

UNIVERSITY OF TEXAS AT ARLINGTON
GEOL 4189/4289 & BIOL 4289/4389
Research Topics: Environmental Forensics
(3 Credits)
SPRING 2015

<u>Earth & Environmental Science</u>	<u>Biology</u>
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SECTION INFORMATION: GEOL 4189/4289, BIOL 4189/4289

TIME AND PLACE OF CLASS MEETINGS: Thursdays at 1:00pm – 3:00pm

MEETING LOCATION: 200 Life Science Building

OFFICE HOURS: Available by email. Questions and concerns will be answered within 24 hours of receipt. Appointments with Dr. Johnson may be scheduled at least two days ahead.

DESCRIPTION OF COURSE CONTENT

This is an experimental course to assist in the development of inquiry based environmental science teaching modules. Products from this course may be utilized to teach first year students introductory chemistry and biology concepts. Modules in this course will focus on various hazardous substances, their effects on humans, their movement in the environment as well as the pertinent laws governing it. Emphasis will be placed on substances of current concern. This course will also provide a general introduction to conducting relevant research with a focus on major environmental issues.

The activities in this course will involve the application of principles from chemistry, biology, earth sciences, engineering, public health as well as policy to public health and legal problems as related to environmental forensics. Covered topics in this course will include:

- Formulating a research project
- Performing a literature review
- Application of chemical and analytical methods in identifying chemical contaminants, distribution and sources.
- Evaluation of data

- A thorough and developed foundation of Good Laboratory Practice Standards
- Overview of compliance laws and regulations.

In addition, students will acquire an understanding of the methodology, utility and limitations of various chemical analytical methods as applied to environmental investigations.

Students will examine case studies to better illustrate environmental forensic chemistry topics. Case studies may include such topics as: adulteration of processed foods, source identification of environmental pollutants, misrepresentation of geographic origin of foods, drugs of abuse and petroleum oil spills source identification, and identification of natural or anthropogenic sources of chemical pollutants.

STUDENT LEARNING OUTCOMES

After completing this course students will be able to:

- critically evaluate information related to environmental issues/concerns;
- develop a concrete framework for understanding and applying the scientific process to environmental concerns; and
- demonstrate an understanding of physical, chemical and biological systems of terrestrial and aquatic environments, their complex connections and patterns, and human interactions.
- Professional development and presentation skills
- Development of teaching modules

Students who successfully complete the course will also be familiar with key terminology pertaining to environmental studies and possess knowledge related to issues, causes, and possible solutions to local, regional and global environmental challenges faced in today's world.

FIELD & LAB SAFETY GUIDELINES: IMPORTANT!

This course may require the use and handling of hazardous chemicals. Therefore, personal protective equipment (PPE) is necessary to protect your body. You will not be admitted into the lab or field if any of the following guidelines are not met. If you violate any of the following guidelines, you may be asked to leave the lab. All missed work will receive zero credit.

1. Goggles, gloves and aprons are provided and are required at all times.
2. Shoes that cover the entire foot are required at all times. Absolutely no exceptions will be made to this guideline. Warnings will not be issued.
3. Long pants and sleeves are highly recommended.
4. No musical or other entertainment devices may be used in chemistry lab at any time.

5. Cell phones are not permitted in lab and must be silenced and placed in your bag while conducting any experimental work.

FIELD TRAVEL

University vehicles and personal vehicles may be used for field travel. All students will be required to complete and turn in a release of liability form prior to travel for each field trip. If the form is not completed prior to the travel event then the student will not be able to participate in the activity. The instructor will provide the Release of Liability Forms will be provided by at least 3 days prior to each field trip.

REQUIRED TEXTBOOKS AND OTHER COURSE MATERIALS

Reading materials will be provided as needed by the instructor.

MANDATORY ONLINE SAFETY TRAINING

Students registered for this course must complete the University's required "Hazard Communication and Waste Management" course prior to entering the lab and undertaking any activities. Students should complete the required module as soon as possible, but no later than the first lab meeting. **Until all required Lab Safety Training is completed, a student will not be given access to lab facilities, will not be able to participate in any lab activities, and will earn a grade of zero for any uncompleted work.**

1. Visit <https://training.uta.edu> and Log on using your network log-on ID and password (what you use to access email). If you do not know your NetID or need to reset your password, visit <http://oit.uta.edu/cs/accounts/student/netid/netid.html>.
2. The available courses for completion will be listed. Select the course entitled "Hazard Communication and Waste Management"
3. Complete the course and email to the instructor(s) your certification number. If you have any issues with the online training you will need to contact the training helpline (817-272-5100) or email compliance@uta.edu.

