

**TABLE 7 – ALL PROGRAMS MUST COMPLETE**

	<b>Column Header</b>	<b>Explanation</b>	<b>2010 Information</b>
<b>1</b>	Program		<b>Geology; BS degree program</b>
<b>2</b>	Provide all locations where program learning outcomes are published (URL, ECO's, Syllabi, etc.)	The assumption is that you have learning outcomes. At a minimum, they should be published on your website. Please provide this URL, as well as other locations where program outcomes are published.	1. Program Learning Outcomes are posted under "Learning Objectives" at <a href="http://geology.csupomona.edu/academics.htm">http://geology.csupomona.edu/academics.htm</a> 2. Learning outcomes for all GSC courses are posted under "Assessment--GSC Course Learning Outcomes Compilation 2009" at <a href="http://geology.csupomona.edu/academics.htm">http://geology.csupomona.edu/academics.htm</a> 3. ECOs for all GSC GE courses were updated and filed with Academic Programs in January, 2010 <a href="#">Good.</a>
<b>3</b>	Has a curriculum map been developed? If so, provide URL where curriculum map is published.	The benchmark for programs this year was to create a matrix that mapped the learning outcomes to the curriculum. All programs should be able to provide this information. <b>This is a new column this year.</b>	This matrix is posted under "Assessment—Department Learning Objectives Linked to Specific Geology Course Outcomes" at <a href="http://geology.csupomona.edu/academics.htm">http://geology.csupomona.edu/academics.htm</a> <b>Fine. The department might want to reconsider the order of the courses on the list or the way in which the objectives are addressed since some appear to be re-introduced after development opportunities.</b>
<b>4</b>	Describe the DIRECT data/evidence that is used to determine that students have achieved stated outcomes	Direct data/evidence is an explicit demonstration of student learning, such as exams, essays, presentations, etc. <b>Note: This column and the next column were combined last year. This year we want the responses divided.</b>	Program Learning Outcome #6 is <b>"Use maps, cross sections, and other imagery to analyze and interpret spatial and temporal relationships displayed by Earth features or geologic data sets."</b> This outcome has been assessed for several years in GSC 321/L (Engineering Geology I) by targeting students' <b>ability to analyze and interpret topographic maps</b> . Such skills provide a crucial foundation for Civil Engineering majors and Geology majors who take this required course, which is also a Science Synthesis GE course. Assessment entails evaluation a Pre-test, completion of laboratory exercise, then Post-test evaluation. See data and findings in Parts 6 and 7 below.  <a href="#">What other direct evidence do you collect or plan to collect?</a>

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<b>5</b>	Describe the INDIRECT data/evidence that is used to determine that students have achieved stated outcomes	Indirect data/evidence is implicit information about student learning, such as student surveys, employer surveys, department discussions, etc.	<p>We compiled data on the job placement of all Geology degree recipients from 2004-2009. This data shows that: 88% of Geology majors were placed in Earth science-related fields. Of these degree recipients, specific fields are as follows:</p> <ul style="list-style-type: none"> <li>o 42% went on to graduate school</li> <li>o 28% work in geotechnical industry</li> <li>o 10% work in hydrogeology industry</li> <li>o 10% work in mineral resource or petroleum industry</li> <li>o 5% work in environmental remediation industry</li> <li>o 5% work as Earth science educators</li> </ul> <p>In addition, 5 students served as interns during 2008-09 at local companies or agencies. We believe this information reflects highly on the Geology degree program. Our learning outcomes and related student achievements are highly valued by graduate schools and the earth-science industry.</p> <p><u><a href="#">Do you collect any other indirect evidence?</a></u></p>
<b>6</b>	Provide at least one example of data/evidence collected and/or reviewed in the last two years.	<p>Give a short description of process used to collect and interpret the evidence. Include the data on a separate Excel spreadsheet if desired.</p> <p><b>Note: We asked for a process last year; this year we are asking for an example.</b></p>	<p>Students were given a pretest at the beginning of the first laboratory meeting asking to demonstrate skills at analysis and interpretation of topographic maps. Following lecture material and hands on activities, students submitted a laboratory exercise on topographic maps. This laboratory was graded and returned to students. One month later students were asked similar types (but not identical) questions on their first midterm. Results from 2005-2010 are presented in the attached spreadsheet: <b>GSC321TopoMapAssessment2005to2010.xls</b> <u><a href="#">Good. Thanks for attaching the data.</a></u></p>



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<b>7</b>	Provide at least one example of a finding that resulted from analysis of evidence in the last two years and how the finding was used to revise program.	Give a short description of the analysis and the conclusion. <b>Note: We asked for a process last year; this year we are asking for an example.</b>	The most complete data sets are from 2005, 2009 and 2010. Results from Pretests, Laboratory Exercise #1, and Post-test (gauged by student performance on the topographic map questions on Exam 1) show consistent and progressive gains in learning. Scores for the pretest were universally low (32% to 42%), indicating poor understanding of topographic maps at the beginning of the course. Laboratory #1 results (completed after related lecture and hands-on class activities) were much improved (72% to 83%). Post-test scores were highest (77% to 89%), perhaps because instructor evaluated and returned Lab #1 and reviewed concepts with students before the exam. These data suggest that the process of completing hands-on work in the form of classroom activities and assigned labs yields substantial improvement in meeting the learning outcome. Because the pre-test results tend to be so low, the instructor experimented with his two lab sections during 2009 and 2010. Monday morning's group was given the pretest with no prior instruction, while Wednesday's group took the test after receiving a Monday afternoon lecture and class activity on the material. The Wednesday groups scored higher than Monday groups both years: 48% vs. 28% in 2009 and 42% vs. 34% in 2010. These results show that the process of introducing topographic map concepts in Lecture #1 has some impact. Still, pretest scores remain below 50%, suggesting that students don't really understand the topographic map concepts until they spend the 3-4 hrs needed to complete Laboratory #1. <a href="#">Good</a>
<b>8</b>	Date of last program review for this program	Academic Programs will provide this information.	The Geological Sciences Department Assessment Plan 2006-2010 is posted under "Assessment" at <a href="http://geology.csupomona.edu/academics.htm">http://geology.csupomona.edu/academics.htm</a>