2012-2013 Assessment Report
Program: Biological Sciences, PhD

College of Sciences & Mathematics

Biological Sciences

Biological Sciences, PhD

Expected Outcome 1: PhD level of performance in Biological Sciences

PhD graduate will display 1) a comprehensive understanding of a sub-discipline of Biology, 2) the ability to produce significant research in their sub-discipline, and 3) be able to communicate their findings effectively.

Assessment Method 1: Comprehensive Understanding of the sub-discipline

Assessment Method Description
PhD graduates will produce in their dissertation a comprehensive literature review of their sub-discipline, either as a separate introductory chapter or that which is contained in one or more chapters containing primary and original data that will be rated by their dissertation committee as well as an outside reader.
Findings

100% of PhD graduates in 2012-2013 (n=12) produced an approved and comprehensive literature review section within their dissertation as certified by the students' dissertation committees and their outside readers. In the last two years, 25/25 produced a comprehensive and approved literature review section within their dissertation as certified by their committee and outside reader.

We will institute the use of a dissertation quality rubric (see attached file) this coming year.
How did you use findings for improvement?

Results are shared with faculty and grad students annually. Current discussions by the departmental Strategic Planning is underway to determine whether a common curricula for our graduate students is necessary to improve their exposure to and understanding of important biological areas. The data we generated from 2 years of rubric use for preliminary and final exams for MS-T and PhD rubric were presented to the faculty at a faculty meeting dedicated to graduate program discussion. The faculty did not think the results indicated a necessity for a core curriculum and indicated they wanted more data. We have obtained another year of data for the oral exams and plan to use rubrics on the comprehensiveness and quality of the dissertation itself and will present it to the faculty.

Additional Comments
None

Assessment Method 2: Comprehensive understanding of sub-discipline #2

Assessment Method Description

PhD graduates will have been orally examined by their dissertation committee at their defense about the general understanding of the published literature within their sub-discipline.
Findings

100% of PhD graduates in 2012-13 (n=12) displayed a mastery of the fundamental knowledge of their sub-discipline at their final oral exam as certified by the students' committees and the outside readers.

We used a modified rubric (see uploaded form) to assess the quality of knowledge and communication displayed by the students during these final exams. There were 3 attributes (Overall Quality of Science, Overall Depth and Breadth of Knowledge, and Quality of Communication Skills) with several sub measure per attributes. Students ranged in scores from 1-5 in various sub measures of the attributes. The overall average
score on the three attributes was 3.84, which was lower than the 4.2 score last year. The average scores for the 3 categories were Overall Quality of Science=4.03, Overall Breadth and Depth of Knowledge=3.68, and Quality of Communication skills=3.82.

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

Results are shared with faculty at least annually. Current discussions by the departmental Strategic Planning are underway to determine whether a common curricula for our graduate students is necessary to improve their exposure to and understanding of important biological areas. The data we generated from 2 years of rubric use at preliminary and final exams for MS-T and PhD rubric were presented to the faculty at a faculty meeting dedicated to graduate program discussion. The faculty did not think the results indicated a necessity for a core curriculum and indicated they wanted more data. The faculty were also reminded that they must give accurate assessments in their use of the rubrics. We have obtained another year of data and will present it to the faculty. However, most faculty are of the opinion that rubrics may not be accurately assessing the qualities ultimately desired in the graduate students and measures like publication and successful placement of graduates are of more importance.

**Additional Comments**

**Assessment Method 3: Ability to Produce Significant Research**

**Assessment Method Description**

PhD graduates will have produced in their dissertation both independent and original research within their sub-discipline which will be evaluated by the students' dissertation committees and outside reader.

**Findings**

100% of PhD graduates in 2012-13 (n=15) produced both independent and original research within their dissertation that is suitable for publication, as certified by the students' dissertation committees and outside readers. In the last 2 years, 25/25 graduates have been certified for this objective.

