

# GEOL 455 - ENVIRONMENTAL GEOLOGY

## Spring 2018 (3.0 Credit Hours)



<b>DESCRIPTION</b>	Students will explore 4-5 selected topics in environmental geology during this course. Topics will vary each year, but are likely to include wide ranging issues, like microbial water quality in rural America, as well as site specific issues, like clean-up of buried wastes at a former industrial or defence site in east Tennessee. The course involves extensive readings, written analyses, presentations and discussions. It is similar to a graduate level seminar course, aimed at undergraduates (not available for graduate credit).
<b>OBJECTIVES</b>	To develop a better understanding of interactions between geologic settings/processes, natural/human ecosystems, scientific research/education and environmental/resource management. Other objectives include developing skills in <ul style="list-style-type: none"><li>- Critical reading of scientific papers, reports &amp; websites</li><li>- Scientific writing and presentations</li><li>- Developing informed opinions on environmental issues</li></ul>
<b>RECOMMENDED</b>	Students from a variety of science and engineering programs are welcome. Recommended prior coursework includes two Geology courses at the 100- or 200-level, or permission of instructor.
<b>CLASSES</b>	Tues. and Thurs., 12:40 - 1:55 pm in Strong Hall, Room 103.
<b>INSTRUCTOR</b>	Larry McKay <a href="mailto:lmckay@utk.edu">lmckay@utk.edu</a> 974-7782, office Strong Hall, Room 703 Office hours: TR 2:00 to 3:00 pm or by appointment
<b>GTA</b>	To be determined
<b>TEXTBOOK</b>	None
<b>CANVAS</b>	Canvas will be used for posting lecture notes/outlines, posting grades, making announcements and other purposes.

<b>EVALUATION</b>	Assignments (~5 or 6)	30%
	Classroom attendance & participation	30%
	Term paper or project	30%
	Presentation	10%
	Bonus	to be determined

**MISSED/LATE** Students who miss a class due to illness, formal UT activities (athletics, student government, field trips, etc.), or other essential personal/family/work duties should inform the instructor as soon as possible. No points taken off for missed classes, if there is a valid and verifiable reason. Late assignments will be penalized 10% per day past the due date, unless the delay is for one of the reasons listed above.

**HONESTY** Students are encouraged to discuss assignments and environmental issues outside of the classroom and can help each other with items such as finding reference materials and editing. However, written assignments, papers and presentations must be based on the student's own work. Plagiarism will not be tolerated and written documents may be examined for this violation with the UT iThenticate software. I request that all students abide by the UT Honor Statement: *"An essential feature of the University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."*

**DISABILITY** The instructor fully supports the UT policies for accommodations for students with disabilities that impact their ability to learn. These are stated on the Provost's website and are summarized as follows. *"Any student who feels that he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services (ODS) at 865-974-6087 in 2227 Dunford Hall to document their eligibility for services. ODS will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities"*

**OTHER POLICIES** The instructor encourages students to read the Campus Syllabus (attached) and "Hilltopics" <https://hilltopics.utk.edu/> for updates on student policies, expectations and resources.

**SUCCESS** Students who are highly successful in this course tend to

- attend class regularly and participate in discussions
- carry out assigned readings promptly
- start assignments early and request help when needed
- submit assignments on time
- participate in a Bonus (extra credit) activity
- ***are enthusiastic about the subject***

# **Geol 455 Course Outline**

## Spring 2018

### **INTRODUCTION**

Geology of Tennessee  
Human/environment interaction  
Resources & ecosystems  
Scientific literature and analysis  
Presentation & discussion format

### **TOPIC: INDUSTRIAL & DEFENSE CONTAMINATION IN CHATTANOOGA**

Chattanooga Creek – An environmental case history  
Volunteer Army Ammunition Plant  
Federal Superfund program (why Chattanooga Creek, but not VAAP?)  
Assignment and discussion of readings  
Student presentations

### **TOPIC: MICROBIAL WATER QUALITY IN WELLS, SPRINGS & STREAMS**

Microbial water quality in wells, springs & streams in east Tennessee  
Microbial water quality in wells in Bangladesh  
Agriculture, septic fields and microbial water quality  
Assignment and discussion of readings  
Student presentations

### **TOPIC: COAL AS A POWER SOURCE: COSTS, BENEFITS AND ENVIRONMENTAL/SOCIETAL IMPACTS**

Coal mining and reclamation of mine pits and wastes  
Mining methods (underground, open pit, mountain top removal)  
Acid mine drainage & fly ash disposal  
Economics of coal versus alternative energy sources  
Coal and human health  
Assignment and discussion of readings  
Student presentations

### **ADDITIONAL TOPICS (1 to 2): To be selected by class**

Each will start with several introductory lectures or talks, followed by an assignment, discussion of readings, and student presentations (each student will make one presentation during course)



Dear Student,

The purpose of this **Campus Syllabus** is to provide you with important information that is common across courses at UT. Please observe the following policies and familiarize yourself with the university resources listed below. At UT, we are committed to providing you with a high-quality learning experience. I want to wish you the best for a successful and productive semester.

Interim Provost John Zomchick

### UNIVERSITY CIVILITY STATEMENT -- <http://civility.utk.edu/>

“Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other’s well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus.”

### EMERGENCY ALERT SYSTEM -- <http://safety.utk.edu/>

The University of Tennessee is committed to providing a safe environment to learn and work. When you are alerted to an emergency, please take appropriate action. Learn more about what to do in an emergency and sign up for [UT Alerts](#). Check the emergency posters near exits and elevators for building specific information. In the event of an emergency, the course schedule and assignments may be subject to change. If changes to graded activities are required, reasonable adjustments will be made, and you will be responsible for meeting revised deadlines.

### ACADEMIC INTEGRITY

“An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

### YOUR ROLE IN IMPROVING TEACHING AND LEARNING THROUGH COURSE ASSESSMENT

At UT, it is our collective responsibility to improve the state of teaching and learning. During the semester you may be requested to assess aspects of this course either during class or at the completion of the class. You are encouraged to respond to these various forms of assessment as a means of continuing to improve the quality of the UT learning experience.

### DISABILITIES THAT CONSTRAIN LEARNING

“Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Student Disability Services (SDS) at 865-974-6087 in 100 Dunford Hall to document their eligibility for services. Student Disability Services will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities.”

**Accessible Information, Materials, & Technology** -- <http://accessibility.utk.edu/>

### WELLNESS -- <http://counselingcenter.utk.edu/> and <http://wellness.utk.edu/>

The *Student Counseling Center* is the university’s primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The **Center for Health Education and Wellness** is dedicated to a community model that is embodied in the “VOLS HELP VOLS” commitment: *We are all Volunteers. We look out for each other.* The Center manages **974-HELP**, the **distressed student protocol**, **case management**, the **Sexual Assault Response Team**, and the **Threat Assessment Task Force**.