



CLUSTER II

Science

Earth Sciences/Geology

Prepared by Peter Schiffman, Lead Discipline Faculty, University of California, Davis

Summary of Identified Issues

The Earth Sciences group met once at the IMPAC Statewide Meeting, and the main topics of discussion were the same as last year: (1) identifying a core preparatory curriculum for transfer students, (2) possible revision of CAN descriptors for required Earth Sciences courses, and (3) the necessity of creating a preparatory pattern (similar to IGETC) for Science major transfer students.

Identified Trends/Future Directions

Because of the high-unit nature of B.S. degrees in Earth Science/Geology at CSU and UC institutions, it is imperative that CC students complete as much as possible of their preparatory coursework in Calculus, Physics, and Chemistry prior to transferring to four-year colleges and universities.

New B.S. degree programs in Natural Sciences, with emphases in Earth Sciences/Geology, are starting to appear at CSU and UC. These programs are targeted towards future K-12 instructors. These programs (e.g., at UC Davis <http://www-geology.ucdavis.edu/~NatSci/>) may require a lower-division prerequisite course in “Earth Sciences” as opposed to “Physical Geology.” What coursework should be required for these programs and how can IMPAC participate in helping transfer students better participate?

Recommendations for the Discipline

1. All lower-division Geology/Earth Science majors need a full year of Calculus, Chemistry, and Physics (with Calculus), as well as one course in Physical Geology (with lab) and one course in Historical Geology (with lab).
2. Transfer students should complete most, if not all, of these preparatory courses at the CC.
3. We need to create a Physical Sciences equivalent of IGETC that would have CC students completing their preparatory courses prior to transfer.
4. CAN descriptors for Physical and Historical Geology (CAN GEOL 2,4,6, and 8) should be revised to emphasize geologic process as opposed to a “shopping lists” of topics to be covered (see recommendations in Minutes from North Area Regional Meeting, January 5, 2002.)

Topics for Further Discussion

1. Finalize revision of CAN descriptors. Consider drafting CAN descriptors for lower-division courses in “Earth Sciences”.
2. Work with other disciplines to create Science version of IGETC (SciGETC)

Recommendations Forwarded/ to be Forwarded to:

CAN

Forward the changes in Earth Science Appendix 1 to CAN.

EARTH SCIENCES CAN DESCRIPTORS

~~Strikethrough~~: deletion of existing CAN description

CAN: GEOL 2

Title: Physical Geology w/lab

Description: ~~Physical geology includes the study of plate tectonics, rocks and minerals, weathering, mass-wasting, surface and ground water, wind, waves and currents, glaciation, mountain building, volcanoes and other igneous activity, deformation and resulting structures, earthquakes, Earth's interior, geologic time, and earth resources. The laboratory component should include rock and mineral identification, interpretation of topographic and geologic maps and may include other geologic topics.~~

Revised Description: Physical geology introduces the processes that are at work changing the Earth today. Within the context of global tectonics, it explores the origins of rocks and minerals and the dynamics of processes such as igneous activity, seismicity, and crustal deformation that are driven by the release of Earth's internal heat. It also examines how air, water, and ice move in response to gravity and energy from the Sun, sculpting Earth's surface by eroding, transporting, and depositing weathered rock materials. Lab exercises will include the identification of rocks and minerals, the interpretation of topographic and geologic maps, and related geologic topics.

CAN: GEOL 4

Title: Historical Geology w/lab

Description: ~~Historical geology includes the study of the origin and evolution of Earth and its biosphere, incorporating plate tectonics, stratigraphy, paleontology, geologic dating, etc. The laboratory component should include the study of fossils and rocks, geologic maps, and the interpretation of ancient environments.~~

Revised Description: Historical geology introduces Earth's history and that of the life it supports. Drawing on concepts from geologic dating, global tectonics, and stratigraphy, it explores the planet's origin and the processes that have repeatedly re-shaped the global environment during the past 4.5 billion years. It also reviews fossil evidence for the origin of life on Earth, and for the complementary roles played by natural selection and environmental change in shaping both ancient and modern living communities. Lab exercises will include studies of rocks, fossils, the interpretation of ancient environments, and regional geologic history.

CAN: GEOL 6

Title: Physical Geology—Lecture only

Description: ~~Physical geology includes the study of plate tectonics, rocks and minerals, weathering, mass-wasting, surface and ground water, wind, waves and currents, glaciation,~~

mountain building, volcanoes and other igneous activity, deformation and resulting structures, earthquakes, Earth's interior, geologic time and earth resources.

Revised Description: Physical geology introduces the processes that are at work changing the Earth today. Within the context of global tectonics, it explores the origins of rocks and minerals and the dynamics of processes such as igneous activity, seismicity, and crustal deformation that are driven by the release of Earth's internal heat. It also examines how air, water, and ice move in response to gravity and energy from the Sun, sculpting Earth's surface by eroding, transporting, and depositing weathered rock materials.

CAN: GEOL 8

Title: Historical Geology—Lecture only

Description: Historical geology includes the study of the origin and evolution of Earth and its biosphere, incorporating plate tectonics, stratigraphy, paleontology, geologic dating, etc.

Revised Description: Historical geology introduces Earth's history and that of the life it supports. Drawing on concepts from geologic dating, global tectonics, and stratigraphy it explores the planet's origin and the processes that have repeatedly re-shaped the global environment during the past 4.5 billion years. It also reviews fossil evidence for the origin of life on Earth, and for the complementary roles played by natural selection and environmental change in shaping both ancient and modern living communities.