Annual Assessment Report

Academic Year: 2016/17
Department: Microbiology and Immunology
Program(s): Microbiology

1. What Was Done
Based on our assessment plan, Learning Objective 3 (LO3) “Our graduates will be able to Perform basic microbiological lab techniques” was scheduled for assessment in AY 2016/17 (see Attachment 1; p.3).

2. What Data Were Collected
Student performance on LO3 was evaluated in two courses. General Microbiology (BOIM 360) and Medical Bacteriology Lab (BIOM 432).

A sample of the microbiology students (10-20%) in the class were randomly selected and assessed using the Microbiology Learning Objective Scoring Rubric designed for LO3 (see Attachment 2 and 3 respectively).
For General Microbiology (BIOM 360) students the assignment assessed was a Written report on identification of an unknown bacterium.
For Medical Bacteriology Lab, the class assignment assessed was a Performance of a Lab Procedure. Students were given a bacterial unknown and students were challenged to identify a common medically important bacterial pathogen.

3. What Was Learned
a. General Microbiology (BIOM 360):
The average score was 4.2 indicating the student performance was well executed and exceeded expectations.

The LO consisted of 6 parts (see Attachment 2). Students performed well on all parts with scores ranging from 4-5.
b. Medical Bacteriology Lab (BIOM 432):

The average score was 3.6 out of 5, indicating the students performance was adequate and met expectations to performance was well executed and exceeded expectations. The Learning Objective was comprised of the following components:

a. Show they have mastered the techniques essential to identify a common bacterial pathogen

b. Show they have mastered a technique including ocular micrometer calibration – *NA for this assignment*

c. Demonstrate they can use a biochemical identification test and can accurately use this technique.

d. Show they can organize and summarize data and present them in in a way that is accurate and comprehensible in both written and graphical modes

e. Show they can apply deliberate and thorough observational skills to collect data

f. Show they can interpret data and draw conclusions that allow the students to support or refute hypotheses and make a case for alternative hypotheses

The students exceeded expectations for c, e and f above. Students were average on a and d. While this was above threshold, this indicates more attention could be given to performance of a biochemical identification of a bacterial pathogen and the ability to organize and summarize data.

4. How We Responded

**LO3:** No changes were needed based upon performance although some recommendations for instructors for BIOM 432 may be given, based upon our assessment results (see specific comments above for BIOM 432).

Results of Assessment of LO2 and LO3 and the details of Assessment Process will be shared with the Department at the beginning of the AY 2016/17.
# Attachment #1: Assessment Schedule for 2015-2018

## MBI Dept. Assessment Schedule 2015-18

### Assessment Schedule: 2015-2018

<table>
<thead>
<tr>
<th>Year</th>
<th>LO</th>
<th>Course</th>
<th>Assessor 1</th>
<th>Assessor 2</th>
<th>Course Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/16</td>
<td>1</td>
<td>BIOM 360 (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>BIOM 455(S)</td>
<td>Halonen</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>BIOM 441 (S)</td>
<td>Franklin</td>
<td>Hudson</td>
<td></td>
</tr>
<tr>
<td>2016/17</td>
<td>3</td>
<td>BIOM 360 (F)</td>
<td>Grad. TA</td>
<td>Boyd</td>
<td>Boyd, Walk, Rasmussen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOM 432 (S)</td>
<td>Rasmussen</td>
<td>Craver</td>
<td>Craver</td>
</tr>
<tr>
<td>2017/18</td>
<td>4</td>
<td>BIOM 450 (F)</td>
<td></td>
<td></td>
<td>Fields</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>BIOM 450 (F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOM 494 (S)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>BIOH 405 (F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOB 410 (F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BIOM 435 (F)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F = Fall semester; S = Spring semester

### Learning Objectives (LO)

**Our students should be able to:**

1. Use knowledge of the fundamental terms and concepts of microbiology
2. Design an experiment to test a hypothesis or microbiological concept
3. Perform basic microbiological lab techniques
4. Access and analyze bioinformatic data or large datasets
5. Verbally communicate about fundamental and modern microbiological concepts
6. Communicate in written form about fundamental and modern microbiological concepts

