

**PROGRAM ASSESSMENT ANNUAL REPORT 2010-2011**

	<b>REQUESTED INFORMATION</b> <i>(Enter information for each undergraduate and graduate program on separate forms.)</i>	<b>PROGRAM INFORMATION</b>
<b>1</b>	College	<b>Science</b>
<b>2</b>	Department	<b>Geological Sciences</b>
<b>3</b>	Name of program, and type of degree (BA, BS, etc.)	<b>Geology; BS degree program</b>
<b>4</b>	All locations where program student learning outcomes are published (URL, ECO's, Syllabi, etc.) The URL should take the user directly to the outcomes, either their own page or the location on a more general page.	Program Learning Outcomes are posted under "Learning Objectives" at <a href="http://geology.csupomona.edu/academics.htm">http://geology.csupomona.edu/academics.htm</a>
<b>5</b>	URL where curriculum map is published. The URL should take the user directly to the curriculum map, either its own page or the location on a more general page.	A matrix that maps learning outcomes to the curriculum 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>

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<b>6</b>	List of all DIRECT data/evidence that is used to determine students' progress on achieving stated outcomes ( <i>Direct data/evidence is an explicit demonstration of student learning.</i> )	<ul style="list-style-type: none"><li>• Data in the form of examination responses was collected and compiled from two Geology courses (GSC 111—GE Category B1 and GSC 321/L—GE Category B5 Science Synthesis) during winter and Spring quarters of 2011. Results are currently being assessed with a newly developed rubric for GE learning outcome IIa (<b>see Part 10 below</b>) as part of the “GE Rubric Pilot” Faculty Learning Community. Objectives are to 1) Evaluate the applicability of the rubric, 2) Discuss feasibility of implementing the rubric at a larger scale, and 3) Compare rubric scores between the B1 and B5 courses to see if there is a measurable gain between the B1 and B5 courses.</li><li>• All Geology faculty members keep careful records of scores on homework assignments, laboratory reports, examinations and presentations—all direct measures of student achievement. In many cases this data is itemized such that it can be linked to specific program outcomes. Because such data is organized on spreadsheets it can be extracted to statistically analyze student performance related to specific learning outcomes when such information is requested.</li><li>• Senior thesis presentations are evaluated by Geology faculty using a scoring rubric. Details of this process are described below in <b>Parts 8 and 9</b>.</li></ul>

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7	List of all INDIRECT data/evidence that is used to determine students' progress on achieving stated outcomes ( <i>Indirect data/evidence is information about student learning.</i> )	<ul style="list-style-type: none"><li>• Graduate school placement and internships: The Geology department has been very successful in placing students in prestigious graduate schools and summer internship programs. Examples from 2010-11 are showcased on our web site at <a href="http://geology.csupomona.edu/students2011.htm">http://geology.csupomona.edu/students2011.htm</a> . These student successes are a positive reflection on the Geology program and exemplify the high level at which students are achieving our programmatic learning outcomes</li><li>• Student presentations at professional conferences: These are another positive measure of progress toward achieving outcomes of the Geology program. Approximately 17 students made presentations at the SCCUR, SCAS and GSA conferences during 2010-11. Thirteen of these students are highlighted on the Department web site at <a href="http://geology.csupomona.edu/sccur.htm">http://geology.csupomona.edu/sccur.htm</a> and <a href="http://geology.csupomona.edu/sccur.htm">http://geology.csupomona.edu/sccur.htm</a></li><li>• Faculty mentored student research: Geology faculty have ample opportunity to assess student outcomes achievement through working with student assistants on a multitude of research projects. Some good examples from 2010 are showcased on our website at <a href="http://geology.csupomona.edu/research2011.htm">http://geology.csupomona.edu/research2011.htm</a></li><li>• Employment: Job placement data has been compiled for Geology graduates up through 2009, with results reported last year. The Department is in the process of updating this data base to include recent employment trends. This kind of information is important for assessing the relevance of the outcomes to actual areas of fruitful employment</li><li>• Alumni Reunion: the Geology Department holds an alumni reunion each year to interact with former students who also tend to be important employers of current students. These interactions provide valuable feedback on</li></ul>

