people as your own*. With the rise of the Internet there have been a growing number of plagiarism cases. For questions on how to avoid plagiarism, go to http://www.lib.clemson.edu/Plagiarism/index.htm. If you have any questions about what constitutes cheating or plagiarism please do not hesitate to ask.

## IX. METHOD OF EVALUATION

Review Questions 30 pts
Field Excursions 20 pts
Written reports/Presentations 100 pts
Exam #1 100 pts
Exam #2 100 pts

Total Points = 350 pts

## X. Grading Scale

All grading will be done on an A through F scale, and will be converted to a numerical scale for averaging

| | | | |
|---|---|---|---|
| A+ = 100 – 96 | A = 95 – 92 | B+ = 91 – 85 | B = 84 – 82 |
| C+ = 81 – 75 | C = 74 – 62 | D = 61 – 55 | F = 54 – 0 |