

# GEOL M03: EARTH HISTORY

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**Originator**

rputnam

**College**

Moorpark College

**Discipline (CB01A)**

GEOL - Geology

**Course Number (CB01B)**

M03

**Course Title (CB02)**

Earth History

**Banner/Short Title**

Earth History

**Credit Type**

Credit

**Start Term**

Fall 2022

**Catalog Course Description**

Examines the geologic history of the Earth including changes in the continents, oceans, atmosphere, climate, and life as recorded by fossils. Emphasizes global plate tectonics, changes in paleogeography, and biological evolution. Reviews concepts of geologic dating.

**Taxonomy of Programs (TOP) Code (CB03)**

1914.00 - Geology

**Course Credit Status (CB04)**

D (Credit - Degree Applicable)

**Course Transfer Status (CB05) (select one only)**

A (Transferable to both UC and CSU)

**Course Basic Skills Status (CB08)**

N - The Course is Not a Basic Skills Course

**SAM Priority Code (CB09)**

E - Non-Occupational

**Course Cooperative Work Experience Education Status (CB10)**

N - Is Not Part of a Cooperative Work Experience Education Program

**Course Classification Status (CB11)**

Y - Credit Course

**Educational Assistance Class Instruction (Approved Special Class) (CB13)**

N - The Course is Not an Approved Special Class

**Course Prior to Transfer Level (CB21)**

Y - Not Applicable

**Course Noncredit Category (CB22)**

Y - Credit Course

**Funding Agency Category (CB23)**

Y - Not Applicable (Funding Not Used)

**Course Program Status (CB24)**

1 - Program Applicable

**General Education Status (CB25)**

Y - Not Applicable

**Support Course Status (CB26)**

N - Course is not a support course

**Field trips**

Will be required

**Faculty notes on field trips; include possible destinations or other pertinent information**

There will be a weekend-long field trip to a location of relevance to the history of Earth where students will assess stratigraphy, identify fossils, and/or make geologic maps. Possible locations include Cadiz, Bishop, or Deep Springs (all in southern/eastern California.)

**Grading method**

(L) Letter Graded

**Alternate grading methods**

(O) Student Option- Letter/Pass

(P) Pass/No Pass Grading

**Does this course require an instructional materials fee?**

No

**Repeatable for Credit**

No

**Is this course part of a family?**

No

**Units and Hours**

**Carnegie Unit Override**

No

**In-Class**

**Lecture**

**Minimum Contact/In-Class Lecture Hours**

52.5

**Maximum Contact/In-Class Lecture Hours**

52.5

**Activity**

**Laboratory**

**Total in-Class**

**Total in-Class**

**Total Minimum Contact/In-Class Hours**

52.5

**Total Maximum Contact/In-Class Hours**

52.5

**Outside-of-Class**

**Internship/Cooperative Work Experience**

**Paid**

**Unpaid**

**Total Outside-of-Class**

**Total Outside-of-Class**

**Minimum Outside-of-Class Hours**

105

**Maximum Outside-of-Class Hours**

105

**Total Student Learning**

**Total Student Learning**

**Total Minimum Student Learning Hours**

157.5

**Total Maximum Student Learning Hours**

157.5

**Minimum Units (CB07)**

3

**Maximum Units (CB06)**

3

**Student Learning Outcomes (CSLOs)**

**Upon satisfactory completion of the course, students will be able to:**

- |   |  |
|---|--|
| 1 | apply the criteria used to differentiate among periods of geologic time to points of change in the past and to the present Earth conditions. |
|---|--|

**Course Objectives**

**Upon satisfactory completion of the course, students will be able to:**

- |   |  |
|---|--|
| 1 | describe and give examples of the interactions between the four basic components of the Earth as a global ecosystem - the atmosphere, hydrosphere, lithosphere, and biosphere.   |
| 2 | apply the scientific method to solve geologic problems such as determining the age of the Earth; distinguishing data, observations, and evidence from interpretation.  |
| 3 | explain the immensity of geologic time, define the geologic eras, and place some well-known events in the context of the geologic time scale.  |
| 4 | determine the relative ages of rocks from an outcrop or a diagram by analyzing their relationships, and combine their ages and processes of formation to construct the geologic history of an area; explain how absolute ages of rocks and fossils are determined. |
| 5 | explain the theory of plate tectonics by describing the three types of plate boundaries, the landforms, and processes that occur at each type with reference to appropriate examples.  |
| 6 | apply plate tectonic theory to explain phenomena such as the supercontinent cycle and paleoclimate change, and the formation and evolution of Earth's major features such as oceans, continents, mountain ranges, and volcanoes.                                   |
| 7 | classify and distinguish between igneous, sedimentary, and metamorphic rocks and analyze rock distributions to reconstruct the paleogeography, paleoclimate, and geologic history of an area.  |
| 8 | identify types of fossils and fossilization processes, and demonstrate how fossils are used to determine paleoenvironments, ecology, and relative ages of rocks; explain the importance of the fossil record as evidence of evolution and extinction events.       |
| 9 | compare mass extinctions in the history of life and critique proposed theories for their causes by assessing the evidence.   |

