1. What student learning outcomes were assessed this year, and why?
In answering this question, please identify the specific student learning outcomes you assessed this year, reasons for assessing these outcomes, with the outcomes written in clear, measurable terms, and note how the outcomes are linked to department, college and university mission and goals.

The department assessed Student Learning Outcomes #1, 2, 3, and 4. The specific learning outcomes are delineated in the accompanying plan, as are the links to department, college and university mission and goals.

2. How were they assessed?
In answering these questions, please concisely describe the specific methods used in assessing student learning. Please also specify the population assessed, when the assessment took place, and the standard of mastery (criterion) against which you will compare your assessment results. If appropriate, please list survey or questionnaire response rate from total population.

Learning Outcome #1: Assessed through evaluation of an assignment given in the following required or elective classes or GEOL 595 (research experience):
GEOL 595 (n = 52 graduate student 595 experiences, 100% response rate).

Learning Outcome #2: Assessed through evaluation of proposal in GEOL 503, elective classes, and GEOL 595 (research experiences):
GEOL 503 (n = 9 graduate students, 89% response rate)
GEOL 583 (n = 5, 100% response rate).
GEOL 595 (n = 52 graduate student 595 experiences, 100% response rate).

Learning Outcome #3: Assessed through evaluation of an assignment given in the following required class:
GEOL 534 (n = 3 graduate students, 100% response rate)

Learning Outcome #4: Assessed through evaluation of an assignment given in the following elective classes:
GEOL 534 (n = 3 graduate students, 100% response rate)

For additional details, please refer to the attached CWU Student Learning Outcome Assessment Plan.

A) What methods were used?
(1) Specific rubrics were created to grade assignments that addressed one or more learning objectives. Instructor completed rubric evaluation. Evaluation of assignments and rubrics was completed by chair.
(2) For 595, results (S/U) were compiled and evaluated by chair.
(3) Group interview of dispositions was conducted in GEOL 504 by Dr. Marie Ferland, (instructor) and Dr. Chris Mattinson (graduate coordinator).

B) Who was assessed?
All of students in a specific class, or students enrolled in GEOL 595, were assessed.

C) When was it assessed?
Learning objectives were assessed during the relevant quarter that the class was delivered.
Fall: GEOL 583
Winter: GEOL 503
Spring: GEOL 504, GEOL 534

GEOL 595 is offered fall, winter, and spring quarters.

3. What was learned?
In answering this question, please report results in specific qualitative or quantitative terms, with the results linked to the outcomes you assessed, and compared to the standard of mastery (criterion) you noted above. Please also include a concise interpretation or analysis of the results.

RESULTS
Several criteria for assessment of specific learning objectives identify a target of 85% of students receiving an average rubric score of 2 or greater. These are reported below.

<table>
<thead>
<tr>
<th>Learning Objective, Course #</th>
<th>n</th>
<th>Below rubric average of 2*</th>
<th>Above rubric average of 2</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, GEOL 534</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>Range of scores was 3.5 to 4.0. Class rubric average was 3.75.</td>
</tr>
<tr>
<td>2, GEOL 503</td>
<td>9</td>
<td>0</td>
<td>8</td>
<td>Range of scores was 2.3 to 4.0. Class rubric average was 3.4. One faculty member failed to respond to request to assess student proposal.</td>
</tr>
<tr>
<td>2, GEOL 583</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>Range of scores was 3.3 to 3.5 (out of 4). Class rubric average was 3.4.</td>
</tr>
<tr>
<td>4, GEOL 534</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>Range of scores was 3.0 to 4.0 (out of 4). Class rubric average was 3.4.</td>
</tr>
</tbody>
</table>
*Standard of mastery for each outcome is 85% of students receive rubric score of 2 or above. Thus, for each outcome, 100% of the students achieved mastery. See learning outcome assessment plan for more detail. Rubrics on file in department.

For learning objectives 1, 2, and 3, the criterion of achievement includes 95% of students receiving a passing grade (S) in GEOL 595.

<table>
<thead>
<tr>
<th>Learning Objective</th>
<th>Below Passing Grade</th>
<th>At or Above Passing</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3</td>
<td>52</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For one 595 experience, no grade was reported.</td>
</tr>
</tbody>
</table>

Interview results: While the department is still working toward including dispositions directly into the assessment plan, we did conduct a group interview with all graduate students who took GEOL 504 (n=~15). In general, graduate students are pleased with their programs and the department.

Suggestions for improvement included: (1) upgrades to computer labs; (2) graduate students should be provided with a list of resources that are available in the department and in other departments (e.g., Geography); (3) graduate students need better information about electives (which year, quarter they will be offered), and students suggest that more courses should be offered in the areas of their interests; (4) students suggested some revisions to GEOL 501 that relate to the emphasis on research outside their areas of expertise. They suggest that some of the course requirements could be related to the areas of their thesis research. (Typically the instructors have had the students focus on areas outside of their research interests); (5) students suggest that there be more department social functions.