Lab Safety Training is valid for each academic year for all courses that include a lab. If a student enrolls in a lab course in a subsequent academic year, he/she must complete the required training again.

All questions/problems with online training should be directed to the University Compliance Services Training Helpline at 817-272-5100 or by emailing compliance@uta.edu.

OTHER REQUIREMENTS

Instructor approval is required for this course.

ATTENDANCE

At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. I will take attendance but it does not reflect on your grade.

GRADING

- Homework Assignments: (8) 8% of course (1% each)
- Presentations: (4) 20% of course (10% each)
- Introductory Assignment: 2% of course
- Signature Assignment: 10% of course

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels. ***All homework assignments, quizzes and exams are due by 11:59pm on the dates specified. Late submission is penalized at a rate of 10% credit per day. This will be enforced.***

GRADE GRIEVANCES

Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current undergraduate catalog.

COURSE SCHEDULE OUTLINE AND READING ASSIGNMENTS

Assignments will be for this course are posted on Blackboard.

Introductory Environmental Forensics Assignment

Utilize <http://www.onlinenewspapers.com/> to identify two (2) articles per subject. Each article should relate to the following topics within a local, regional, or global context:

- (1, 4) environmental contamination/abatement, (2, 5) environmental public health, and (3, 6) environmental policy/regulation.
- Provide a link and a full citation to each of the articles.
 - Citations 1, 2, and 3 should be provided utilizing MLA Newspaper Online format (Last, First M. "Article Title." *Newspaper Title* Date Month Year Published: Page(s). *Website Title*. Web. Date Month Year Accessed.)
 - Citations 4, 5, and 6 should be provided utilizing APA Newspaper Online format (Last, F. M. (Year, Month Date Published). Article title. *Newspaper Title*, pp. Page(s). Retrieved from URL address.).
- For each article provide:
 - Article Link (appropriately referenced)

- ii. a 350 word summary of the article. Be sure to describe how it relates to the environment, public health, and policy.

Signature Assignment (10%)

- A. Annotated bibliography focusing on one of the pillars of sustainability:
 - a. Social
 - b. Political
 - c. Economical
 - d. Environmental
- B. Report on the local environment with a focus on one of the following areas with approval from instructor: (in the format of a short communication)
 - a. Human Health
 - b. Urban development and impacts on the environment
 - c. Air Quality, and Pollution Control
 - d. Conventional Energy Alternatives and
- C. Short Communication

Group Project

Students will be required to develop teaching modules that will be utilized by fall semester students and scientific investigations. Students will be divided into teams containing four students. Each team will need to produce four teaching modules, delegate work, and give presentations on their progress. Group projects are subject to instructor approval.

EXPECTATIONS FOR OUT-OF-CLASS STUDY

Beyond the time required to initially review the course material, students enrolled in this course should expect to spend at least an additional 9 hours per week in course-related activities, including reading required materials, completing assignments, preparing for exams/teaching modules, scientific investigations, field work, workshops, etc.

DROP POLICY

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

AMERICANS WITH DISABILITIES ACT

The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX

The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

ACADEMIC INTEGRITY

Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

STUDENT SUPPORT SERVICES

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-

6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

WRITING CENTER

The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, Quick Hits (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit <https://uta.mywconline.com/> to register and make appointments. For hours, information about the writing workshops, scheduling a classroom visit, and descriptions of the services offered to undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

ELECTRONIC COMMUNICATION

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

STUDENT FEEDBACK SURVEY

At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

In addition, periodic student feedback will be requested using survey monkey or other methods of polling.

FINAL REVIEW PERIOD

A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week.

During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

EMERGENCY EXIT PROCEDURES

Should there be an emergency event that requires vacating a building, students should exit the room and move toward the nearest exit. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Please follow all posted emergency plans located in the laboratory or meeting room.

BOMB THREATS

In the event of a bomb threat to a specific facility, University Police will evaluate the threat. UT-Arlington will prosecute those phoning in bomb threats to the fullest extent of the law.