### Courses Involved in On-going Assessment:

- BIOM 360 – General Microbiology
- BIOH 405 – Hematology (lecture)
- BIOB 410 – Immunology
- BIOM 410 – Microbial Genetics
- BIOM 441 – Eukaryotic Pathogens
- BIOM 432 – Medical Bacteriology Lab
- BIOM 435 – Virology
- BIOM 450 – Microbial Physiology
- BIOM 455 – Research Methods in Microbiology
- BIOM 494 – Seminar, Capstone
Microbiology Assessment Form

Scoring Rubric

Course: BIOM 360 (General Microbiology) Semester Fall 2016
Evaluator: Walk, Graduate TA for course
Dept. of Evaluator MBI

Type of Learning Activities(s) Assessed: *Indicate which of the following activity is being used for the Assessment*

- Written examination
- Written assignment
- In class activities (role play, class discussion, presentations)
- Performance of Lab Procedure
- Out of class activities (projects)
- Other (please specify) __Written report on identification of an unknown bacterium__

Learning Objective Assessed:
3. Perform basic microbiological lab techniques

<table>
<thead>
<tr>
<th>Learning Objectives</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Show they have mastered the techniques essential to sound microbiological laboratory practice such as streak-plating, serial dilutions, aseptic technique, gram stain.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>b. Show they can investigate hallmarks of phenotypic microbial diversity, including differences in colony morphology and biochemical profiles.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>c. Demonstrate they can use conduct taxonomic classification by following decision (dichotomous) keys.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>d. Show they can organize and summarize data and present them in a way that is accurate and comprehensible in both verbal and graphical modes.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>e. Show they can apply deliberate and thorough observational skills to collect data.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>f. Show they can interpret data and draw conclusions that allow the students to support or refute hypotheses and make a case for alternative hypotheses.</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

1 = Not Done
2 = *Performed but with poor execution – threshold level (see note below)*
3 = Adequate Performance; Met Expectations
4 = Performance Well Executed; Exceeds Expectation
5 = Performance Excellent; Exceeds Expectations Plus

* threshold level: if student performance falls below this threshold faculty action will be taken to improve the program.
Attachment #3: Assessment Form for LO3 used for BIOM 432 (Spring 2017)

Microbiology Assessment Form
Scoring Rubric
Course: BIOM 432 Medical Bacteriology Lab  Semester Spring 2017
Evaluator: Kay Rasmussen
Dept. of Evaluator MBI Dept

Type of Learning Activities(s) Assessed: choose one of the following
Written examination
Written assignment
In class activities (role play, class discussion, presentations)
Performance of Lab Procedure – Students were given a bacterial unknown students were challenged to identify a common medically important bacterial pathogen
Out of class activities (projects)
Other (please specify)

Learning Objective Assessed:
3. Perform basic microbiological lab techniques

<table>
<thead>
<tr>
<th>Learning Objectives:</th>
<th>Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Show they have mastered the techniques essential to</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>___________________</td>
<td></td>
</tr>
<tr>
<td>b. Show they have mastered _____________ technique</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>including ocular micrometer calibration</td>
<td></td>
</tr>
<tr>
<td>c. Demonstrate they can use a _____________ and can</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>accurately use this technique</td>
<td></td>
</tr>
<tr>
<td>d. Show they can organize and summarize data and</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>present them in a way that is accurate and</td>
<td></td>
</tr>
<tr>
<td>comprehensible in both verbal and graphical modes</td>
<td></td>
</tr>
<tr>
<td>e. Show they can apply deliberate and thorough</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>observational skills to collect data</td>
<td></td>
</tr>
<tr>
<td>f. Show they can interpret data and draw conclusions that</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>allow the students to support or refute hypotheses and</td>
<td></td>
</tr>
<tr>
<td>make a case for alternative hypotheses</td>
<td></td>
</tr>
</tbody>
</table>

1 = Not Done
*2 = Performed but with poor execution – threshold level (see note below)
3 = Adequate Performance; Met Expectations
4 = Performance Well Executed; Exceeds Expectation
5 = Performance Excellent; Exceeds Expectations Plus

Threshold level: if student performance falls below this threshold faculty action will be taken to improve the program.