GEOL115 : Earth and Life through Time Lab

General Information

Author:	• Corey Jamieson
Course Code (CB01) :	GEOL115
Course Title (CB02) :	Earth and Life through Time Lab
Department:	GEOL
Proposal Start:	Spring 2025
TOP Code (CB03) :	(1914.00) Geology
CIP Code:	(40.0601) Geology/Earth Science, General.
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000564449
Curriculum Committee Approval Date:	06/12/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	06/12/2024
Course Description and Course Note:	GEOL 115 is the laboratory component of GEOL 105, Earth and Life through Time lecture. Activities in this laboratory course cover geologic dating, plate tectonics, stratigraphy, fossils, biological evolution, the planet's origin and the processes that have influenced paleogeography during the past 4.6 billion years.
Justification:	Content Change
Academic Career:	• Credit
Mode of Delivery:	
Author:	
Course Family:	

Academic Senate Discipline

Primary Discipline:	• Earth Science
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

IGETC Area	Area	Status	Approval Date	Comparable Course
5C-Science Laboratory	Science Laboratory	Approved	08/31/2015	No Comparable Course defined.

CSU GE-Breadth Area	Area	Status	Approval Date	Comparable Course
B3-Laboratory Activity	Laboratory Activity	Approved	09/03/2019	No Comparable Course defined.

C-ID	Area	Status	Approval Date	Comparable Course
GEOL	Geology	Approved	02/17/2015	GEOL 110 L - Historical Geology Laboratory

Units and Hours

Summary

Minimum Credit Units (CB07)	1
Maximum Credit Units (CB06)	1
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	0
Total Student Learning Hours	54

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	0	0
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	0
Laboratory	54
Studio	0
Total	54
Course Out-of-Class Hours	
Lecture	0
Laboratory	0
Studio	0
Total	0

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

GEOL105 - Earth and Life through Time

OR

Co-Requisite

GEOL105 - Earth and Life through Time

(GEOL 105 may be taken concurrently)

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory
Methods of Instruction	Discussion
Methods of Instruction	Multimedia
Methods of Instruction	Collaborative Learning
Methods of Instruction	Demonstrations
Methods of Instruction	Presentations
Methods of Instruction	Field Activities (Trips)

Out of Class Assignments

- Field trip reports (e.g., write a report using field data on the history of the Santa Monica Mountains)
- Laboratory reports
- Individual or group projects that create reports or other media (e.g., a group presentation on data collection and analysis from a field trip to the Santa Monica Mountains)

Methods of Evaluation	**Rationale**

Other	Attendance to lab and performance of assigned work should constitute some portion of student's final grade
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Midterm exam including essay or short answer questions
Exam/Quiz/Test	Final exam including essay or short answer questions
Project/Portfolio	Instructor directed student projects for evaluation by peers and/or the instructor

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Ossian Clair	Insights: A Laboratory Manual for Historical Geology	Kendall Hunt	2015	9780757581243

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Apply the scientific method to identify geologic samples and to evaluate geologic problems from the analysis of maps, cross sections, stratigraphic columns, and data sets.

Visually identify common fossils, minerals and rocks.

Practically apply concepts related to the fossil record including index fossils, bias in the fossil record, cladistics and collection methods.

Practically apply understanding of ecological systems, biological evolution, and extinction concepts to interpret the rock record.

Apply concepts related to plate tectonics, especially to reconstruct past continent and ocean basin configurations globally and locally.

Practically apply concepts about the supercontinent cycle to understand the distribution of rock formations and mountain belts.

Use paleoclimatic indicators such as fossil distributions, oxygen isotopes, paleomagnetism or other data to reconstruct paleoclimatic conditions and examine broad climatic trends over time on Earth.

Practically apply principles underlying radiometric dating of geological samples.

Explain and use the principles underlying other methods for dating geological samples including magnetostratigraphy and biostratigraphy.

Interpret sequences of geologic events from cross sections, maps, or stratigraphic sequences using dating principles and understanding of how rocks form.

