I. Description of Course:

1. Department/Course: GEOL - 104
2. Title: The Changing Earth: Historical Geology
3. Cross Reference:
4. Units: 3
   Lec Hrs: 3
   Lab Hrs:
   Tot Hrs: 54.00
5. Repeatability: No
6. Grade Options: Grade Only (GR)
7. Degree/Applicability:
   Credit, Degree Applicable, Not Transferable (D)
8. General Education:
9. Field Trips: Required
10. Requisites:
12. Catalog Description:
   The study of the origin and evolution of Earth and life through time. Geological history and global change as revealed by plate tectonics, rocks, fossils, and evidence for climatic change, both ancient and recent. The development of continents, especially North America, ocean basins, and mountains. One Saturday field trip required.

13. Class Schedule Description:
   Evolution of Earth and life through time; global climatic change as revealed by plate tectonics, rocks, and fossils.

14. Counselor Information:
   This course gives students an additional choice for transferrable physical science GE requirement. It is a hybrid course, which includes 5 meetings with the instructor (including all tests and a Saturday field trip), an online component, and an optional lab component, GEOL 103L

II. Student Learning Outcomes
The student will:

1. List and explain the major steps in the scientific method of investigation, specifically, the difference between a speculation, falsifiable hypothesis, and theory.
2. Formulate and write out appropriate hypotheses and interpretations when presented with observational data and other types of scientific evidence.
3. Demonstrate an understanding of the basic principles of geology and develop an ability to relate scientific concepts regarding the Earth to current situations such as global climatic change, geological hazards, and natural resources, especially the fossil fuels.
4. Develop an understanding of the theory of plate tectonics, evolution and movement of continents through geological time, and the associated global change.
5. Identify and classify the common earth materials, especially the sedimentary rocks and major groups of fossils.
6. Explain the concept of geologic time ("deep time"), list eras and periods of the geologic
time scale, and demonstrate the use of the geologic time scale in determining relative and numerical ages of rocks.
7. Develop an understanding of the major events in the origin, evolution, diversification, and geographic dispersion of life through time, both on land and in the marine realm.
8. Demonstrate an understanding of the various components of the Earth system and their interactions through time, including positive and negative feedbacks and current trends.
9. List various stages of development and evolution of the North American continent and other continents including tectonic events, terrane accretion, mountain building, and changes in character and distribution of their flora and fauna (paleobiogeography).
10. Develop a practical understanding of geological concepts through participation in one full-day field trip and a visit to the Ohlone Museum of Paleontology.

III. Course Outline:
A. introduction to Earth as a system, the science of historical geology and its development
B. the theory of uniformity; basic principles of stratigraphy
C. time in geology; determining the age of rocks; correlation of rocks and fossils
D. sedimentary rocks; the rock cycle; sedimentary environments and their interpretation
E. fossils and their preservation; basic concepts of evolution
F. the theory of plate tectonics
G. origin of the Earth; early Earth; early continents; origin of life
H. Precambrian Eon; major geological and biological developments
   I. major geological events of the Paleozoic era; Paleozoic life; formation of Pangea
   J. major geological events of the Mesozoic era; break-up of Pangea; Mesozoic life
   K. Paleozoic and Mesozoic global environmental crises and mass extinctions; MIDTERM 2
   L. major geologic events of the Cenozoic era; Cenozoic life; climatic cooling
M. Pleistocene Ice Age and the associated environmental and biological changes
N. global climatic change through time; evidence from the past and current trends

IV. Course Assignments:
A. Reading Assignments
   1. weekly readings from textbook
B. Projects, Activities, and other Assignments
   1. weekly online discussion board
   2. full-day field trip activity
C. Writing Assignments
   1. weekly online quizzes
   2. 5-page field trip report

V. Methods of Evaluation:
A. EXAMINATIONS: Two midterms and a final exam. All exams will be closed-book and notes and consist of multiple choice, true/false, and short answer questions.
B. CLASS PARTICIPATION: weekly online assignments/quizzes and discussion board
C. FIELD TRIP: all-day Saturday field trip and the subsequent 5-page written report.
D. Specially announced lectures (Ohlone science seminars).

VI. Methods of Instruction:
A. Lecture
B. Discussion
C. Computer Assisted Instruction
D. Distance Learning
E. Other

1. This is a web-enhanced, hybrid (online and face-to-face) course. There will be 5 in-class meetings including the introductory lecture, all-day Saturday field trip, and three exams. The rest of the course will be conducted online through the Ohlone College WebCT

VII. Textbooks:

Recommended


Supplemental

VIII. Supplies:

CID 3511