



PROGRAM REVIEW – CURRICULUM REVIEW
2015-16

Geology

Courses with CID Designation

Course Name	CID #	CID Name	COR Effective Term
GEOL G106	GEOL 121	Earth Science with Lab	F2014
GEOL G110	GEOL 101	Physical Geology with Lab	S2012
GEOL G120	GEOL 111	Historical Geology with Lab	F2014

Dual Listed Courses

Course Name	Dual Listed

List of Active Courses offered or not offered in the last 3 years

Course Name	2012-2013			2013-2014			2014-2015		
	Summer	Fall	Spring	Summer	Fall	Spring	Summer	Fall	Spring
GEOL G105		X	X		X	X		X	X
GEOL G106			X			X		X	
GEOL G110		X	X		X	X		X	X
GEOL G110L									
GEOL G120						X			X



PROGRAM REVIEW – SLO ASSESSMENTS

2015-16

Geology

**Assessment status reflects assessments between Fall 2013 through Summer 2015*

Assessment status for courses with active cSLOs

Course Name	# of cSLOs	# of cSLOs Assessed	Status
GEOL G105	5	3	↔
GEOL G106	5	1	↔
GEOL G110	5	2	↔
GEOL G110L	5	3	↔
GEOL G120	9	2	↔

- ↑ Fully assessed
- ↔ Partially assessed
- ↓ No assessment

Courses with cSLOs that still need to be assessed

Course Name	cSLO #	cSLO
GEOL G105	cSLO 1	List, in order, major advances of life on Earth and outline the general patterns of change (life, climate, continents) through time.
GEOL G105	cSLO 5	Explain the processes which have formed and continue to effect the Earth.
GEOL G106	cSLO 1	Explain how the Earth's internal processes occur, how the Earth's surface processes occur, how plate tectonics occurs and the results of plate tectonics.
GEOL G106	cSLO 2	Relate how life on earth has evolved over time; how mineral resources have formed and how their extraction and distribution affects humanity; how the Earth's oceans have originated, evolved, and are studied and how the Earth's atmosphere has originated, evolved, and is studied.
GEOL G106	cSLO 3	Describe the occurrence and identification of common minerals and rocks; the origin and nature of geologic hazards: earthquakes, volcanoes, etc.; the manner in which the history of the Earth and life on Earth occurred; and the manner in which plate tectonics has been responsible for the structure of the Earth's crust and mountain building.
GEOL G106	cSLO 5	Relate our solar system with planetary science and astronomy to processes, which formed the Earth and made it unique.
GEOL G110	cSLO 3	Identify and name unknown minerals, and rocks through employing physical properties such as color, hardness, cleavage, streak, and special properties. Understand the differences between igneous, sedimentary, and metamorphic rocks. Distinguish between rocks based on mineral composition and texture.
GEOL G110	cSLO 4	Use Geographical Information Systems (GIS). Examine topographic and geologic maps. Identify locations, distances, and elevations on standard U.S.G.S. quadrangle maps. Be able to draw a topographic profile and understand slope and gradient of terrain. Identify geologic structures on geologic maps and understand dip and strike of geological units.
GEOL G110	cSLO 5	Identify landforms resulting from glaciers and glaciation periods. Understand the continuous aspects of climate change throughout the earth's history; climate with and without glaciers and ice caps. Recognize how warm and cold climates result in formation of unique landscapes, fossil fuel deposits, and fossil fauna on Earth.
GEOL G110L	cSLO 4	Use Geographical Information Systems (GIS). Examine topographic and geologic maps. Identify locations, distances, and elevations on standard U.S.G.S. quadrangle maps. Be able to draw a topographic profile and understand slope and gradient of terrain. Identify geologic structures on geologic maps and understand dip and strike of geological units.
GEOL G110L	cSLO 5	Identify land forms resulting from glaciers and glaciation periods. Understand the continuous aspects of climate change throughout the earth's history; climate with and without glaciers and ice caps. Recognize how warm and cold climates result in formation of unique landscapes, fossil fuel deposits, and fossil fauna on Earth.
GEOL G120	cSLO 1	Employ the scientific method from a theoretic prospective from lecture material and in an applied aspect from laboratory experiments.

Courses with cSLOs that still need to be assessed

Course Name	cSLO #	cSLO
GEOL G120	cSLO 2	Analyze the geologic development of the Earth through geologic time, and the impact of plate tectonics on land forms.
GEOL G120	cSLO 4	Illustrate the formation of continents and ocean basins, and the geomorphology of fluvial, glacial, eolian process on land forms.
GEOL G120	cSLO 6	Discuss the impacts of the San Andreas Fault on extension tectonics, and the development of the Basin and Range and the current California coastal topography.
GEOL G120	cSLO 7	Explain the formation of various mineral resources, and the formation of fossil fuels.
GEOL G120	cSLO 8	Explore paleoclimatology, paleogeographic reconstruction and mass extinctions in relation to tectonic settings, geography, and ecological environments throughout the history of the Earth.
GEOL G120	cSLO 9	Define the development of various land forms, unconformities, and geologic strata, and how they develop as a sequence of geological events.

