## Assessment of Course Student Learning Outcomes

<table>
<thead>
<tr>
<th>COURSE ALPHA/NUMBER: MICRO 140 (CRN 62221)</th>
<th>Semester/Year: Fall 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL MICROBIOLOGY LAB</td>
<td></td>
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<tr>
<td>Instructor: Ingelia White</td>
<td>Date Submitted to Department Chair: August 2010</td>
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**Identify the Course Student Learning Outcomes assessed this semester.**

1. Operate equipment used in microbiology laboratory
2. Prepare growth media
3. Perform aseptic transfer
4. Identify microorganisms using morphological and physiological tests
5. Follow biosafety procedures
6. Produce lab reports using the standard scientific format

**How do the above course SLOs align with the Associate of Arts or certificate program-level outcomes?**

The above SLOs align with the AA-Liberal Arts and ASC in Plant Biotechnology learning outcomes (i.e. gained knowledge in biological and environmental issues, became lifelong learners, effective employees etc.)

**What skills or competencies are necessary for the student to perform the selected SLOs?**

- Operate microscope, analytical balance, water bath, and autoclave
- Prepare culture media and reagents
- Perform microbial inoculations
- Adhere to biosafety codes
- Identify unknown microorganism cultures for diagnostic purpose
- Submit scientific lab reports

**What instructional methods or material are used to prepare the students?**

Lab manuals, hand-outs, dry runs, lab exercises and lab reports in scientific formats

**What assessment task(s) or tools are being used to assess the outcomes? What are the criteria for success?**

**Assessment tools:**

- Embedded assessment evaluating students achievements as stated in the student learning outcomes
- Lab exams
- Lab reports
- Identification of unknown microorganism cultures

**Criteria for success:**

- 82.4% of students received final grade point average higher than 90% of total possible points (630 points)
- 17.6% of students received final grade point average higher than 80% of total possible points (630 points)
- Assessment average rating is 2.37 (see table).

**What are the results of the assessment?**

The average embedded assessment rating is 2.37. This number is greater than the set up benchmark of 2.
How will you use the results? What changes do you propose to improve student learning? When?

Assessment results are shared and discussed with students to enable them to know what the status of their performance and to encourage them to achieve higher skills and competencies. Students are monitor individually to reach these goals. The table and graph below show a great improvement made toward the end of the semester.

<table>
<thead>
<tr>
<th>Student Learning Outcome</th>
<th>Start of Semester</th>
<th>End of Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Operating lab equipment</td>
<td>0.7</td>
<td>2.5</td>
</tr>
<tr>
<td>2. Prepare growth media</td>
<td>0.8</td>
<td>1.1</td>
</tr>
<tr>
<td>3. Perform aseptic transfer</td>
<td>0.7</td>
<td>2.7</td>
</tr>
<tr>
<td>4. Identify microorganisms</td>
<td>0.5</td>
<td>2.5</td>
</tr>
<tr>
<td>5. Following biosafety procedures</td>
<td>2.6</td>
<td>2.7</td>
</tr>
<tr>
<td>6. Produce scientific lab reports</td>
<td>0.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Total average</td>
<td>1.03</td>
<td>2.37</td>
</tr>
</tbody>
</table>

Will the changes require funding? How much will the changes cost?
No