- |    |  |
|----|--|
| 10 | describe the major tectonic events, rock-forming processes, and major events in the evolution of life recorded by fossils for each major geologic time period. |
| 11 | explain the relationships between the supercontinent cycle, paleogeography, and paleoclimate and how these changes affect evolution of life.                   |

## Course Content

### Lecture/Course Content

- (3%) - Earth as a system, principles of Earth history
- (6%) - Geologic time
  - Dating of rocks and fossils using relative dating principles and absolute dating methods
  - Geologic time scale
- (12%) - Earth Materials
  - Minerals, igneous rocks, metamorphic rocks
  - Sedimentary rocks, sedimentary structures, and stratigraphy
- (6%) - Evolution and Mass Extinctions
  - Fossilization processes
  - Taxonomy and cladistics
  - Patterns of evolution and extinction
- (6%) - Plate tectonics, supercontinent cycle, evolution of lithosphere
- (10%) - Precambrian
  - Hadean, Archean, and Proterozoic tectonics
  - Formation of life, evolution of eukaryotes and metazoans
- (16%) - Paleozoic Era
  - Global paleogeography and tectonic events
  - Evolution of invertebrates, fish, amniotes, tetrapods, and terrestrial plants
- (16%) - Mesozoic Era
  - Global paleogeography and tectonic events
  - Evolution of reptiles, dinosaurs, and early mammals
- (14%) - Cenozoic Era
  - Global paleogeography and tectonic events
  - Evolution of mammals into modern species
- (6%) - Origin of primates and humans
- (5%) - Geologic history of southern California

### Laboratory or Activity Content

N/A

## Methods of Evaluation

**Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):**

Written expression  
Skills demonstrations

**Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):**

Essay exams  
Group projects  
Individual projects  
Objective exams  
Oral presentations  
Quizzes  
Research papers  
Skills demonstrations  
Written homework  
Classroom Discussion  
Projects  
Participation  
Reports/Papers/Journals

## Instructional Methodology

### Specify the methods of instruction that may be employed in this course

Class activities  
 Class discussions  
 Collaborative group work  
 Computer-aided presentations  
 Distance Education  
 Field trips  
 Group discussions  
 Guest speakers  
 Internet research  
 Lecture  
 Small group activities

### Describe specific examples of the methods the instructor will use:

- Peer-to-peer instruction via PowerPoint presentations on selected topics in Earth History.
- Think-pair-share exercises on discussion topics in Earth history.

## Representative Course Assignments

### Writing Assignments

- Research and write an informational, illustrated report on a specific extinct organism.
- Write an essay that compares traditional theories with proposed new theories for the origin and purpose of limbs in tetrapod animals, based on new discoveries of fossil and geologic evidence.
- Complete journal exercises to summarize the major events of geologic periods and eons.

### Critical Thinking Assignments

- Analyze the spatial distribution of rock types on a map of North America to determine the paleogeography of the continent at that time.
- Participate in group activity using geologic data to determine the ages of rocks and fossils.
- Prepare essays that require critical analysis of geologic data or proposed theories on topics such as causes of mass extinctions or fossil evidence of evolution in a variety of lifeforms.

### Reading Assignments

- Read the Global Boundary Stratotype Section and Point (GSSP) of the International Commission on Stratigraphy to become familiar with the boundaries between different time zones.
- Read and review current peer-reviewed journal articles on the subject of Earth history or Paleontology.

### Skills Demonstrations

- Evaluate stratigraphic data to determine the sedimentary record and paleogeography of a region.
- Read geologic maps to evaluate the structural geologic history of a region.

## Outside Assignments

### Representative Outside Assignments

- Attend field trips to fossil localities or places of geological interest.
- Research a specific fossil organism and describe its taxonomy, time range, geographic distribution, environment it inhabited, mode of life, and importance in the fossil record.
- Visit a museum of natural history that has fossil or Earth history exhibits.

