



**2014-2015 CSCI EETF Assessment Year End Report, June, 2015**

Program Name(s)	EETF Faculty Rep	Department Chair
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[NOTE: Items A, B, C, and D are identical to your Page 2 on your Annual Report for CAPR. Please simply cut and paste from there. Item E is unique to the CSCI EETF.]

**A. Program Student Learning Outcomes**

Students graduating with a B.S. or B.A. in Geology from Cal State East Bay will be able to:

1. identify and classify geologic materials, including minerals, rocks, and fossils, and know their material and/or biological properties or characteristics.  
(Geologic Materials)
2. collect, organize, and analyze qualitative and quantitative data from both field and laboratory investigations such as lithostratigraphic and biostratigraphic correlations, geologic maps, geophysical surveys, cross-sections, soil tests, and geochemical and groundwater quality analyses. (Data Collection and Analysis)
3. synthesize, interpret and critically analyze geologic datasets (2D and 3D) and reports using discipline-specific methods, techniques, and equipment. (Interpretation)
4. critically analyze geological and environmental issues through the evaluation of scientific literature, and present their positions clearly and persuasively in written and oral form. (Communication)
5. understand geologic time, evolution, Earth's place in the Universe, and global-scale processes such as plate tectonics, earth systems interactions, and climate change.  
(Geologic Time)

See attached PLO-ILO alignment matrix and curriculum map showing alignment of Program Learning Outcomes and CSUEB Institutional Learning Outcomes.

## B. Program Student Learning Outcome(s) Assessed

1) Geologic Materials, 4) Communication

## C. Summary of Assessment Process

The assessments presented here are derived from both laboratory-based and written assignments. The department has developed rubrics that are used as guides for assessment of specific learning outcomes. In geology, capstone and other milestone experiences necessarily integrate traditional reading, critical analysis, and subsequent written communication (our PLOs 2, 3 and 4), but also the applied experience of working with *geologic materials* and maps, and using geologic techniques in the laboratory and the field. The assessment for GEOL 3701 was conducted based on results from an exercise in which each student carries out a detailed study of a different rock suite. Final products include a written report and an oral presentation. The Laboratory Skills/Course Project rubric was used for assessment of this exercise. Assessment was also conducted based on student work from GEOL 4800, a course that focused on readings on a wide range of topics in the Earth Sciences. A modified rubric, altered to apply to the strict conventions of the *précis* form, was used to assess student work and to measure how well Program Student Learning Outcomes were attained.

## D. Summary of Assessment Results

### **GEOL 3701 Igneous & Metamorphic Petrology - Winter 2015**

#### **PLO 1. Geologic Materials**

*Rock Suite Project. Term-long comprehensive study of a suite of rocks.*

This project assesses a significant portion of the Geology Core: a strong foundation in both Mineralogy (GEOL3601) and Igneous & Metamorphic Petrology (GEOL3710) is required to demonstrate competence in this task. The project serves as an early capstone to the 'hard rock' geology content that we provide, which in turn serves as a fundamental part of a geologist's understanding of the Earth's chemical and physical make-up. It builds and tests the strength of a student's foundation of knowledge of Earth materials.

Course average of 11/15, where 5/15 indicates “competence” and 10/15 indicates “accomplishment”. The large standard deviation (4.31) may be the result of a wide range of abilities. The lowest average scores are in the areas of ‘Supporting Materials’ and “Central Message”, and is consistent with early- and mid-level students with weak writing skills and with difficulty in analysis and integration. This project provides an excellent introduction to the methods used by and skills required of a professional geologist. It incorporates all of the Geology BS/BA PLOs, and the students greatly value the experience.

**GEOL 4800 Senior Seminar (Topic: Geology & Environmental Issues in California)  
Winter 2015**

**PLO 4. Communication**

*Final Précis of a Journal Article.*

This class was a first-time attempt to offer a Senior Seminar that was accessible to both Geology and Environmental Science majors, thus providing a much needed degree requirement to a larger community, but perhaps more importantly, it promoted important cross-discipline dialogue that we recognize as being fundamental to solving many of the existing and impending environmental challenges that we now face. Students presented both oral presentations and précis (assessed here) on a subject of their choice. Topics ranged from volcanic hazards and desert species.

Course average is 8.9/12, where 4/15 is ‘competent’ and 8/15 is ‘accomplished’. With the exception of 1 student (#4) who barely met the competence threshold (4/12), the results are strong. This was the ultimate in a series of précis, and as such the strong results speak to a familiarity with the requirements of the précis form. Anecdotal evidence and post-class student comments indicate the exercise of writing précis is valuable and will likely be continued in this seminar.

Department of Earth and Environmental Sciences  
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**ILO Alignment Matrix for Geology B.S., B.A. Programs**

The table below shows which Institutional Learning Outcomes (ILOs) are addressed by each of the Program Learning Outcomes (PLOs).

	BSBA PLO 1 Geologic Materials	BSBA PLO 2 Data Analysis	BSBA PLO 3 Interpretation	BSBA PLO 4 Communication	BSBA PLO 5 Geologic Time
ILO 1: Thinking & Reasoning	X	X	X	X	X
ILO 2: Communication			X	X	
ILO 3: Diversity*				X	X
ILO 4: Collaboration		X		X	
ILO 5: Sustainability				X	X
ILO 6: Specialized Education	X	X	X	X	X

\*diversity in the natural world, including evolutionary diversity, and ranging from microscopic to astronomic scales.

**CSU East Bay, Dept. of Earth & Environmental Sciences**  
**Geology BS, BA Program Assessment**  
**Curriculum Map**

Course	No	Name	Program Learning Outcomes				
			1. Geol. Materials	2. Data Analysis	3. Interp.	4. Communi-cation	5. Geol. Time
GEOL	2101	Physical Geology	I		I	I	I
GEOL	2102	Earth and Life Through Time	I	P	I		P
GEOL	2600	Introduction to GIS		I	P		P
GEOL	3110	Principles of Geomorphology		P	P		I
GEOL	3400	General Oceanography	P	P			I
GEOL	3500	Environmental Hydrology		M	P	P	
GEOL	3601	Mineralogy and Optical Crystallography	P		P	P	P
GEOL	3701	Igneous and Metamorphic Petrology	P	P	P	P	P
GEOL	3801	Sedimentology and Stratigraphy	P	P*	P	I	I
GEOL	3810	Structural Geology	P	P	I	P	P
GEOL	3910	Geologic Field Methods	P	P	M		M
GEOL	3999	Issues in Geological Sciences			P	P	M
GEOL	4010	Applied Geophysics		P	P		
GEOL	4130	Survey of Geochemistry	P	P	I	P	M
GEOL	4140	Hazardous Waste Management		P	P	M	I
GEOL	4200	Introduction to Planetary Science	P	P	I	P	M
GEOL	4320	Hydrogeology	P	M	P	P	
GEOL	4414	Earthquake Geology	P		P	M	M
GEOL	4600	GIS for Earth Sciences		M	M		P
GEOL	4800	Seminar				M	

**Proficiency Level: I = Introductory; P = Practicing; M = Mastery**