**Spring 2017---GEOL. 305L Introduction to Engineering Geology**

**Lecture (SGM 123): TTh 11:00 - 12:20 PM**

**Laboratory (ZHS B65)**

**Instructors:**

Prof. Greg Davis (gdavis@usc.edu) ZHS 305 Office Hours--TBD

Prof. Charlie Sammis (sammis@usc.edu ) ZHS 107 Office Hours--TBD

Prof. Will Berelson ([berelson@usc.edu](mailto:berelson@usc.edu)) ZHS 227 Office Hours--TBD

**Teaching Assistan**ts**:**

**2** TBD

**Textbook (recommended, NOT required):**  "Geology for Engineers and Environmental Scientists”, A. E. Kehew, 3rd Edition Prentice Hall (earlier editions are fine)—

**Learning Objective—Class Premise:**  This is a mid-level Earth Sciences class with components of geology, 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. Foundational information about minerals, rocks and physical geology introduces topics of environmental importance to engineers, among them mass wasting, flooding, dam failures, coastal processes, and earthquakes. Engineering aspects of this course include topics such as mechanics, hydraulics, acoustic wave properties etc., with applications to seismology and earthquake science. The labs are integral to the course and provide observational and experimental applications that highlight various lecture topics. The lab is a mandatory portion of this class and one that must be passed in order to pass the course. Field aspects of earth sciences appropriate to the course are included within a one-day field trip required of all students.

**Field Trip:**  Tentatively scheduled for Sunday, March 26, 2017. Prepare to be gone from 8AM to 4PM.

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

Laboratory quizzes each week total = 25%

There will be NO extra credit although attendance may be considered when adjusting final grades.

Laboratory attendance (weekly) is mandatory, if you miss a lab and can’t make it up, you will get poor lab grade.

Overall grades will generally fall into A’s, B’s etc. by >90%, 80-90%, etc. A curve will be applied if too many scores are low.

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**GEOL 305 Syllabus**

**(**NOTE: Syllabus is ‘fluid’, it will change, updated versions will be posted)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | Date | Lecture Topic | Instructor | Lab Topic |
| 1 | Jan. 10 | Introduction--Planet Earth, Minerals | All | No Lab |
|  | Jan. 12 | Plate tectonics: divergent | Davis |  |
| 2 | Jan. 17 | Plate tectonics: convergent, transform | Davis | Topo and simple geologic maps |
|  | Jan. 19 | Rock Cycle, Igneous Rocks | Davis |  |
| 3 | Jan. 24 | Volcanoes | Davis | Minerals and Igneous Rks |
|  | Jan. 26 | Volcanic Hazards | Davis |  |
| 4 | Jan. 31 | Landslides and other Mass Wasting | Davis | Sedimentary and Metamorphic Rks |
|  | Feb. 2 | River Systems, Erosion | Davis |  |
| 5 | Feb. 7 | Floods and Dams | Davis | No Lab (conference) |
|  | Feb. 9 | Dam Failures, Removal | Davis |  |
| 6 | Feb. 14 | Exam | Davis | Landslides |
|  | Feb. 16 | Waste Disposal | Berelson |  |
| 7 | Feb. 21 | Groundwater | Berelson | River Systems and Flooding |
|  | Feb. 23 | Soils, Compaction, Subsidence | Berelson |  |
| 8 | Feb. 28 | Coastal Hazards | Berelson | Groundwater |
|  | 2-Mar | Make-up | Berelson |  |
| 9 | 7-Mar | Energy Extraction (C-based) | Berelson | Soils, subsidence, liquefaction |
|  | 9-Mar | Energy Extraction (other) | Berelson |  |
| 10 | Spring Break |  |  |  |
|  | Spring Break |  |  |  |
| 11 | 21-Mar | Climate Change | Berelson | Coastal Hazards |
|  | 23-Mar | Climate Change | Berelson |  |
| 12 | 28-Mar | Exam | Berelson | Environmental Contaminants |
|  | 30-Mar | Physical properties of rocks | Sammis |  |
| 13 | 4-Apr | Seismic Waves | Sammis | Rock Mechanics |
|  | 6-Apr | Reflection and Refraction of Seismic Waves | Sammis |  |
| 14 | 11-Apr | Structure of the Earth's Interior | Sammis | Geologic Maps - folds/faults |
|  | 13-Apr | Earthquakes and Faulting | Sammis |  |
| 15 | 18-Apr | Earthquake Prediction | Sammis | Earthquake Location and Magnitude |
|  | 20-Apr | Earthquake Engineering | Sammis |  |
| 16 | 25-Apr | Tectonics on Other Planets | Sammis | Earthquake Intensity and Hazards |
|  | 27-Apr | Review for Final Exam | Sammis |  |
|  | TBD | Final Exam | Sammis |  |

**Blackboard:** this course will make extensive use of the Blackboard online system. Various course information is made available on this site.

**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 me 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 http://web-app.usc.edu/scampus/wp- content/uploads/2007/08/appendix\_a.pdf). Please don’t make us have to turn you in!