GEOL105 – PLANET EARTH

Department of Earth Sciences, USC

First lecture for Spring 2019 semester will be given at 1 pm, Monday Jan. 7, in THH201

Welcome to GEOL105, Planet Earth. This course provides an introduction for non-geologists and non-scientists to the inner workings, origin, and history of our dynamic planet. We learn how the Earth's internal heat drives the engine that builds mountains, moves the continents, creates the ocean basins, and produces earthquakes and volcanoes. We examine the way the circulation of the atmosphere and hydrosphere are driven by solar energy, and interact with the solid earth to produce landscapes, erode and deposit sediment, and create environments for life and evolution. We investigate the techniques by which we can image the Earth's interior, measure the rates of plate motion, and infer how the planet has evolved in deep time. Each step of the way we ask ourselves how we know what we know, what we don't know, and how science establishes a body of knowledge that is generally accepted by the scientific community. This syllabus outlines the course contacts, requirements, and schedule. Additional information will be posted on Blackboard during the course.

Lectures: MWF 1:00-1:50 pm, Taper Hall, Room THH201
First lecture: 1 pm, Monday, Jan 7, 2019

Instructors: Professor John Platt ZHS 313 ext. 11194 jplatt@usc.edu
TAs to be arranged

Textbook: E.J. Tarbuck et al., *Earth - An Introduction to Physical Geology* (11th edition, but but earlier editions are OK), published by Pearson, ISBN-13: 978-0-321-81406-7. All assigned readings will be from this textbook.

Instructional Material: Announcements, lecture files and grades, will be posted on Blackboard.

Class Etiquette: Students should arrive for class and be seated prior to the lecture start time. Cell phones may not be used in class for either voice or text messaging, and students should refrain from talking to their neighbors during lectures. Questions to the lecturer are encouraged!

Laboratory: Students must register separately for laboratory sections, which meet for 2 hours once per week. *Laboratory sessions will begin during the week of January 14*; no labs will be held during the first week of classes. Lab exercises can be downloaded from Blackboard. Teaching Assistants will schedule tests on lab material and will grade all lab work.

Field Trip: All students are required to attend a one-day field trip on either **Saturday, March 30** or **Sunday, March 31.** The field-trip grade will be based on a simple lab exercise to be carried out in the field. If you have a valid academic or medical excuse for missing the field trip, you *must* notify Professor Platt in advance.

Lecture Schedule

DATE	DAY	SUBJECT	ASSIGNED READING*
Jan	7 M	Introduction to Planet Earth	chapter 1
	9 W	Scientific Methods in the Earth Sciences	chapter 1
	11 F	Plate Tectonics	chapter 2
	14 M	Plate Tectonics	chapter 2
	16 W	Plate Tectonics	chapter 2
	18 F	Melting in the Earth	chapter 4
	21 M	***Martin Luther King Day* (*holiday*)**	
	23 W	Volcanoes	chapter 5
	25 F	Volcanic Hazards	chapter 5
	28 M	Earth Materials: Minerals	chapter 3
	30 W	Earth Materials: Rocks	chapter 4
Feb	1 F	Igneous Rocks	chapter 4
	4 M	Sedimentary Rocks	chapter 7
	6 W	Metamorphic Rocks	chapter 8
	8 F	Rock Deformation: Faults	chapter 10
	11 M	Rock Deformation: Folds	chapter 10
	13 W	***Midterm Exam 1***	
	15 F	Geologic Time	chapter 9
	18 M	***President's Day (holiday)***	
	20 W	Geologic Time	chapter 9
	22 F	Origin of the Earth and the Solar System	chapter 24
	25 M	The Early Earth	ch 22, p. p. 743-750
	27 W	Building the Continents I	ch 22, p.751-759
Mar	1 F	Building the Continents II	chapter 14
	4 M	Life on Earth I	ch 22, p.760-771
	6 W	Life on Earth II	
	8 F	Weathering and Erosion	chapter 6
	10 to 17	***Spring Break***	
	18 M	Mass Wasting	chapter 15
	20 W	Streams and Rivers	chapter 16
	22 F	Streams and Rivers	chapter 16
	25 M	Hydrologic Cycle and Groundwater	chapter 17
	27 W	***Midterm Exam 2***	
	29 F	The Climate System	chapter 21
	30/31 (Sa) / (Su)	***Field Trip (every student must attend one day)***	
April	1 M	Desert Environments	chapter 19
	3 W	Coastal Environments and Processes	chapter 20
	5 F	The Deep Ocean Basins	chapter 13
	8 M	Glaciers	chapter 18
	10 W	Glaciations in Earth History	chapter 18
	12 F	Earthquakes	chapter 11
	15 M	Earthquakes	chapter 11
	17 W	Exploring Earth's Interior	chapter 12
	19 F	Exploring Earth's Interior	chapter 12
	22 M	Natural Resources	chapter 23
	24 W	Human Impact on Earth's Environment	chapter 21
	26 F	Review session	
May	1 W	***Final Examination: 2-4 pm***	

