Annual Academic Assessment Report Cover Sheet

Assessment reports are due the 1st Wednesday after the Fall Term

Email to: assessment@unlv.edu

Program Information:

<table>
<thead>
<tr>
<th>Program Assessed</th>
<th>Computer Science BA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>Computer Science</td>
</tr>
<tr>
<td>College</td>
<td>Engineering</td>
</tr>
<tr>
<td>Department Chair</td>
<td>Dr. Laxmi Gewali</td>
</tr>
<tr>
<td>Assessment Coordinator</td>
<td>Dr. Laxmi Gewali</td>
</tr>
<tr>
<td>Date Submitted</td>
<td>12/18/2015</td>
</tr>
</tbody>
</table>

Contact Person for This Report

<table>
<thead>
<tr>
<th>Name</th>
<th>Dr. Laxmi Gewali</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone</td>
<td>702-895-4028</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:laxmi.gewali@unlv.edu">laxmi.gewali@unlv.edu</a></td>
</tr>
</tbody>
</table>

Please attach a narrative (not to exceed 4 pages, excluding appendices) addressing the following:

- What are the student learning outcomes? Please provide a numbered list.
- Which learning outcomes were assessed?
- How were they assessed? (Programs must use at least one direct assessment of student learning.)
- Undergraduate programs should assess at least one University Undergraduate Learning Outcome (UULO) each year, which may or may not overlap with a program learning outcome.
- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  - student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  - activities requiring originality, critical analysis and expertise.
  - the development of extensive knowledge in the field under study.
- What was learned from the assessment results?
- How did the program respond to what was learned?

Please limit the narrative portion of your report to no more than four pages. You may attach appendices with data, tables, charts, or other materials as needed. Please explain the relevant conclusions from any appendices in your narrative. Please contact the Office of Academic Assessment if you have questions or need assistance.
Assessment Report

Program: BA in Computer Science

Submitted by

Department of Computer Science
University of Nevada, Las Vegas

December 2015

I. Introduction

Outcomes Assessed in 2015

Following 3 Outcomes (out of the 4 total outcomes) were assessed

- **Outcome A**: Analyze problems and identify the computing and/or mathematical techniques appropriate to their solutions.
- **Outcome B**: Apply design and development principles in the construction of software systems.
- **Outcome C**: Apply computer science theory and mathematical models to comprehend the tradeoffs involved in various design choices.

**Direct Assessment** method was used to assess the above three outcomes

**Direct Assessment** was done by using either (i) *Selected Question Method*, or (ii) *Model Question Method*. Assessment questions in these methods were prepared by the instructors who taught the courses closely related to the corresponding outcomes. These assessment exams were scheduled at the end of the semester. For either method chosen by the instructor, the answers given by the students were organized in a rubric-categorized table.
II. Assessment Results

Direct Assessment of Outcome A

Courses used to cover Outcome A:
- CS 135: Computer Science I (Spring 2015)

Direct Assessment examinations were given by instructors of CS 135 to cover Outcome A on the final week of the semester.

Tabulated results of direct assessment (Percentage Distribution) are as shown in the following table:

<table>
<thead>
<tr>
<th>Outcome A</th>
<th>Unsatisfactory (U)</th>
<th>Below Expectation (BE)</th>
<th>Satisfactory (S)</th>
<th>Exceeds Expectation (EE)</th>
<th>Remark for S+EE (Is it &gt;= 70% Threshold?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>3.99</td>
<td>8.66</td>
<td>50.66</td>
<td>36.64</td>
<td>87.30(&gt;70) Meets Threshold</td>
</tr>
</tbody>
</table>

- Overall Results for Outcome A: 87 percent of the student’s achievement in Outcome A was satisfactory or better.
- Notable suggested improvement(s) by instructor(s) and/or Assessment Committee members:
  - Hands-on programming sessions: A significant number of students seem to have difficulty in properly debugging and testing programs. Students of
CS 135 should be assigned many more programming exercises with supervision of teaching assistants and/or lab monitors having prior experience in UNIX and debugging methods.

- **Enforcing Prerequisite:** The Assessment Committee recommended the need to close the loopholes in prerequisite enforcement to weed out students without the correct background.

**Direct Assessment of Outcome B:**

Courses used to cover Outcome B:
- CS 202: Computer Science II (Spring 2015)

Direct Assessment examinations were given by instructors of CS 202 to cover Outcome B on the final week of the semester. Tabulated results of direct assessment (Percentage Distribution) are as shown in the following table:

<table>
<thead>
<tr>
<th>Outcome B</th>
<th>Unsatisfactory (U)</th>
<th>Below Expectation (BE)</th>
<th>Satisfactory (S)</th>
<th>Exceeds Expectation (EE)</th>
<th>Remark for S+EE (Is it (&gt;= 70%) Threshold?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>5.48</td>
<td>17.80</td>
<td>42.49</td>
<td>34.22</td>
<td>76.71 (&gt; 70%)</td>
</tr>
</tbody>
</table>

- Overall Results for Outcome B: 76\% of students achieved satisfactory or better in Outcome B.
- Notable suggested improvement(s) by instructor(s) and Assessment Committee
  - **Assign programming exercise in incremental order of difficulty:** Rather than assigning a few large size programming projects it may be pedagogically beneficial to break them into more smaller size programs. Students tend to complete smaller size programs on time with fewer errors.
  - **Test Data:** Students of CS 202 should be encouraged to generate a variety of test data for validating the correct working of programs.

**Direct Assessment of Outcome C:**

Courses used to cover Outcome C:
- CS 302: Data Structures (Spring 2015)
Direct Assessment examinations were given by instructors of CS 302 to cover Outcome C on the final week of the semester.

Tabulated results of direct assessment (Percentage Distribution) are as shown in the following table:

<table>
<thead>
<tr>
<th>Outcome C</th>
<th>Unsatisfactory(U)</th>
<th>Below Expectation(BE)</th>
<th>Satisfactory(S)</th>
<th>Exceeds Expectation(EE)</th>
<th>Remark for S+EE (Is it &gt;= 70% Threshold?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>0</td>
<td>2.90</td>
<td>58.64</td>
<td>38.45</td>
<td>97.09 (&gt;70%)</td>
</tr>
</tbody>
</table>

- **Overall Result for Outcome C**: The targeted threshold was met. Almost all (97%) student achievements were satisfactory or better.

**Assessment Result for University Undergraduate Learning Objectives (UULO’s)**

The milestone course for BA degree program is CS 302. Outcome C overlaps with UULO’s objectives which are (i) ability to identify alternative data structures for implementation of algorithms, and (ii) ability to implement at least one major container type data structure to solve applied problems. The direct assessment of Outcome C for CS 302 shows that 97.1% of students achieved satisfactory or better. Thus almost all students achieved UULO’s at excellent level.

**III. Plan for next Assessment Period**

(Fall 2015 and Spring 2016)

- Make assessment of all 4 Outcomes A, B, C, and D by using both direct and indirect methods.
- Analyze assessed data to record key findings.
- Follow-up on the suggestions for improving outcomes as recommended in this assessment period