Assessment in the Department of Microbiology: Zero to...

Stuart P. Donachie, Department of Microbiology

Introduction
- Five faculty in Department of Microbiology run five programs (BS/BA Microbiology; BS Molecular Cell Biology (MCB); MS/PhD Microbiology).
- One of three faculty members lost in 2014 had run assessment for many years. To 2011 this comprised submitting paper form to Assessment Office. Replaced by selecting ‘radio buttons’ and typing in online version.
- Faculty member new to assessment took over BS/BA Microbiology assessment in 2012. No BS/BA assessment activities due to time constraints, inexperience; 2012 and 2013 reports used as templates in 2013 and 2014, respectively. No BS/BA assessment undertaken.
- MCB assessment activities run by second faculty passed in 2014 to faculty reporting on BS/BA Microbiology. First assessment for latter degrees undertaken late in 2014, i.e., faculty provided Student Learning Outcomes (SLO) for their courses.
- SLOs for all required and elective BS/BA Microbiology courses mapped to revised Program Learning Outcomes through collaboration with Assessment Office in Spring 2015.

Department Facts
- Five programs (2 BS, 1 BA, MS, PhD)
- Five faculty, includes one new in 2014
- Three faculty lost in 2014
- >150 majors
- >25 graduate students
- MCB program in probationary period
- Third in College of Natural Sciences majors (9.9%)

Program Outcomes

Fig. 1. Graduates of the Microbiology Program will:

1. Understand primary microbiological disciplines and their interrelatedness, including diversity, ecology, physiology, and genetics of microbes.
2. Be able to explain and discuss how microbial processes are integrated in functional cells.
3. Be able to explain the bases of host-microbe interactions.
4. Be able to explain the techniques and logic as well as employ methods in microbiology research.
5. Be able to propose potential solutions to real-world problems by applying microbiological knowledge.

Assessment challenges
- Few faculty
- Loss of faculty
- Five programs, with one in probation period
- Lack of assessment knowledge, skills
- New Chair/assessment coordinator
- Lack of resources for assessment

Tab. 1. Microbiology Curriculum Map

<table>
<thead>
<tr>
<th>Course</th>
<th>SLO 1 Knowledge of discipline</th>
<th>SLO 2 Cellular processes</th>
<th>SLO 3 Host-microbe interactions</th>
<th>SLO 4 Techniques, Methods</th>
<th>SLO 5 Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Microbiology MICR 351</td>
<td>I/R</td>
<td>I/R</td>
<td>I/R</td>
<td>I/R</td>
<td>I</td>
</tr>
<tr>
<td>General Microbiology Lab MICR 351L</td>
<td>I/R</td>
<td>I/R</td>
<td>I</td>
<td>I/R</td>
<td>I/R</td>
</tr>
<tr>
<td>Microbial Physiology MICR 431</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Immunology MICR 461</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Bacterial Genetics MICR 475</td>
<td>R</td>
<td>M</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Marine Microbiology MICR 401</td>
<td>R</td>
<td>R</td>
<td>I</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Microbiology of Pathogens MICR 463</td>
<td>M</td>
<td>R</td>
<td>R/M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Microbial Pathogenesis MICR 470</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Microbes and their Environment MICR 485</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Virology MICR 490</td>
<td>M</td>
<td>R</td>
<td>M</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Marine Microbiology Lab MICR 401L</td>
<td>R</td>
<td>I</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Microbial Physiology Lab MICR 431L</td>
<td>R</td>
<td>R</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Immunology Lab MICR 461L</td>
<td>M</td>
<td>R</td>
<td>M</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Microbiology of Pathogens Lab MICR 463L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Bacterial Genetics Lab MICR 475L</td>
<td>R</td>
<td>R</td>
<td>M</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>Microbes and their Environment Lab MICR 485L</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Virology Lab MICR 490L</td>
<td>M</td>
<td>R</td>
<td>M</td>
<td>M</td>
<td>R</td>
</tr>
</tbody>
</table>

I, Introduced; R, Reinforced; M, Mastered

Achievements

Developed Student Learning Outcomes for Microbiology BS/BA (Fig. 1).
Developed Curriculum Map for Microbiology BS (Tab. 1).

Reflections

Faculty participated! Despite challenges, faculty developed Learning Outcomes for Microbiology BS/BA.
And Curriculum Map for Microbiology BS.

Next steps

Work with previous MCB Assessment Coordinator on MCB BS program assessment.
Plan collection of Microbiology BS/BA assessment data from upper level courses using current exams or assignments first.

New Chair attended Assessment Leadership Institute
Prior assessment coordinator is knowledgeable
New hire can be a proponent of assessment
Assessment Office facilitated assessment activities