## Articulation

### C-ID Descriptor Number

GEOL 110

### Status

Approved

**Additional C-ID Descriptor(s)**

C-ID Descriptor(s)	Status
GEOL 111 with GEOL M03L	Approved

**Equivalent Courses at 4 year institutions**

University	Course ID	Course Title	Units
CSU Northridge	GEOL 110	Earth and Life Through Time	3
UC Davis	GEOLOGY 3	History of Life	3
CSU Channel Islands	GEOL 122	Historical Geology	3
UC Santa Barbara	EARTH 3	Principles of Historical Geology (includes lab)	4

**Comparable Courses within the VCCCD**

GEOL V03 - Historical Geology  
 GEOL R114 - Historical Geology

**District General Education****A. Natural Sciences****A2. Physical Science**

Approved

**B. Social and Behavioral Sciences****C. Humanities****D. Language and Rationality****E. Health and Physical Education/Kinesiology****F. Ethnic Studies/Gender Studies****Course is CSU transferable**

Yes

**CSU Baccalaureate List effective term:**

F1995

**CSU GE-Breadth****Area A: English Language Communication and Critical Thinking****Area B: Scientific Inquiry and Quantitative Reasoning****B1 Physical Science**

Approved

**Area C: Arts and Humanities**

**Area D: Social Sciences**

**Area E: Lifelong Learning and Self-Development**

**Area F: Ethnic Studies**

**CSU Graduation Requirement in U.S. History, Constitution and American Ideals:**

**UC TCA**

UC TCA  
Approved

**IGETC**

**Area 1: English Communication**

**Area 2A: Mathematical Concepts & Quantitative Reasoning**

**Area 3: Arts and Humanities**

**Area 4: Social and Behavioral Sciences**

**Area 5: Physical and Biological Sciences**

Area 5A: Physical Science  
Approved

**Area 6: Languages Other than English (LOTE)**

**Textbooks and Lab Manuals**

**Resource Type**

Textbook

**Description**

Levin, Harold, and David King. *The Earth Through Time*. 11th ed., Wiley, 2017.

**Resource Type**

Textbook

**Description**

Stanley, Steven, and John A. Luczaj. *Earth System History*. 4th ed., Macmillan, 2014.

**Resource Type**

Textbook

**Description**

Wicander, Reed and James S. Monroe. *Historical Geology: Evolution of Earth and Life Through Time*. 8th ed., Brooks Cole, 2015.

**Library Resources**

**Assignments requiring library resources**

Research, using the Library's print and online resources, for reports and presentations on subjects in Earth History.

**Sufficient Library Resources exist**

Yes

**Example of Assignments Requiring Library Resources**

Conduct a report on a specific fossil organism, its taxonomy, time range, geographic distribution, environment inhabited, mode of life, and importance in the fossil record.

**Distance Education Addendum****Definitions****Distance Education Modalities**

Hybrid (1%–50% online)  
Hybrid (51%–99% online)  
100% online

**Faculty Certifications**

**Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.**

Yes

**Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities. Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.**

Yes

**Regular Effective/Substantive Contact****Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Regular Asynchronous discussion boards will be used to encourage discussion among students where they can compare and contrast/discuss /identify and analyze elements of course outcomes. Other Discussion boards will also be used for Q&A and general class discussion by students and instructor to facilitate student learning outcomes. E.g. - Students will use the discussion board in Canvas to discuss how the geosphere and hydrosphere influence each other.
E-mail	Email, class announcements and tools such as “Message Students Who” and “Assignment Comments” in Canvas will be used to regularly communicate with all students to clarify class content, remind of upcoming assignments, and provide immediate feedback to students on coursework to facilitate student learning outcomes. Students will be given multiple ways to email instructor through Canvas inbox and faculty provided email account through their own canvas email and school email.
Other DE (e.g., recorded lectures)	Faculty will use a variety of tools and media integrated within the LMS to help students reach SLO such as: o Recorded Lectures, Narrated Slides, Screencasts o Instructor created content o MC Online Library Resources o Canvas Peer Review Tool o Canvas Student Groups (Assignments, Discussions) o 3rd Party (Publisher) Tools (Mastering Geography) o Websites and Blogs o Multimedia (YouTube, Films on Demand, 3CMedia, Google Earth, Earth.nullschool, etc.)



