

Modesto Junior College
Course Outline of Record Report
 02/22/2023

GEOL185 : Geology of California's Volcanoes

General Information

Faculty Author:	<ul style="list-style-type: none"> Garry Hayes Richmond, Jennifer
Attachments:	ASSIST CAS GEOL 185.pdf GEOL-185_SU15.pdf GEOL 185.pdf HTML Source Editor before edits.pdf
Course Code (CB01) :	GEOL185
Course Title (CB02) :	Geology of California's Volcanoes
Department:	Earth Science
Proposal Start Date:	MJC Fall 2024
TOP Code (CB03) :	(1914.00) Geology
CIP Code:	(40.0601) Geology/Earth Science, General
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Is Distance Education Course:	No
Course Control Number (CB00) :	CCC000560103
Curriculum Committee Approval Date:	10/21/2014
Board of Trustees Approval Date:	12/10/2014
External Review Approval Date:	09/01/2015
Course Description:	Application of the principles of geology to interpret rock sequences and evaluate the potential for volcanic activity in the Cascades Range and Modoc Plateau region of Northern California. Requires ability to work and study under rigorous conditions.
Proposal Type:	Mandatory Revision
	Course is being updated for periodic review.
Faculty Author:	No value

Discipline(s)

Master Discipline Preferred:	<ul style="list-style-type: none"> Earth Science
Bachelors or Associates Discipline Preferred:	No value

Course Coding

Basic Skill Status (CB08)

Course is not a basic skills course.

Allow Students to Gain Credit by Exam/Challenge

Rationale For Credit By Exam/Challenge

No value

Course Support Course Status (CB26)

Course is not a support course

Course Special Class Status (CB13)

Course is not a special class.

Repeatability

0

Type of Repeat

No value

Grading

- A-F or P/NP

Course Prior To College Level (CB21)

Not applicable.

Allow Students To Audit Course

Associated Programs

Course is part of a program (CB24)

Associated Program

No value

Award Type

No value

Active

Transferability & Gen. Ed. Options

Course General Education Status (CB25)

Y

Transferability (CB05)

Transferable to CSU only

Transferability Status

Approved

Field Trips

Field trips are required.

- Yes
- No
- Maybe

Comparable Lower-Division Courses at UC/CSU v2

Courses numbered 100-299 require identification two comparable lower-division courses from CSU or UC from the current institutional catalog (not schedule). At least one course from CSU, and if requesting/maintaining UC general elective transfer, one course from UC. Please identify the CSU campus offering this course. (Term type is indicated in parentheses)

CSU, Sacramento (SEM)

CSU Catalog Year

2022-2023

Provide the CSU course code (e.g., ENGL 1A) from the most current official Catalog (not schedule). Curriculum changes each year.

Geology 184

CSU Course Title

Geological Field Trip

Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?

No

Select the institution that offers the second comparable course from CSU or UC. If seeking or maintaining UC transferability, you must supply a UC campus. (Term type is indicated in parentheses)

Humboldt State (SEM)

CSU/UC Catalog Year

2021-2022

Provide the CSU course code (e.g., ENGL 1A) from the most current official Catalog (not schedule). Curriculum changes each year.

Geology 110

CSU Course Title

Field Geology of the Western United States

Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?

No

Select the institution that offers the third comparable course from CSU or UC. If seeking or maintaining UC transferability, you must supply a UC campus if not already provided above. (Term type is indicated in parentheses)

No Value

CSU/UC Catalog Year

No Value

Provide the CSU/UC course code (e.g., ENGL 1A) from the current official Catalog (not schedule). Curriculum changes each year.

No Value

CSU Course Title

No Value

Does course-to-course or lower-division, "major prep" articulation with this course exist for this academic year?