Courses Assessed and their Action Plans

Course Name	cSLO #	Semester Assessed	Action Plans
GEOL G105	cSLO 2	2013 - 2014 (Spring 2014)	The assessment shows the importance of adequate time for group interaction in facilitating mastery of rock and mineral specimens. Future classes will allow for even more time to identify additional specimens and for additional group exercises opportunities (e.g. earthquake epicenter exercise, topographic map identification).
GEOL G105	cSLO 3	2014 - 2015 (Spring 2015)	A different SLO testing strategy that I will probably use next time for this class is generating practical cause-effect questions that will test the students' ability to identify and apply geologic principles—which will demonstrate the relevance of studying General Geology.
GEOL G105	cSLO 4	2014 - 2015 (Spring 2015)	A different SLO testing strategy that I will probably use next time for this class is generating practical cause-effect questions that will test the students' ability to identify and apply geologic principles—which will demonstrate the relevance of studying General Geology.
GEOL G106	cSLO 4	2014 - 2015 (Fall 2014)	A different SLO testing strategy that I will probably start next semester is using earth science application questions to test ability to define relevance of earth science principles. Possible topics might include: how local ocean currents impact dispersion of treated urban sewage that is dumped in the ocean, impact of seawater desalination on local biological systems, seawater intrusion into municipal aquifers. Practical applications of earth science hold the interest of students.
GEOL G106	cSLO 4	2014 - 2015 (Spring 2015)	A different SLO testing strategy that I will probably start next semester is using earth science application questions to test ability to define relevance of earth science principles. Possible topics might include: how local ocean currents impact dispersion of treated urban sewage that is dumped in the ocean, impact of seawater desalination on local biological systems, seawater intrusion into municipal aquifers. Practical applications of earth science hold the interest of students.
GEOL G110	cSLO 1	2014 - 2015 (Fall 2014)	Greater cause and effect and the physical forces responsible for geologic formations. I show slides of geologic structures, however a dry erase board illustration with arrows showing the forces provides a greater understanding to students.
GEOL G110	cSLO 1	2014 - 2015 (Fall 2014)	Greater cause and effect and the physical forces responsible for geologic formations. I show slides of geologic structures, however a dry erase board illustration with arrows showing the forces provides a greater understanding to students. The evening section of geology 110-2 had lower results. This was in part to missed classes by the students and working adults attending an evening class after a work day.
GEOL G110	cSLO 2	2013 - 2014	Practical applications of geology hold the interest of students. Several students ask

Courses Assessed and their Action Plans

Course Name	cSLO #	Semester Assessed	Action Plans
		(Spring 2014)	questions concerning contamination of ground water be the cyanide leaching process. Environmental factors seem to aid in the comprehension and interest of students.
GEOL G110L	cSLO 1	2014 - 2015 (Fall 2014)	Greater cause and effect and the physical forces responsible for geologic formations. I show slides of geologic structures, however a dry erase board illustration with arrows showing the forces provides a greater understanding to students.
GEOL G110L	cSLO 1	2014 - 2015 (Fall 2014)	Greater cause and effect and the physical forces responsible for geologic formations. I show slides of geologic structures, however a dry erase board illustration with arrows showing the forces provides a greater understanding to students. The evening section of geology 110-2 had lower results. This was in part to missed classes by the students and working adults attending an evening class after a work day.
GEOL G110L	cSLO 2	2014 - 2015 (Fall 2014)	Relate abstract minerals such as Muscovite, Bauxite and Amphiboles to real uses. Muscovite plates are used in computer memory and memory cards. The evening section of geology 110-2 had lower results. This was in part to poor attendance by the students and working adults attending an evening class after a work day. We need to change the set-up of evening classes to have greater student activity.
GEOL G110L	cSLO 2	2014 - 2015 (Fall 2014)	Relate abstract minerals such as Muscovite, Bauxite and Amphiboles to real uses. Muscovite plates are used in computer memory and memory cards. The evening section of geology 110-2 had lower results. This was in part to missed classes by the students and working adults attending an evening class after a work day. We need to change the set-up of evening classes to have greater student activity,
GEOL G110L	cSLO 3	2013 - 2014 (Spring 2014)	A potential way to improve student understanding in the future would be to introduce mineral and rock identification games, such as mineral bingo. Since mineral and rock identification work best as a comparative analysis it is subject best learned through trial and error of testing many different samples together. Small groups of students or individual students will be given a tray of minerals and bingo cards with mineral or rock names. Students would then be asked to place their unknown samples on their bingo cards based on questions asked of them. The intent here would be to further solidify concepts students have learned and practiced, while engaging them in a fun activity.
GEOL G120	cSLO 3	2013 - 2014 (Spring 2014)	Shortfall of this lab was the lack of the Phylum Bryozoa. These are important Pre Cambrian pre reef organisms, which later evolved into reef building organisms. It was apparent due to a lack of these organisms in our fossil collection that students were not exposed to Bryozoan variations. It is within the plans to obtain a collection of these fossils to aid in the identification and exposure of Bryozo fossils
GEOL G120	cSLO 5	2013 - 2014 (Spring 2014)	Continued relating topics as reinforces to learning. Large portions of education consists of linear learning. We need to look at interactions, feedback loops and reinforces positive and negative to Earth systems. Not all mass extinction events resulted from meteorite impacts. There are complex factors, which resulted in six mass extinction events throughout the history of life on Earth.