**Spring 2013**

**SWS 4550/5551**

**Soils, Water, and Public Health**

**Course Syllabus**

**Instructor Contributors**

**Dr. G.A. O’Connor** **Dr. Elizabeth Snyder** **Dr. Max Teplitski**

3169 McCarty A Dept. Health Sciences 304 Genetics Inst.

Soil & Water Sci. Univ. Alaska Anchorage Soil & Water Sci.

PO Box 10290 Ankorage, AK PO Box 10290

294-3167 907-786-6541 273-8189

[GAO@ufl.edu](mailto:GAO@ufl.edu) afeh1@uaa.alaska.edu [maxtep@ufl.edu](mailto:maxtep@ufl.edu)

Office hours by appt.

**Teaching Assistant: Ky Gress** 2176 McCarty A

Office hours Wednesday 9:30-11 am, or by appt. [kygress@ufl.edu](mailto:kygress@ufl.edu)

**Meeting Times Meeting Room Course Website**

M/W/F 2nd period 3194 McCarty Hall A **http://swsde.ifas.ufl.edu**

**Course Description**

We highlight important instances where soil and water science and public health considerations overlap, including how humans are exposed to environmental contaminants and how environmental health threats are addressed. Prerequisites: CHEM 2045 & 2046 and BSC 2010 for SWS 4550 enrollees, and graduate status (or consent of instructor) for SWS 5551 enrollees.

**Course Objectives**

* Describe chemical, physical and microbiological characteristics of soil and water systems
* Describe how the characteristics impact contaminant behavior in the environment and affect public health
* Consider how people think about and make decisions to reduce health risks from soil and water pollution
* Provide case studies of risk assessment, management and mitigation

**References** (Additional, suggested readings will be provided on-line at course website.)

**Pepper, Gerba, and Brusseau. 2006. Environmental and Pollution Science 2nd Ed. Academic Press. [e-book, on reserve] – highly recommended**

Plant, Voulvoulis, and Ragnarsdottir (Eds). 2012. Pollutants, Human Health and the Environment. Wiley-Blackwell Publishers. [On reserve]

**National Research Council, Committee on Research Priorities for Earth Science and Public Health. “Earth Materials and Health.” 2007. National Academy Press, Washington, DC.**

**Course Format and Credit**

Classes consist of three 50-minute lectures each week. 3 credits

**Class Structure**

The course is arranged into four units:

In Unit 1, we provide an overview of the many ways soil and water uses relate to public health issues. Once the connections are made, we address basic soil and water properties (physical, chemical, and biological) and processes pertinent to public health issues

In Unit 2, we identify contaminant types, sources, and effects on human and environmental health and how various contaminants behave in the environment.

Unit 3 focuses on assessing the risks posed by contaminants and how the assessments are quantified and influenced by political/value judgments.

Unit 4 focuses on protecting environmental and human health and specific examples of hazard mitigation, including rule development.

Throughout the course, guest speakers and web-based materials will supplement formal live and videoed lectures. Periodic homework assignments are designed to help you make connections between the material and real-life applications. Informal class sessions will provide opportunities for discussions of current events and student-centric topics. Lectures, readings and class activities will inform a semester-long case study of waste and waste constituent fate, transport, and impacts on/risks to public health and their mitigation.

**Student Responsibilities**

* *Attendance and reading:* We expect students to attend class and come prepared to discuss the readings.
* *Handing in assignments:* Unless otherwise stated, all assignments are due at the beginning of class on the due date.
* *Late or make-up assignments:* Assignments will be marked down 20% for each day late, unless prior arrangements have been made.
* *Common courtesy:* Cell phones and other electronic devices must be turned off during class.