No Value

Units and Hours

Summary

Minimum Credit Units (CB07)	2
Maximum Credit Units (CB06)	2
Total Course In-Class (Contact) Hours	36
Total Course Out-of-Class Hours	72
Total Student Learning Hours	108

Credit / Non-Credit Options

Course Credit Status (CB04)	Course Non Credit Category (CB22)	Non-Credit Characteristic
Credit - Degree Applicable	Credit Course.	No Value

Course Classification Code (CB11)	Funding Agency Category (CB23)	Cooperative Work Experience Education Status (CB10)
Credit Course.	Not Applicable.	<input type="checkbox"/>
<input type="checkbox"/> Variable Credit Course		

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	0	0
Laboratory Hours	0	0
Activity Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	52.5
Course In-Class (Contact) Hours	
Lecture	0
Laboratory	0
Activity	36
Total	36
Course Out-of-Class Hours	
Lecture	0
Laboratory	0
Activity	72
Total	72

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
Discussion	Activity	2	4

Prerequisites, Corequisites, and Advisories

Advisory

Before enrolling in this course, students are strongly advised to be enrolled in or have successfully completed any geology or earth science course, or get consent of the instructor.

Requisite Skills

Requisite Skills	Description
Identify basic rocks and minerals.	No Value

Specifications

Methods of Instruction

Methods of Instruction (Typical)

INSTRUCTIONAL METHODS

MOI	
	<ol style="list-style-type: none"> 1. Lectures, demonstrations and discussions 2. Field trips to geologically significant sites 3. Demonstrations of geological problem-solving techniques by both instructor and student

Assignments (Typical)

Evidence of Workload for Course Units (Quantity)

1. A pre-trip project and poster presentation on a park or significant geologic locality to be visited during the field excursion.
2. Worksheets and problem-solving exercises for each day of the field excursion.
3. A notebook of field observations.
4. A post-trip final examination.

Evidence of Critical Thinking (Quality)

1. Upon arrival at all field localities, students will observe rock outcrops, identify the rocks exposed there, and explain how the rocks might have formed.
2. Students will observe and record the field relationships in an outcrop (faults, folds, or unconformities), and construct a model or sequence of events that led to the formation of the outcrop.
3. Upon arrival at a field locality, students will be presented with some hypothetical alterations that could be made on the landscape (urban development, building a dam, designing a resort complex), and students will model possible responses by local geological processes with possible negative or positive consequences.
4. Sample questions:

1. Here at Petroglyph Point in Lava Beds National Monument, we can see a high cliff composed of angular layers. Carefully observe the layers and their composition, and determine whether they have been tilted or are in their original configuration. What kind of process can you propose that would explain the presence of the cliff (the outcrop is a hydrovolcanic tuff cone that was later eroded by wave action on a now dry lake).
2. At this lava flow on the flank of Medicine Lake Highland, we can see several dozen holes in the lava, a few inches to several feet across and as much as ten feet deep. Carefully observe these holes and suggest a possible origin (these are tree molds, caused when a lava flow entered a forest and flowed around the trees, but kept their shape before they burned away).
3. At this location on the southern flank of Mt. Shasta, we can see rocks on the volcano that have been exposed by erosion. Is there any evidence in the rock exposures that show the possibility of more than one volcanic edifice at this location? Sketch the relationships of the rocks and the location of any other possible volcanic cones (at least three ancient cones are visible from the locality).

Methods of Evaluation (Typical)	Rationale			
FORMATIVE EVALUATION	<ol style="list-style-type: none"> 1. Student-generated reports on specific localities in the field area 2. Written and oral exams at field localities 3. Group discussion of specific problems and analysis of rock exposures 			
SUMMATIVE EVALUATION	<ol style="list-style-type: none"> 1. Submission of field journals following the field trip 2. Submission of assigned problems and worksheets after the field trip 3. Final examination after the field trip 			
Equipment				
No Value				
Textbooks				
Author	Title	Publisher	Date	ISBN
David Alt, Donald Hyndman	Roadside Geology of Northern and Central California (2nd Ed.)	Mountain Press Publishing Company	2016	0878424091
Other Instructional Materials				
No Value				

Textbook Exceptions and Supplementals

Title of Other Material

No Value

Who prepared or published this supplemental material?

No Value

Publish date

No Value

Are any of the textbook editions cited on this proposal considered "Classics" (typically with a publish date more than 5 years old)?

- Yes
 No
 Unsure

If yes, explain why this older text is used in the course. Reasons should focus on content only.

