

SYLLABUS

Instructors:

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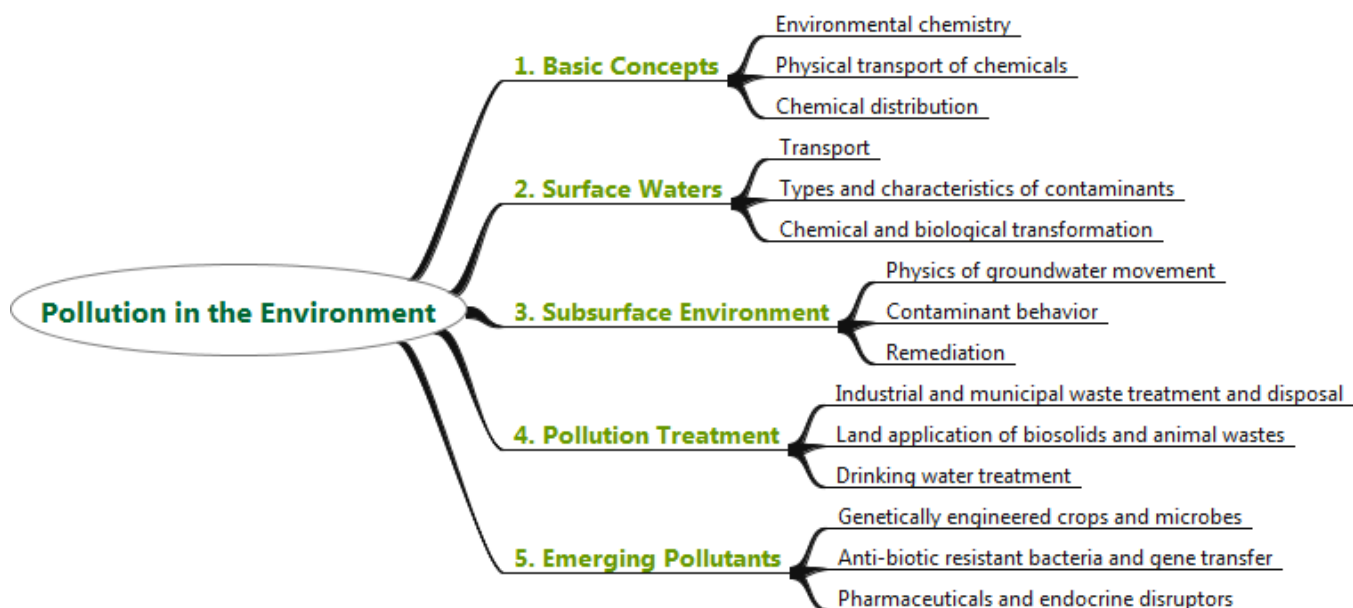
Office: RHSC 337

Office hours: 10-11 h TR/by appointment

Lecture Times and Location: Monday 14-17 h, RHSC 112

Course Goals and Structure:

The main goal of this course is to help understand fundamental physical, chemical, and biological processes that affect transport and fate of both human-induced and natural pollutants in the environment. This course is designed for students that have strong interests in environmental sciences and have had basic preparation in sciences such as chemistry, geology, and/or biology. This course will provide the scientific basis that will allow making prudent decisions in managing and mitigating pollution of the natural world. In general, pollution is defined as excessive accumulation or release of various physical, chemical, and biological substances within or into the environment with, sometimes, catastrophic consequences. Pollution is ubiquitous and can occur on or within land, oceans, and in the atmosphere. Given its complex nature, this course will take a multidisciplinary approach to address environmental pollution issues. Also, for the same reason, this will serve as a broad survey and will mostly focus on the geological environment. You will, however, have the opportunity to pursue any of the topics from this course in detail on your own as a research project. Below is a “mind map” of the course structure:



While we will strive to cover most of these topics, the structure will be fluid and will change based on your interests and needs. Much of the class time during lectures will be devoted to introduction of the concepts and to discussions and analyses of assigned readings from either the textbook or from research papers. You will solve several critical-thinking exercises to better understand fundamental environmental concepts. Consequently, **you must come to class prepared** by reading the appropriate book chapters and attempting to work the assigned exercises. This way, you will be a full partner in the learning enterprise.

Even though there is no laboratory associated with this class, we will organize 2-3 field trips outside of scheduled class time to visit various sites in the Charleston area (water treatment plant, groundwater treatment site, etc.). On these trips you will have hands-on opportunities to learn about techniques that are used to assess basic pollution parameters.

Textbook:

Hemond, H.F. and Fechner-Levy, E.J. (2000), *Chemical Fate and Transport in the Environment*, 2nd Ed., 433 pp., Academic Press – Elsevier.

Prerequisites:

CHEM 101 & 102 (or equivalent) or BIOL 101 & 102 (or equivalent) or GEOL 101 & 105 (or equivalent).

Course Schedule for Spring 2010:

Date	Topics Covered		Other Comments
1/11	Introduction	Chap. 1	Lab and class demonstrations
1/18	No Class: MLK Day		
1/25	In-class Field Trip – Filbin Creek, North Charleston		
2/01	Surface Waters: Introduction	2	Demo of critical review, readings assigned
2/08	Types of contaminants	2	Student paper review
2/15	Transformation and degradation	2	Research Paper outline due
2/22	Mid-Term Exam		
3/01	Subsurface Environments: Introduction	3	Readings assigned
3/08	Spring Break		
3/15	No class: GSA Conference in Baltimore		
3/29	Soil and groundwater pollution & remediation	3	Student paper review; readings assigned
4/05	Monitoring, toxicology, & risk assessment		Research Paper due ; readings assigned
4/12	Municipal Water and Wastewater Treatment	provided	Student paper review
4/19	In-class Field Trip		
4/26	Emerging Contaminants	provided	Student Presentations, <i>Revised Paper due</i>
5/01	Final Exam	SATURDAY, MAY 1, 2010	4-7 PM

Assessment:

Your performance in this course will be assessed based on your understanding of pollution-related concepts and applications. This will involve a combination of (i) solving critical-thinking exercises, (ii)

exams, (iii) research paper and presentation associated with your research projects, and (iv) class participation.

- Critical-thinking exercises will include solving problems and synthesis and interpretation of published data – there will be one every week (except during exams) for 15% of total grade
- One mid-term exam worth 25% of total grade
- Final exam worth 30% of total grade
- A 6000-word research paper that us an original synthesis of an idea, an extensive research paper related to a pollution related case-study, or an idea for your own pollution-themed thesis work – 25% of total grade
- Presentation of your research towards end of the term – 5% of total grade

The grade you earn at the end of the semester will be based on this scale.

A 92-100	B+ 91-88	C+ 80-76	F < 70
	B 87-82	C 75-70	

Expected Outcomes (or What you will get from this course):

On successful completion of this course, you will be able to

- Critically understand processes related to environmental pollution
- Interpret the behavior of naturally complex environmental systems
- Critically analyze environmental data and explain your findings and conclusions to your peers
- Collaboratively develop research projects
- Develop other ancillary skills:
 - Become familiar with journals and technical sources in subject
 - Become proficient in conducting literature reviews
 - Improve your presentation and science writing skills

CofC's Honor Code and Academic Integrity:

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student's actions are clearly related more to a misunderstanding will handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed by both the instructor and the student will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the student may petition for the X to be expunged. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment and/or test, no collaboration is permitted. Other forms of cheating include possessing or using an unauthorized study aid (such as a PDA), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the *Student Handbook* at http://www.cofc.edu/studentaffairs/general_info/studenthandbook.html.