**Student Evaluation**

* Three 1-hour exams, each worth 100 points (undergraduates), or 125 points (graduates). Make up exams are rarely authorized must be medically justified and authenticated.
* Periodic homework assignments (100 points total).
* In-class quizlets (10% of course grade)
* Reusable Learning Objects (RLOs, see <http://ecolearnit.ifas.ufl.edu>) or a 7-10 page term paper, optional for undergraduates, are required for graduate students (100 points). Students develop packaged information or write a paper on a topic relevant to the course material. RLO or term paper subject matter will be selected by the student in consultation with the instructor.
* Course grades are determined by summing all scores, dividing by the maximum score possible and multiplying by 100: 100-92% = A, 91-90% = A-, 89-87% = B+, 86-82% = B, 81-79% = B-, 78-75% = C+, 74-70% = C, 69-65% = D+, 64-60% = D, <59% = E.

**Academic Honesty**

In 1995 the UF student body enacted a new honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standards drafted and enacted by students. In adopting this honor code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the university community.

Students who enroll at the university commit to holding themselves and their peers to the high standard of honor required by the honor code. Any individual who becomes aware of a violation of the honor code is bound by honor to take corrective action. The quality of a University of Florida education depends on community acceptance and enforcement of the honor code. **The Honor Code: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.** On all work submitted for credit by students at the university, the following pledge is either required or implied: “**On my honor, I have neither given nor received unauthorized aid in doing this assignment.”** The university requires all members of its community to be honest in all endeavors. A fundamental principle is that the whole process of learning and pursuit of knowledge is diminished by cheating, plagiarism and other acts of academic dishonesty. In addition, every dishonest act in the academic environment affects other students adversely, from the skewing of the grading curve to giving unfair advantage for honors or for professional or graduate school admission. Therefore, the university will take severe action against dishonest students. Similarly, measures will be taken against faculty, staff and administrators who practice dishonest or demeaning behavior. Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean or Student Honor Court. *(Source: 2012-13 Undergraduate Catalog)* It is assumed all work will be completed **independently** unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

**Software Use**

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**Campus Helping Resources**

Students experiencing crises or personal problems that interfere with their general wellbeing are encouraged to utilize the university’s counseling resources. The Counseling and Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

* *University Counseling and Wellness Center*, 3190 Radio Road, 392-1575, [**www.counseling.ufl.edu**](http://www.counseling.ufl.edu)
  + *Counseling Services*
  + *Groups and Workshops*
  + *Outreach and Consultation*
  + *Self-Help Library*
  + *Training Programs*
  + *Community provider database*
* *Career Resource Center,* CR-100 JWRU, 392-1601, **www.crc.ufl.edu/**

**Students with Disabilities** (0001 Reid Hall, 392-8565, **www.dso.ufl.edu/drc/)**

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

**TOPIC OUTLINE**

**SWS 4550/5551 Sp’2013**

**SOILS, WATER AND PUBLIC HEALTH**

**Topic Approximate # Periods**

**I. Course introduction 1**

**---------------------------------------UNIT 1-----------------------------------------------**

**II. Overview: Soils, Water and Public Health Interactions 5**

**Martin Luther King Day (Jan 21) – No class**

**III. Fundamentals 8**

1. **Soils**
2. **Water**
3. **Biological**
4. **Public/Environmental Health**

**Test # 1 (Feb 11) 1**

**--------------------------------------UNIT 2------------------------------------------------**

**IV. Contaminant Types, Sources, and Effects 6**

1. **Physical**
2. **Chemical**
   1. **Inorganic**
   2. **Organic**
3. **Biological**

**V. Contaminant Fate and Transport 5**

**A. Physical Influences**

**B. Chemical Influences**

**C. Biological Influences**

**Spring Break (Mar 4-8) - No class**

**Test # 2 (Mar 18) 1**

**---------------------------------------UNIT 3-----------------------------------------------**

**VI. Assessing Human and Environmental Risk 6**

1. **Risk Assessment**
2. **Risk Management**
3. **Risk Communication**

**---------------------------------------UNIT 4------------------------------------------------**

**VII. Protecting Environmental and Human Health 9**

1. **Rule Development**
2. **Hazard Mitigation**
3. **Case Studies**
4. **Student/Guest Presentations**

**RLO/Term Papers due April 19**

**Last Day of Classes April 24**

**Test # 3 (April 24 or May 1)**

**Check the course website regularly for schedule updates, reading assignments, and deadlines.**