Field guides are not typically revised as often as traditional textbooks. The content is geologically current.

Materials Fees v2

Is there a materials fee for this course?

No

Provide a cost breakdown for all items provided for a materials fee. Each item must become "tangible personal property" of student upon payment of the fee and completion of the course.

No Value

Explain how these materials are related to the Student Learning Objectives for the course.

No Value

Explain how the materials have continuing value outside the classroom.

No Value

Is the amount of the material the student receives commensurate with the fee paid AND with the amount of material necessary to achieve the Student Learning Objectives for the course AND provided as the district's actual cost?

No Value

If no is checked, explain why.

No Value

If the district is NOT the only source of these materials, explain why the students have to pay a fee to the district rather than supply the materials themselves. (Cost savings? Health/Safety? Consistency/Uniformity?)

No Value

Learning Outcomes and Objectives

Course Objectives

Explain the origin and nature of Cascade-style volcanism and identify the different kinds of volcanoes found in the Cascades and Modoc Plateau.

Describe the Cascadia subduction zone and the tectonic processes active in the Coast Ranges and interior regions of Northern California.

Describe the process of backarc spreading and the origin of the basalt flows of the Modoc Plateau and Medicine Lake Highland in Northern California.

Assess the volcanic hazards associated with volcanic centers at Mt. Shasta, Medicine Lake Highland, Lassen Peak, and Crater Lake.

Identify the igneous (volcanic and plutonic), and metamorphic rocks found in the Cascades, Modoc Plateau, and Klamath Mountain Provinces.

Explain the role of geology in the conduct of the Modoc Indian War of 1872-73 at Lava Beds National Monument.

CSLOs

Identify the characteristic rock and mineral specimens, volcanic landforms, and geologic structures found in the Cascades Range and Modoc Plateau of California.

Expected SLO Performance: 0.0

Geology
GEOLOGY,
A.S.-T

Analyze and interpret stratigraphic columns, geologic profiles, and geologic and topographic maps to determine the geological and structural history of a given region.

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Analyze and interpret stratigraphic columns, geologic profiles, and geologic and topographic maps to determine the geological and structural history of a given region.

Analyze the geological hazards of a given region based on identification of the tectonic and erosional processes acting on the landscape.

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Identify the rock-forming minerals, ore minerals, igneous rocks, sedimentary rocks, and metamorphic rocks, utilizing the physical and chemical properties of each.

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ISLOs
Core ISLOs

Students will develop critical and analytical thinking abilities, cultivate creative faculties that lead to innovative ideas, and employ pragmatic problem-solving skills. Students will be able to: Analyze differences and make connections among intellectual ideas, academic bodies of knowledge and disciplinary fields of study. Develop and expand upon innovative ideas by analyzing current evidence and praxis, employing historical and cultural knowledge, engaging in theoretical inquiry, and utilizing methods of rational inference. Utilize the scientific method and solve problems using qualitative and quantitative data. Demonstrate the ability to make well-considered aesthetic judgments.

Students will develop skills that aid in lifelong personal growth and success in the workplace. Students will be able to: Identify and assess individual values, knowledge, skills, and abilities in order to set and achieve lifelong personal, educational, and professional goals. Practice decision-making that builds self-awareness, fosters self-reliance, and nourishes physical, mental, and social health. Apply skills of cooperation, collaboration, negotiation, and group decision-making. Exhibit quality judgment, dependability, and accountability while maintaining flexibility in an ever-changing world.

Students will develop skills to effectively search for, critically evaluate, and utilize relevant information while demonstrating technological literacy. Students will be able to: Effectively access information and critically evaluate sources of information. Analyze, synthesize and apply information practically and ethically within personal, professional and academic contexts. Identify, utilize and evaluate the value of a variety of technologies relevant to academic and workplace settings.

Students will generate and develop capabilities for creative expression and effective communication. Students will be able to: Articulate ideas through written, spoken, and visual forms appropriately and effectively in relation to a given audience and social context. Utilize interpersonal and group communication skills, especially those that promote collaborative problem-solving, mutual understanding, and teamwork. Mindfully and respectfully listen to, engage with and formally respond to the ideas of others in meaningful ways. Plan, design, and produce creative forms of expression through music, speech, and the visual and performing arts.

