

Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551-7650
(925) 424-1000
(925) 443-0742 (Fax)

Course Outline for GEOL 7

ENVIRONMENTAL GEOLOGY: RESOURCES, USE IMPACT & POLLUTION

Effective: Fall 2017

I. CATALOG DESCRIPTION:

GEOL 7 — ENVIRONMENTAL GEOLOGY: RESOURCES, USE IMPACT & POLLUTION — 3.00 units

Understanding how and where Earth's environmental resources are created and located, and then studying how the resources are accessed and utilized. Topics include rock and mineral resources, energy resources (including fossil fuel and non-fossil fuel resources), water (including rivers, reservoirs, groundwater, etc.), waste disposal (including water and air pollution), global climate changes (including the greenhouse effect), etc. 3 hours lecture.

3.00 Units Lecture

Grading Methods:

Letter or P/NP

Discipline:

	MIN
Lecture Hours:	54.00
Total Hours:	54.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

- Recognize and understand how to mitigate geologic hazards through verbal or written explanations, discussions, analysis, identifications, and/or interpretations.
- Explain, discuss, analyze, identify and/or interpret of concepts, principles and interactions of Earth's systems including: the Hydrologic Cycle; the Rock Cycle; Plate Tectonics; Geologic Hazards; and Connectivity between geosphere, atmosphere, hydrosphere and biosphere.
- Articulate (through written or verbal analysis, summaries, explanations, and/or discussions) how human activities impact the environment
- Explain the Scientific Method
- Communicate complex course concepts effectively in writing and diagrams through the analysis of laboratory exercises

V. CONTENT:

- Formation of the Earth and Plate Tectonics
 - Scientific Method
 - Geologic Time and Earth History
 - Plate Tectonics
 - Geologic Structures
- Earth Resources
 - Rocks and Minerals
 - Soils
 - Water
 - Energy
 - Human Impacts
 - Exploitation and Use
 - Population
 - Waste
- Earth Systems
 - Rock Cycle
 - Carbon Cycle
 - Nitrogen Cycle
 - Water Cycle
 - Weather and Climate
- Geologic Hazards
 - Pollution
 - Groundwater Quality and Subsidence
 - Extreme Weather
 - Climate Change
 - Sea Level Change

E. Optional Field Trip

VI. METHODS OF INSTRUCTION:

- A. **Lecture** - when the course is offered in the traditional on-campus setting. When offered in the online, distance education, lecture material will be accessed through the textbook, online videos, online video clips, web pages on specific topics, etc
- B. **Discussion** - e.g., through Class Discussion Boards and Class Wikis
- C. **Audio-visual Activity** - videos and video clips on relevant course-related topics; includes online images and animations; online quizzes with images, etc.
- D. **Research** - e.g., for Group Projects and/or for term papers and/or for Discussion Board or Wiki projects.
- E. **Student Presentations** - at the instructor's discretion. May be posted to Class Discussion Boards, Class Wikis, etc.
- F. **Directed Study** - using the textbook with publisher materials as available (e.g., online flashcards, online animations, etc)
- G. **Projects** - e.g., through Class Discussion Boards, Class Wikis, etc. For either Group or Individual projects, as determined by the instructor.
- H. **Classroom Activity** - e.g., through Class Discussion Boards and Class Wikis. etc.

VII. TYPICAL ASSIGNMENTS:

- A. Write a paper that lists and explains the pros and cons of each of the major energy resources.
- B. Read the chapter on Groundwater and answer the questions at the end of the chapter.
- C. Complete the Study Guide questions for Exam 2.
- D. Read Chapter 15 in the textbook.
 - 1. Look up all vocabulary for this chapter.
 - 2. Learn to identify the geomorphic features in this chapter in satellite images and regular aerial and ground photos.
 - 3. Make sure that you understand the basic geologic processes discussed in this Chapter.
 - 4. Complete the questions in the Study Guide that refer to the topics in this chapter.
- E. Research Paper. Submit a 5-10 page 12-point paper on a geologic topic approved by the instructor.
- F. Presentation. Create and present a 5-10 minute presentation on a geologic topic approved by the instructor.

VIII. EVALUATION:

A. **Methods**

- 1. Exams/Tests
- 2. Quizzes
- 3. Research Projects
- 4. Portfolios
- 5. Papers
- 6. Oral Presentation
- 7. Projects
- 8. Field Trips
- 9. Simulation
- 10. Group Projects
- 11. Class Participation
- 12. Class Work
- 13. Home Work

B. **Frequency**

- 1. Homework can be assigned daily, weekly or all at the beginning of the term or only as needed, at the discretion of the instructor
- 2. Quizzes will be given daily, weekly, bi-weekly or at the discretion of the instructor
- 3. Quizzes/Midterms/Final Exam/Term Paper – at least 3 or 4 total. For example, there may be 2 midterms, one final exam and one term paper. Or, there may be 4 on-line quizzes, 3 in-class midterms and one in-class final exam.
- 4. Research Papers, Portfolios, Papers, Oral Presentations, Projects, Field Trips, Simulations, Group Projects, Class Participation - at the instructor's discretion; could be one or more

IX. TYPICAL TEXTS:

- 1. Keller, E. . (2011). *Introduction to Environmental Geology – with CD* (5th ed.). Upper Saddle River, New Jersey: Prentice-Hall Publishers.
- 2. Montgomery, C. (2014). *Environmental Geology* (10 ed.). San Francisco, CA: WCB McGraw-Hill Publishers.
- 3. Pipkin, ., Trent, ., Hazlett, ., & Bierman, . (2014). *Geology and the Environment* (7 ed.). Pacific Grove, CA: Books Cole.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

- A. Access to the internet and computers, through the LPC Computer Center, a public library, or access to a personal computer at home with an internet connection
- B. Study guides as made available by the instructor