2012-2013 Assessment Report
Program: Biological Sciences, MS

College of Sciences & Mathematics
Biological Sciences
Biological Sciences, MS

Expected Outcome 1: MS Thesis Level of Performance
MS thesis graduates will 1) demonstrate a mastery of the fundamental aspects of a sub-discipline within the Biological Sciences, 2) demonstrate the ability to apply their knowledge to scientific research, and 3) be capable of writing scientific articles on research performed.

Assessment Method 1: Knowledge of sub-discipline #1

Assessment Method Description
Students will produce approved and comprehensive literature review sections within their thesis as certified by the students' advisory committees.

Findings
100% of MS thesis graduates in the 2012-13 period (n=6) produced an approved and comprehensive literature review section within their thesis as certified by the students' advisory committees. Since 2010, 23 of 23 graduates have produced approved literature reviews.

How did you use findings for improvement?
Results are shared with the faculty and current grad students annually. We have finalized a rubric format to assess the quality and comprehensiveness of the background literature section of the thesis. We start using this rubric to assess theses in Spring 2014.

Additional Comments
None
Expected Outcome 2: MS Thesis Level of Performance in Biology

MS thesis graduates will 1) demonstrate a mastery of the fundamental aspects of a sub discipline within the Biological Sciences, 2) demonstrate the ability to apply their knowledge to scientific research, 3) be capable of writing scientific articles on research performed.

Assessment Method 1: Knowledge of Sub- Discipline

Assessment Method Description

Students will produce approved and comprehensive literature reviews within their thesis as certified by the students' advisory committees.

Findings

100% of MS thesis graduates in the 2012-2013 period (n=6) produced an approved and comprehensive literature review section within their thesis as certified by the students' advisory committees. Since 2010, 23 of 23 graduates have produced approved literature reviews.

How did you use findings for improvement?

Results are shared with the faculty and current graduate students annually.

We have now finalized a rubric for Master's thesis assessment that we have been developing for a couple of years (see previous assessment reports). It follows the rubric developed for the student's final oral exam but concentrates on the background literature more. We hope to start utilizing this rubric on a regular basis starting this Spring Semester.

Additional Comments

Assessment Method 2: Knowledge of sub-discipline (#2)

Assessment Method Description

Students will display a comprehensive knowledge of their sub-discipline at their final oral exam as a certified by the students' advisory committees.
Findings

100% of graduates (n=6) in the Fall 2012-Summer 2013 period displayed comprehensive knowledge of their sub-discipline at their final oral exam as certified by the students' committees. Since 2010, 23 of 23 graduates have exhibited comprehensive knowledge of their sub-discipline according to their committees.

In the last, the department was just assessing on a pass/fail rate. We refined a rubric to give us more detail on students' abilities. Committee members used a rubric we developed 1 year ago to quantify the extent of the abilities in within 3 major attributes (Overall Quality of Science; Overall Depth of Knowledge, Quality of Communication skills, each attribute had several sub-points which were then average for an overall score by attribute; 5 point range for all points: 1= Poor- 5= Outstanding- see rubric). The overall average score for Quality of Science was 3.25, Overall Depth of Knowledge was 3.05, Quality of Communication Skills was 3.12. The average range in the sub points was 2.8-4.1.

These average scores are lower than we last year with about an equivalent sample size (6 vs 4).

How did you use findings for improvement?

As GPO, I presented the oral exam rubric findings to the faculty at a faculty meeting totally devoted to the graduate program. This presentation was to inform the continuing discussion by the faculty about whether we should have a core graduate curriculum and should it be required at both the PhD and MS-T level. The faculty were also told that they have to be more forthright in their input on the rubric so that we can have valid data for assessment.

Additional Comments

We will continue to use the rubric and increase our sample size. Once we have a sufficient sample size we can then exam factors which may explain some of the variation in student performance (or perceived performance by faculty).
**Assessment Method 3**: Application of Scientific Training

**Assessment Method Description**

Graduates will be successful in obtaining employment or furthering their education by pursuing a higher degree within their research sub-discipline within a 2 year period as determined by alumni tracking records from faculty.

**Findings**

66.6% (4/6) graduates are still in the biological sciences field (two are in PhD programs, 2 have jobs in the field). Two are still applying for jobs. Combining this year’s data with last year, 69.5% (16 of 23) MS-T graduates are pursuing careers in their field. We are trying to track the progress of students that did not immediately get a job in their field or continue in Biology by annually asking mentoring faculty of the students for updates. Updates for MS-T graduates are more difficult to obtain than PhDs but we are attempting to follow our alumni/ae more closely.

**How did you use the findings for improvement?**

We will continue to track the students still looking for jobs or education in their field. Results are and will be shared annually with faculty and current grad students. We will also share these data with prospective grad students.

**Additional Comments**

**Assessment Method 4**

Technical Writing Capability

**Assessment Method(s) Description**

MS thesis graduates will publish all or part of their thesis in peer-reviewed scientific journals or other scholarly outlets within 3 years of graduation.
Findings

Of the 6 MS-T graduates, 33.3% (2/6) have already published at least one paper on their research before graduating. 1 of 4 has submitted a manuscript but it has not yet been published. 3 have not submitted any manuscript. Tracking MS thesis graduates from 2007-2013, 54.7% (23/42) have published all or part of their thesis within 3 years of graduation. However, this statistic may be an underestimate because faculty may not fully report a student's publication if s/he have been gone over a year from when we try to gather faculty input.

How did you use findings for improvement?

Results are and will be shared with faculty and grad students annually. The Graduate Program Officer also meets with graduate students on an individual basis yearly to get updates on publication progress (so that publication occurs during or soon after graduation) and to encourage students to publish. Additionally, the Graduate Office should make a greater effort to follow up on publication activity of MS students after they graduate by annually surveying faculty as to publishing activity.

Additional Comments