Model the geologic history of the Cascades Range and Modoc Plateau volcanic provinces based on field observations of rock and structure relationships.

Expected SLO Performance: 0.0

<p><i>Geology</i> GEOLOGY, A.S.-T</p>	<p>Analyze and interpret stratigraphic columns, geologic profiles, and geologic and topographic maps to determine the geological and structural history of a given region.</p>
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	<p>Identify the rock-forming minerals, ore minerals, igneous rocks, sedimentary rocks, and metamorphic rocks, utilizing the physical and chemical properties of each.</p>
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<p><i>ISLOs</i></p>	<p>Students will develop critical and analytical thinking abilities, cultivate creative faculties that lead to innovative ideas, and employ pragmatic problem-solving skills. Students will be able to: Analyze differences and make connections among intellectual ideas, academic bodies of knowledge and disciplinary fields of study. Develop and expand upon innovative ideas by analyzing current evidence and praxis, employing historical and cultural knowledge, engaging in theoretical inquiry, and utilizing methods of rational inference. Utilize the scientific method and solve problems using qualitative and quantitative data. Demonstrate the ability to make well-considered aesthetic judgments.</p>
<p>Core ISLOs</p>	<p>Students will develop skills that aid in lifelong personal growth and success in the workplace. Students will be able to: Identify and assess individual values, knowledge, skills, and abilities in order to set and achieve lifelong personal, educational, and professional goals. Practice decision-making that builds self-awareness, fosters self-reliance, and nourishes physical, mental, and social health. Apply skills of cooperation, collaboration, negotiation, and group decision-making. Exhibit quality judgment, dependability, and accountability while maintaining flexibility in an ever-changing world.</p>
	<p>Students will develop skills to effectively search for, critically evaluate, and utilize relevant information while demonstrating technological literacy. Students will be able to: Effectively access information and critically evaluate sources of information. Analyze, synthesize and apply information practically and ethically within personal, professional and academic contexts. Identify, utilize and evaluate the value of a variety of technologies relevant to academic and workplace settings.</p>
	<p>Students will generate and develop capabilities for creative expression and effective communication. Students will be able to: Articulate ideas through written, spoken, and visual forms appropriately and effectively in relation to a given audience and social context. Utilize interpersonal and group communication skills, especially those that promote collaborative problem-solving, mutual understanding, and teamwork. Mindfully and respectfully listen to, engage with and formally respond to the ideas of others in meaningful ways. Plan, design, and produce creative forms of expression through music, speech, and the visual and performing arts.</p>

Content

Course Content

1. Geologic Provinces
 1. Great Valley
 2. Klamath Mountains
 3. Cascades Range
 4. Modoc Plateau
 5. Sierra Nevada
2. Rocks and Minerals
 1. Plutonic rocks: Castle Crags
 2. Volcanic rocks: Mt. Shasta, Crater Lake, Lava Beds National Monument, Medicine Lake Highlands, Lassen Volcanic National Park
 3. Metamorphic rocks: Castle Crags State Park
3. Geologic Structures
 1. Convergent boundary: Cascades magmatic arc, Klamath terranes
 2. Faults and folds: Klamath Lake graben, Tule Lake graben
 3. Volcanoes: Mt. Shasta, Crater Lake, Medicine Lake Highlands, Lassen Volcanic National Park
4. Geologic History
 1. Mesozoic Era: Castle Crags State Park, Sierra Nevada Batholith
 2. Cenozoic Era: Great Valley, Cascades arc volcanism
5. Environmental Geology
 1. Volcanic hazards assessment: Mt. Shasta, Crater Lake, Medicine Lake Highlands, Lassen Volcanic National Park
 2. Native Americans: Modoc Indian War of 1872-73, Lava Beds National Monument

Recommended Course Content

Recommended Course Content

No Value

Recommended Lab Content

No Value

Distance Education (DE) Addendum 2.0

Is this course being proposed for Distance Education? If so, select Yes below from the list in the dropdown and complete the questions. If not, select No and skip all questions.