Communicate complex course concepts effectively in writing and diagrams.

Use the Geologic Time Scale and understand its basis.

SLOs

Interpret the geologic rock record using the scientific method to analyze stratigraphic records and apply dating principles.

Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
GEOL Geology AS-T Degree	Apply reasoning to evaluate hypotheses and theories; analyze, interpret, and present research evidence
	Develop foundational knowledge to be able to use evidence-based approaches to explore and evaluate global issues such as natural disaster preparation, energy, resources, and climate
GEOL Geology	analyze, interpret, and present research evidence.
	apply reasoning to evaluate hypotheses and theories
	knowledge and skills offered to develop foundational knowledge to be able to use evidence-based approaches to explore and evaluate global issues such as natural disaster preparation, energy, resources, and climate

Practically apply concepts related to the fossil record including biostratigraphy to the study of evolution. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
GEOL Geology AS-T Degree	Apply reasoning to evaluate hypotheses and theories; analyze, interpret, and present research evidence
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GEOL Geology	analyze, interpret, and present research evidence.
	apply reasoning to evaluate hypotheses and theories

Communicate plate tectonic processes and course concepts effectively in writing, maps, and diagrams. Expected Outcome Performance: 70.0

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Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

No value

Laboratory/Studio Content

Identification of Earth's Materials (15 Hours)

- Internal layers and their properties
- Visual identification of faults, folds, joints and other geologic structures and understand their formation
- Identify geologic subdivisions of continents including shield, craton, orogenic provinces, rifts, volcanic arcs and terranes from maps or other imagery
- Visually identify important landscape features including basic types of volcanoes and examine any correlation to their tectonic or geographic setting

Earth Structures (4.5 Hours)

- Internal layers and their properties
- Visual identification of faults, folds, joints and other geologic structures and understand their formation
- Identify geologic subdivisions of continents including shield, craton, orogenic provinces, rifts, volcanic arcs and terranes from maps or other imagery
- Visually identify important landscape features including basic types of volcanoes and examine any correlation to their tectonic or geographic setting

Plate Tectonics (4.5 Hours)

- Use evidence and data to reconstruct past configurations of continents and ocean basins
- Use data such as maps, data sets and imagery on crustal evolution and deformation to examine continental growth, seafloor cycling, the supercontinent cycle and orogenesis

Fossils (6 Hours)

- Examine and identify modes of fossilization
- Identify major groups of fossils
- Classify fossils
- Construct and interpret a cladogram
- Practically apply ecological principles to interpret past ecosystems from the fossil record
- Examine the basis for biological evolution in the fossil record
- Examine the fossil record to understand extinction concepts including background and mass extinction

Dating Methods (6 Hours)

- Principle of uniformitarianism in contrast to catastrophism
- Use and basis of the Geologic Time Scale
- Use principles of relative dating to interpret geologic cross sections and stratigraphic sequences
- Apply biostratigraphic and magnetostratigraphic principles to solve geologic problems
- Practically apply concepts of radiometric dating of geologic materials

Stratigraphy and Maps (9 Hours)

- Read and interpret geologic maps
- Read and interpret geologic cross sections
- Read and interpret stratigraphic sequences
- Use basic principles of stratigraphy including unconformities, intrusive contacts and fault contacts to interpret sequences of geologic events
- Examine and identify sedimentary structures including bedding, crossbedding, graded bedding, mudcracks and raindrop impressions
- Interpret sedimentary rock sequences using lithofacies and biofacies concepts
- Identify transgressions and regressions of sea level from stratigraphic sequences

Paleogeographic Reconstruction (9 Hours)

- Apply the principles and concepts of historical geology to reconstruction of the paleogeography of selected locations and time periods
- Analyze and evaluate paleoclimatic data sets to examine broad and recent paleoclimatic trends

Total Hours: **54**

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

Yes

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

Natural Sciences

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

No Value

If additional resources are needed, add a brief description and cost in the box provided.

No Value