4. What will the department or program do as a result of that information?

In answering this question, please note specific changes to your program as they affect student learning, and as they are related to results from the assessment process. If no changes are planned, please describe why no changes are needed. In addition, how will the department report the results and changes to internal and external constituents (e.g., advisory groups, newsletters, forums, etc.).

ANALYSIS

The assessment results reported above indicate that the department is achieving its objectives for student learning. None of the assessment activities failed to meet our criteria, suggesting that no drastic changes in our approach to teaching or our curriculum are required.

The large number of successful 595 experiences suggests that students are engaged in research experiences with their advisers and are generally making satisfactory progress toward completion of their MS theses.

Several of the comments made by students in the interview suggest that changes/modifications to the curriculum and department infrastructure are needed.

ACTION PLAN FOR ACADEMIC 2010-2011

(1) Define dispositions and knowledge areas and include in learning objectives.
(2) Develop systematic, efficient data collection system to track on funding, presentations, etc.
(3) Refine exit interview/questionnaire experience for graduating MS students in order to address indirect assessment goals.
(4) Faculty will discuss feedback obtained in interviews and take appropriate action.

5. **What did the department or program do in response to last year’s assessment information?**
   In answering this question, please describe any changes that have been made to improve student learning based on previous assessment results. Please also discuss any changes you have made to your assessment plan or assessment methods.

   We added the interview component. Several faculty attended a workshop presented by Science Education faculty, and we will continue to attempt to incorporate changes in our assessment based on what we learned. Beth Pratt-Sitaula was asked to assist with updating/modifying our assessment procedures, and she plans to report to the chair in summer of 2010.

6. **Questions or suggestions concerning Assessment of Student Learning at Central Washington University:**
<table>
<thead>
<tr>
<th>Student Learning Outcomes (performance, knowledge, attitudes)</th>
<th>Related College Goals</th>
<th>Related University Goals</th>
<th>Method(s) of Assessment (What is the assessment?)*</th>
<th>Who Assessed (Students from what courses – population)**</th>
<th>When Assessed (term, dates) ***</th>
<th>Standard of Mastery/ Criterion of Achievement (How good does performance have to be?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Critically interpret published scientific literature; differentiate data from interpretation</td>
<td>I and III</td>
<td>One, three, four, five</td>
<td>Instructor evaluation of literature-based and original research papers, directed reading assignments, oral presentations in class, laboratory, disciplinary and other meetings Faculty mentor evaluation of thesis proposal, defense</td>
<td>Graduate students enrolled in GEOL 501, 502, 503 and other 500-level classes</td>
<td>Fall, winter, spring quarters</td>
<td>85% of students get rubric grade of 2 or better on such assignments</td>
</tr>
<tr>
<td>2) Design and implement an original research project that develops multiple hypotheses, predictions from hypotheses, data-gathering strategy, data analysis, evaluation of uncertainties, interpretation, and literature review</td>
<td>I and III</td>
<td>One, three, four, five</td>
<td>Instructor evaluation of research proposal, laboratory and field reports</td>
<td>Graduate students enrolled in GEOL 503</td>
<td>Winter quarter</td>
<td>85% of students get rubric grade of 2 or better on such assignments and 20-25% per year receive funding in internal or external competition</td>
</tr>
<tr>
<td>3) Present and interpret results of original research, both orally and in writing, using standard geoscience reference tools, formats and conventions (including statistics, georeferencing, plotting, etc.)</td>
<td>I and III</td>
<td>One, three, four, five</td>
<td>Chair and committee member evaluation of written thesis, final thesis oral presentation (defense) Acceptance of conference abstracts, peer reviewed journal articles or equivalent (e.g., book chapters)</td>
<td>Graduate students enrolled in GEOL 595, 700</td>
<td>Fall, winter, spring quarters</td>
<td>85% of students get rubric grade of 2 or better on such assignments</td>
</tr>
<tr>
<td>4) Establish competency in solving quantitative problems, using correct units and significant figures, and representing geologic data on cross-sections and maps.</td>
<td>I and III</td>
<td>One, three, four, five</td>
<td>Instructor evaluation of class work</td>
<td>Graduate students enrolled in required or elective classes</td>
<td>Fall, winter, spring quarters</td>
<td>85% of students get rubric grade of 2 or better on such assignments</td>
</tr>
</tbody>
</table>

*Method(s) of assessment should include those that are both direct (tests, essays, presentations, projects) and indirect (surveys, interviews) in nature

**Data needs to be collected and differentiated by location (Ellensburg campus vs. University Centers – see NWCCU standard 2.B.2) MS program only offered at Ellensburg campus.

***Timing of assessment should be identified at different transition points of program (i.e., admission, mid-point, end-of-program, post-program)