Central Washington University
Assessment of Student Learning
Department and Program Report

Please enter the appropriate information concerning your student learning assessment activities for this year.

Academic Year of Report: 2012-13  College: COTS

Department PHYSICS  Program: BA, BS

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.

Of the six Student Learning Outcomes (SLO) identified by the Physics department, this year we chose to evaluate the following three:

SLO 1  Content Knowledge: Graduates demonstrate a comprehensive knowledge base of the major areas of physics and related disciplines.

SLO 4  Communication Skills: Graduates demonstrate an ability to communicate effectively.

SLO 5  Civic Engagement: Graduates demonstrate civic engagement.

Outcome #1 was chosen because it is a core outcome and because we are using a different assessment tool than in the previous report. Outcomes 4 and 5 are chosen because they were not included in the previous assessment. They relate to the following Department, College and University Goals as described below:

- Physics Department: Goal 1: Promote Student Learning; Goal 2: Faculty and students engage in scholarly activities.
- COTS: Goals I & II: Maintain and strengthen an outstanding academic and student life at all sites.
- University: Goals I & II: Maintain and strengthen an outstanding academic and student life at all sites; Goal V: Achieve regional and national prominence for the university.

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.

SLO 1: The assessment tool was the Major Field Assessment Test (MFAT), administered to students who are enrolled in PHYS489 (Senior Assessment Seminar). This class is required of all students pursuing the Physics B.S. or B.A., normally taken the spring quarter before graduating or leaving CWU (e.g. for the Dual Degree program). In 2013, twenty students took the physics MFAT. The following rubric was used to convert MFT
raw score in each content category to a scale useful in assessing competence: above 52 = exceeds expectations; 37-52 = meets expectations; below 37 = below expectations.

SLO 4: The assessment tool was SOURCE presentation comment forms, from both judges and peers. The presentation of results of a research project in a public forum is a graduation requirement for the Physics B.S. or B.A.; most students choose to present at SOURCE. Recently developed SOURCE judging response forms were used as the assessment tool. The maximum score is 30 points. A score of 21 is considered the standard for mastery in this area; a score of 26 or above "exceeds expectations." Nine students are assessed for spring 2013.

SLO 5: All students pursuing the Physics B.S. or B.A. degree are required to actively participate in community outreach activities, often under the supervision of physics faculty. A standard evaluation form is used by department to acknowledge and assess each student's outreach activity. Qualifying outreach activities take place throughout the year; forms are submitted in the spring as part of the PHYS489 Senior Assessment class. In Spring 2013, the enrollment was 18 students, of which 14 were evaluated for this outcome (some dual degree students had the option of deferring assessment until they finished at their engineering institution).

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.

SLO 1: Total number of students assessed = 20

<table>
<thead>
<tr>
<th>Areas</th>
<th>Below Expectations</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory physics</td>
<td>5</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Advanced physics</td>
<td>7</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>average</td>
<td>30%</td>
<td>42%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Approximately 70% of students met or exceeded expectations on the MFAT, which is a very rigorous exam administered nationwide. This is especially encouraging considering that 6 of the 20 students being assessed were in our Dual Degree program and had not taken the full set of upper-division physics courses.

SLO 4: The average score on the source judging form for the nine students being evaluated was 24.8 out of a possible 30 points. All students scored above 22, demonstrating mastery of this outcome; two students exceeded expectations.

SLO 5: Fourteen students submitted outreach evaluation forms for assessment in spring 2013. Of these, four exceeded expectations, nine met expectations, and one did not meet expectations. Overall, the department is satisfied with the engagement and performance of students during outreach activities.
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.).

The department is compiling data on MFT scores over several years in order to establish trends in student performance that may be correlated with changes in the curriculum or graduation requirements. The data for a single year does not, by itself, indicate the need for a particular course of action.

The performance of physics students at SOURCE is satisfactory. No programmatic changes related to student research and communication skills are planned at this point.

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.

No specific action was deemed necessary in response to last year's assessment.

6. **Questions or suggestions concerning Assessment of Student Learning at Central Washington University:**