Spring 2022---**GEOL. 305L** Introduction to Engineering Geology
Lecture (ZHS 352): TTh 4:30 - 5:50 PM
Laboratory (ZHS B65): W 10:00 to 11:50am; Th 6:00 to 7:50pm

Instructors (order of appearance):

Prof. Doug Hammond (dhammond@usc.edu) ZHS 325 Office hours by appointment

Prof. John Vidale (jvidale@usc.edu) ZHS 269 Office hours by appointment

TA: TBA (xxxxx@usc.edu) ZHS xxx

Textbook (recommended, NOT required): "Geology for Engineers and Environmental Scientists", A. E. Kehew, 3rd Edition, Prentice Hall (earlier editions are fine). This book is out of print, but you may find hard copies on eBay or you may rent it as an eBook. We will also make a copy or two available to read in ZHS 325.

In addition, some websites will be recommended during the semester.

Learning Objectives: This is a mid-level Earth Sciences class including aspects of geology, hydrology, geochemistry, and geophysics. It is designed primarily for civil and environmental engineering students but is also appropriate for those with earth and environmental science interests. It is designed to help students become better observers of landforms and their significance, apply first order quantitative approaches when considering hazard probability and magnitude, and understand the meaning of some terms commonly used by earth scientists. Foundational information about minerals, rocks and physical geology introduces topics of environmental importance to engineers, among them mass wasting, flooding, dam failures, coastal processes, earthquakes, and climate change. Engineering aspects of this course include topics such as mechanics, hydrology, acoustic wave properties, etc., with applications to seismology and earthquake science. The labs are an integral part of the course and provide observational and experimental applications that illustrate various lecture topics. **The lab is a mandatory portion of this class and must be passed in order to pass the course.**

Grading: Three exams, each covering 1/3 of the course material = 25% + 25% + 25% = 75%

Laboratory = 25%. There will be NO extra credit. Overall grades will be curved using a multi-year scale for reference, based on previous class performances. If you do not pass lab, you will not pass the course.

Laboratory attendance (weekly) is mandatory. If you miss a lab and can't make it up, you will get a zero for the day. Any make-ups must be approved in advance by the TA. **There will also be a required field trip to see rocks and faults in their habitat.**

Support Services: There are a variety of support services available to USC students who are experiencing academic or personal problems. If you are experiencing difficulty, we encourage you to seek assistance. A guide to these is available at: Support Systems.

Blackboard: this course will make use of the Blackboard online system. Various course information is made available on this site, including pre-lab reading for each lab meeting. Lectures given via PowerPoint may be posted, but often after the lecture has been delivered in class. It is ALWAYS best to attend class to take notes on lecture topic. The chalkboard will sometimes be used to convey information.

Students with Disabilities: Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to us as early in the semester as possible, well before the first midterm. DSP is open Monday-Friday, 8:30-5:00. Their phone number is (213) 740- 0776.

Academic Integrity: University policies on academic dishonesty are printed in SCAMPUS. Because cheating negatively affects everyone in the class, we will follow USC guidelines and report all academic misconduct. USC policies on cheating are strict and the minimum punishment is failure in the class and possible expulsion (see Student Conduct Code). Please don't make us have to turn you in! Even the appearance of impropriety can be a concern.

GEOL 305 Schedule Sp2020 (as of 12/3/21)

Date	Lecturer	Lecture Topic	Lab Topic (T, W)	
1/11/22	Hammond	Introduction - Planet Earth	Topo & Geologic Maps	1/12,13
1/13/22	Hammond	Minerals, Rocks and Rock cycle		
1/18/22	Hammond	Weathering	Minerals & Igneous	1/19,20
1/20/22	Hammond	Soils and Soil Hazards		
1/25/22	Vidale	Plate tectonics	Sed & Meta Rocks	1/26,27
1/27/22	Vidale	Seismic waves and earthquakes		
2/1/22	Vidale	Structure of the Earth's interior	**NO LAB: EngComps.**	2/2,3
2/3/22	Vidale	Volcanoes and hazards		
2/8/22	Vidale	Volcano case studies	Plate Tectonics	2/9,10
2/10/22	Vidale	Landslides and other mass wasting		
2/15/22		1st exam covers through Feb 8	Rock mechanics	2/16,17
2/17/22	Vidale	More landslides		
2/22/22	Vidale	California earthquake mitigation	Landslides	2/23,24
2/24/22	Vidale	Famous earthquakes		
3/1/22	Vidale	Earthquake prediction	Earthquakes	3/2,3
3/3/22	Vidale	Earthquake early warning		
3/8/22	Vidale	Earthquake engineering	Earthquake hazards	3/9,10
3/10/22	Vidale	Tsunamis		
3/15/22		spring break		
3/17/22		spring break		
3/22/22	Hammond	Coastal Hazards	Coastal hazards	3/23,24
3/24/22	Hammond	Storms, Water Resources & Rainfall		

3/29/22		2nd exam covers through March 24	TBA	3/30,31
3/31/22	Hammond	Rivers, Floods, Erosion, Siltation		
4/5/22	Hammond	Dams & Dam Problems	Rivers and Floods	4/6,7
4/7/22	Hammond	Groundwater, Shallow Subsidence		
4/9/22		**FIELD TRIP? (flexible date, Sat)**		
4/12/22	Hammond	Contaminants & Transport	Groundwater	4/13,14
4/14/22	Hammond	Waste disposal		
4/19/22	Hammond	Contaminant Remediation	Contaminants	4/20,21
4/21/22	Hammond	Climate change		
4/26/22	Hammond	Climate Mitigation Strategies	Climate	4/27,28
4/28/22	Hammond			
5/5/22	Final	3rd exam		