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<b>8</b>	At least one example <b>from the last two years</b> of a learning outcome that has been evaluated, and the data/evidence collected for that evaluation. Give a short description of process used to collect and interpret the evidence. If desired, include the data on this page below this table or in a separate file.	<p>The Geology Senior Thesis requirement encompasses program Learning Outcome 2: <b>“Effectively communicate results of scientific investigations in written and oral format.”</b> The oral component of this outcome is evaluated by Geology faculty during the student’s final capstone presentation (a requirement of the GSC 463 course). We use a score sheet to evaluate student performances for separate categories of: <b>Organization, Slide Quality, Scientific Observations/Data, Data Discussion, Response to Questions, and Clarity/Presentation Style.</b></p> <p>Each faculty member uses his/her own personal criteria to score the six categories from 1 to 5 (5 being highest). A maximum of 30 points is possible. Copies of the score sheets are given to the Assessment Coordinator. The originals are given to the student’s faculty advisor who shares the results with the student. The composite scores are an important measure used to assign grades in GSC 463. Interpretation of the collective data set is described below in <b>Part 9.</b></p>

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9	<p>At least one example <b>from the last two years</b> of a finding that resulted from evaluation of an outcome and how the finding was used to revise the program. Give a short description of the analysis and the conclusion.</p>	<p>The attached spreadsheet (<b>SeniorThesisOralEvaluations.xlsx</b>) compiles results of faculty evaluations of Senior thesis presentations carried out during the past 3 years. Twenty students were evaluated using the score sheet described above in Part 8. Pertinent <b>results</b> are as follows:</p> <ol style="list-style-type: none"> <li>1. Individual faculty score totals for individual students ranged from 22 to 30 (out of 30 possible points)</li> <li>2. Mean faculty score totals ranged from 24.2 to 29.4—at least 3 faculty members were present for each presentation</li> <li>3. The mean composite score for 20 students 26.9 out of 30</li> <li>4. Individual faculty scores were in good agreement for each student. Standard deviations are not calculated but a visual estimate suggests these will be less than 10% for most of the student presentations.</li> </ol> <p>Some conclusions we glean from these results:</p> <ol style="list-style-type: none"> <li>1. All 20 of the students evaluated are meeting the oral component of Learning Outcome 2 at an A+ to B- level (98% to 81%; mean = 89.6%).</li> <li>3. None of the students received a composite score lower than a C (73%) from any individual faculty member</li> <li>4. Students take these presentations very seriously and are to be commended for achieving the learning outcome at such a high level</li> <li>5. Faculty advisors also play an important role in bringing the students to this high level of achievement, due to their supervision of the thesis from the beginning.</li> <li>6. The senior thesis presentation is a significant and meaningful capstone activity for both students and faculty.</li> </ol> <p>One possible revision to make: The score sheet is not a true rubric in that faculty members use their own personal criteria to assign values of 1 to 5 to each evaluation category. This brings up the question of whether or not it is necessary to specify detailed criteria to score each category. A purist might say that a conventional “tried and tested” oral presentation rubric should be used instead. Nevertheless, the low variation of scores between individual faculty members indicates that we are generally on the same page, and somehow Geology faculty members are collectively “normalizing” their scores without consultation or guidance.</p>

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<b>10</b>	Description of program assessment activities to be undertaken in the next year. Be reasonable, but be active!	<p>The Geology Department Assessment Coordinator is an active member of the University GE Assessment Committee which is tasked to develop and implement methods for assessing GE learning outcomes. The Committee's activities bear on Geology program assessment because GE courses are a significant component of the Geology curriculum. Last year Geology's Assessment coordinator participated in a workshop to develop a rubric to evaluate GE Learning Outcome IIa: <b>"Use fundamental scientific concepts and apply mathematical/statistical models to draw quantitative and qualitative conclusions about the physical universe,"</b> which encapsulates Geology Program Learning Outcome 7: <b>"Utilize quantitative reasoning, experiential judgment, and computer technology to assess data, draw conclusions, and solve problems."</b></p> <p>This year (2011-12) the rubric for GE outcome IIa will be applied to student work collected from GSC 111 and GSC 321/L during winter and Spring quarters of 2011. GSC 111 is GE Category B1, while GSC 321/L is Category B5—Science Synthesis. The objectives of this activity are to: 1) Evaluate the applicability of the rubric, 2) Discuss feasibility of implementing the rubric at a larger scale, and 3) Compare rubric scores between the B1 and B5 courses to see if there is a measurable gain between the B1 and B5 courses.</p>