Synchronous Dialog (e.g., online chat) Scheduled synchronous sessions may be organized at the instructor’s discretion to demonstrate skills, address problems, and review asynchronous lectures. Synchronous sessions may also be used for students to work on problem sets together. The platform for such sessions may include ConferZoom or any other approved medium for synchronous dialog.

**Hybrid (51%–99% online) Modality:**

<b>Method of Instruction</b>	<b>Document typical activities or assignments for each method of instruction</b>
Asynchronous Dialog (e.g., discussion board)	Regular Asynchronous discussion boards will be used to encourage discussion among students where they can compare and contrast/ discuss /identify and analyze elements of course outcomes. Other Discussion boards will also be used for Q&A and general class discussion by students and instructor to facilitate student learning outcomes. E.g. - Students will use the discussion board in Canvas to discuss how the geosphere and hydrosphere influence each other.
E-mail	Email, class announcements and tools such as “Message Students Who” and “Assignment Comments” in Canvas will be used to regularly communicate with all students to clarify class content, remind of upcoming assignments, and provide immediate feedback to students on coursework to facilitate student learning outcomes. Students will be given multiple ways to email instructor through Canvas inbox and faculty provided email account through their own canvas email and school email.
Other DE (e.g., recorded lectures)	Faculty will use a variety of tools and media integrated within the LMS to help students reach SLO such as: o Recorded Lectures, Narrated Slides, Screencasts o Instructor created content o MC Online Library Resources o Canvas Peer Review Tool o Canvas Student Groups (Assignments, Discussions) o 3rd Party (Publisher) Tools (Mastering Geography) o Websites and Blogs o Multimedia (YouTube, Films on Demand, 3CMedia, Google Earth, Earth.nullschool, etc.)
Synchronous Dialog (e.g., online chat)	Scheduled synchronous sessions may be organized at the instructor’s discretion to demonstrate skills, address problems, and review asynchronous lectures. Synchronous sessions may also be used for students to work on problem sets together. The platform for such sessions may include ConferZoom or any other approved medium for synchronous dialog.

**100% online Modality:**

<b>Method of Instruction</b>	<b>Document typical activities or assignments for each method of instruction</b>
Asynchronous Dialog (e.g., discussion board)	Regular Asynchronous discussion boards will be used to encourage discussion among students where they can compare and contrast/ discuss /identify and analyze elements of course outcomes. Other Discussion boards will also be used for Q&A and general class discussion by students and instructor to facilitate student learning outcomes. E.g. - Students will use the discussion board in Canvas to discuss how the geosphere and hydrosphere influence each other.
E-mail	Email, class announcements and tools such as “Message Students Who” and “Assignment Comments” in Canvas will be used to regularly communicate with all students to clarify class content, remind of upcoming assignments, and provide immediate feedback to students on coursework to facilitate student learning outcomes. Students will be given multiple ways to email instructor through Canvas inbox and faculty provided email account through their own canvas email and school email.

Other DE (e.g., recorded lectures)	Faculty will use a variety of tools and media integrated within the LMS to help students reach SLO such as: <ul style="list-style-type: none"> <li>o Recorded Lectures, Narrated Slides, Screencasts</li> <li>o Instructor created content</li> <li>o MC Online Library Resources</li> <li>o Canvas Peer Review Tool</li> <li>o Canvas Student Groups (Assignments, Discussions)</li> <li>o 3rd Party (Publisher) Tools (Mastering Geography)</li> <li>o Websites and Blogs</li> <li>o Multimedia (YouTube, Films on Demand, 3CMedia, Google Earth, Earth.nullschool, etc.)</li> </ul>
Synchronous Dialog (e.g., online chat)	Scheduled synchronous sessions may be organized at the instructor's discretion to demonstrate skills, address problems, and review asynchronous lectures. Synchronous sessions may also be used for students to work on problem sets together. The platform for such sessions may include ConferZoom or any other approved medium for synchronous dialog.

## Examinations

### Hybrid (1%–50% online) Modality

On campus  
Online

### Hybrid (51%–99% online) Modality

On campus  
Online

## Primary Minimum Qualification

EARTH SCIENCE

## Review and Approval Dates

### Department Chair

11/02/2021

### Dean

11/02/2021

### Technical Review

11/18/2021

### Curriculum Committee

12/07/2021

### DTRW-I

MM/DD/YYYY

### Curriculum Committee

MM/DD/YYYY

### Board

MM/DD/YYYY

### CCCCO

MM/DD/YYYY

### Control Number

CCC000429403

### DOE/accreditation approval date

MM/DD/YYYY