Maximum Scoring for Each Grade Element: Student grades are based on the cumulative score across six grade elements: laboratory work, in-class quizzes, two mid-term exams, a final exam, and a one-day field trip. The maximum number of points that can be earned for each element is given in the following table:

Grade Element	Max Credit
Laboratory Work	200 points
In-class quizzes	100 points
Midterm Exam 1	100 points
Midterm Exam 2	100 points
Final Exam	200 points
Field Trip	50 points
Total Max Credit	750 points

Examinations: The three examinations will evaluate student comprehension of the lecture and textbook material.

- Midterm Exam 1 will be given in class on Wednesday, Feb 13; it will cover the material presented in lectures from Jan 7 through Feb 8 and the reading assignments from Chapters 1-5, 7 and 8 of the textbook.
- Midterm Exam 2 will be given in class on Wednesday, March 27; it will cover the lectures from Feb 8 -March 22 and the reading assignments from Chapters 6, 9, 10, 14-16, and 22.
- The Final Exam will be given from 2-4 pm on Wednesday, May 1; it will be a *comprehensive examination*, covering all lectures and reading assignments throughout the term, but a special emphasis will be placed on the material in lectures from March 25 to April 26, and the reading assignments from Chapters 11-13, 17-21, and 23.

If you want to do well on the exams, we encourage you to attend class faithfully, take notes in class, read the textbook, and review the lectures. Pdf versions of the lecture slides will be posted on Blackboard. All exams will be objective (true/false or multiple choice), and grading will be done using Scantron.

Missed examinations
If you have to miss an examination because of illness or an academic conflict, you must inform the Professors by email in advance, and provide documentation. Make-ups of examinations will NOT be permitted except for extraordinary circumstances (e.g., documentable conflicts with other USC-related commitments). In the case of a missed midterm, where a reasonable excuse exists, the midterm may be waived with a score assigned that reflects the average of your work done on the other two exams. There are no make-ups for in-class quizzes.

Assignment of Final Grades: Each student will receive a final grade based on their cumulative score. The grading curve will have an *approximate* distribution as follows:

A: 20% of total enrollment
B: 35% " "
C: 30% " "
D: 15% " "

Based on previous classes, a grade of F is typically assigned to a cumulative score that is less than 50% of the highest score in the class.

Extra Credit: Students can earn extra credit of up to 5% of their total score, for participation in JEP. The extra-credit points will be added to your grade *after* the class grades are curved, and the increase in grade will be limited to one-third of a grade step (e.g., from a B+ to an A- or from a B to a B+). *No other forms of extra credit will be given at any time during the class or at the end of the semester for any reason.*

Field-Trip Make-Up Report. If you miss the field trip due to a documented sickness or valid academic excuse *approved beforehand by the Professor*, you can make up the lost credit by turning in a written 4-page report based on a geological topic assigned by the instructor. No two reports can be based on the same material. The reports will be due no later than 5 pm on Friday, April 19. The report should be approximately 4 pages in length (double-spaced, typewritten) and include three sections:

> Section 1: An introduction describing the nature of the topic being considered), and its significance to the Earth Sciences.
> Section 2: A discussion of the scientific methods used to investigate the topic, the experimental or theoretical approach, and the basic findings.
> Section 3: A summary of the conclusions and any follow-on work that either the authors or you think might be useful.

You may also include one or two figures as part of the report if you wish; these must be referenced in the text and relevant to the discussion. You should provide citations for statements made in the text, and the sources for any figures you include, and you should provide a bibliography.

Disability Services: 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 the Professor as early in the semester as possible*. DSP is open Monday-Friday, 8:30-5:00. The office is in Student Union 301 and the phone number is (213) 740-0776.