- No

Modality Types

No Value

Methods of Instruction: Hybrid Live

No Value

If Other is selected for Methods of Instruction - Hybrid Live, please describe.

No Value

Describe how the Methods of Instruction - Hybrid Live selected will allow students to meet the course's learning outcomes.

No Value

Describe what parts of the course are done face-to-face and what parts are done online.

No Value

Describe how the Methods of Instruction - Hybrid Live selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: <https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/>)

No Value

Typical Methods of Instruction: Hybrid Anytime

No Value

If Other is selected for Methods of Instruction - Hybrid Anytime, please describe.

No Value

Describe how the Methods of Instruction - Hybrid Anytime selected will allow students to meet the course's learning outcomes.

No Value

Describe what parts of the course are done face-to-face and what parts are done online.

No Value

Describe how the Methods of Instruction - Hybrid Anytime selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: <https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/>)

No Value

Typical Methods of Instruction: Online Live OR Online Live (ECO)

No Value

If Other is selected for Methods of Instruction - Online Live OR Online Live (ECO), please describe.

No Value

Describe how the Methods of Instruction - Online Live OR Online Live (ECO) selected will allow students to meet the course's learning outcomes.

No Value

Describe how the Methods of Instruction - Online Live OR Online Live (ECO) selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: <https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/>)

No Value
Typical Methods of Instruction: Online Anytime OR Online Anytime (ECO)
No Value
If Other is selected for Methods of Instruction - Online Anytime OR Online Anytime (ECO), please describe.
No Value
Describe how the Methods of Instruction - Online Anytime OR Online Anytime (ECO) selected will allow students to meet the course's learning outcomes.
No Value
Describe how the Methods of Instruction - Online Anytime or Online Anytime (ECO) selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/)
No Value
Typical Methods of Instruction: Hyflex
No Value
If Other is selected for Methods of Instruction - Hyflex, please describe.
No Value
Describe how the Methods of Instruction - Hyflex selected will allow students to meet the course's learning outcomes.
No Value
Describe how the Methods of Instruction - Hyflex selected will be presented in an accessible way (Title 5 §55206). For information about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/)
No Value
Typical Methods of Instruction: Teleclass
No Value
If Other is selected for Methods of Instruction - Teleclass, please describe.
No Value
Describe what parts of the course are done face-to-face and what parts are done online.
No Value
Describe how the Methods of Instruction - Teleclass selected will be presented in an accessible way (Title 5 §55206). For information

about accessibility standards in online classes, see the OEI Rubric, Section D (Copy this link and paste in a separate browser to visit OEI Rubric: <https://onlinenetworkofeducators.org/course-design-academy/online-course-rubric/>)

No Value

Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) Methods and Examples: Select the methods below that ensure Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) will take place among students and among students and faculty (Title 5 §55204) by being initiated by the instructor, regular and frequent, and meaningful or of an academic nature. Select the methods of Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) that may be used.

No Value

Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) Among students: How will students interact with each other in the course? What methods will be used? Check all that apply.

No Value

Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) Among students and faculty: How will faculty interact with students in the course? What methods will be used? Check all that apply.

No Value

Other Methods of Regular Substantive Interaction (RSI) (Formerly referred to as Regular Effective Contact, or REC) among students and among students and faculty. Please describe and provide example(s).

No Value

Checkoff List 2.0

Does this proposal meet the five development criteria as stated in the CCCC Program and Course Approval Handbook (PCAH)?

Yes

Are new library resources needed for this course?

No new library resources are needed for this course.

Do you have any special concerns/needs or comments regarding library resources? If yes, describe.

No Value

Have you included documentation, if necessary, by uploading file(s) in the Cover Info tab? For example, advisory committee meeting minutes, C-ID descriptor, etc.)

No documentation is necessary

If this is a new course, have you attached the completed class capacity form, with required approvals, and uploaded the file in the Cover Info tab?

No, this is not a new course

If you are requesting Distance Education, did you complete the DE Addendum 2.0 tab?

Not requesting DE

If requesting transferability, have you completed the comparable courses field?

Yes

Add any additional comments you want reviewers to read.

No Value