Again the new rubric produced to assess the comprehensiveness of the literature review as well as the originality of the research should give more quantifiable measures for future assessment. We will start the
use of the dissertation assessment rubric more formally in Spring 2014. However, we always assess the quality of the research in evaluation of the students final defense seminar (see attached final defense seminar evaluation form). We will start data mining those forms to also get a second measure of the student's ability to produce significant research.
BIOL 8950 – First Seminar for Doctoral Students

To the Evaluator: This seminar course is strictly a Departmental requirement (not Graduate School), however the evaluation is very important to the student. Evaluations are given by the student’s advisory committee and grade (S/U) is based upon the majority decision. Please complete this form during and/or immediately after the seminar presentation, and return to the Major Advisor or the Graduate Office (Funchess 331). Your comments will be distributed to the student and the student’s advisor to provide feedback.

Date: ____________ / ____________ / ____________  Student Name: ___________________________

1. Please comment on the following. If you wish, use scale of 1-5 (1 = Excellent, 5 = Poor)

Definition of the Problem:

Presentation of previous research in the area, including 1) the student’s contribution or/and 2) contribution of others in the field:

Creativity:

Presentation of student’s preliminary results (if applicable):

Delivery:

Visual Aids:

Overall Clarity:

Fielding questions:

2. Suggestions for improvement:

3. Other comments:

4. FINAL GRADE: This seminar course is strictly a departmental requirement. Grading is strictly Satisfactory/Unsatisfactory (S/U)

What grade would you give this student?

Satisfactory/Unsatisfactory ______________

Please return this evaluation form to the Major Advisor or Graduate Office (Funchess 331)

Thank you for your time and effort

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BIOL 7950/8950 Final Research Seminar

To the Evaluator: This seminar course is strictly a Departmental requirement in the Graduate School; however, the evaluation is very important to the student. Evaluations are given by the student's advisory committee and the grade (S/U) is based upon the majority decision. Please complete this form during and/or immediately after the seminar presentation and return to the Major Advisor or the Graduate Office (Hunchess 331). Your comments will be distributed to the student and the student's advisor to provide feedback.

Date_________________ Student Name______________________________

I. Please comment on the following. If you wish, use a scale of 1-5 (1 = excellent, 5 = poor)

Introductory Remarks:

Definition of the research problem and the context/contribution of this work to the published body of literature in this area:

Presentation of methods:

Presentation of results:

Presentation of conclusions:

Delivery:

Visual aids:

Relevancy of the content of the talk:

Overall clarity:

Fielding questions:

II. Suggestions for improvement (please expand on the reverse side as necessary):

III. Other comments (please expand on the reverse side as necessary):

IV. FINAL GRADE: Grading is strictly Satisfactory/Unsatisfactory (S/U). What grade would you give this student? (Satisfactory or Unsatisfactory) ____________

Please return this evaluation form to the Major Advisor or Graduate Office (Hunchess 331).

Thank you for your time and effort.
How did you use the findings for improvement?

Results are shared with faculty at least annually. Current discussions by the departmental Strategic Planning are underway to determine whether a common curricula for our graduate students is necessary to improve their exposure to and understanding of important biological areas. The faculty think that rubrics may not be accurately assessing the qualities ultimately desired in the graduate students and measures like publications and successful placement of graduates are of more importance.

Additional Comments

Assessment Method 4
Effective Communication of Research

Assessment Method(s) Description

PhD graduates will have conducted research that is communicated to scientists in their sub-discipline by oral and poster presentations at national and international scientific meetings during their degree program. Additionally, PhD graduates will have conducted research to scientists in their sub-discipline by scientific publications in peer-reviewed journals or other scholarly outlets within 3 years of graduation.

Findings

According to our exit surveys of both the graduates and their major professors, 100% of our PhD graduates (n=12) in the 2012-13 period have given either a poster or oral presentation at national or international meetings (and average of 3.85 in the course of their PhD program) on all or part of their dissertation research during their degree program.

Additionally, using data from the same surveys, 83.3% of PhD graduates in 2012-2013 have published all or part of the independent and original research from their dissertation in peer-reviewed journals or other scholarly outlets either before or within the first year after graduation. Students who have published in this time period average 4.7 papers/student (range 0-10). We continue to survey faculty annually to get updates on the publication progress of our graduates.
**How did you use findings for improvement?**
We continue an excellent record of oral and/or poster presentation productivity which we share annually with the faculty and graduate students. The GPO has annual meetings with the students to encourage them to present their research in a timely fashion.

Our PhD graduates exhibit an excellent record of publication productivity which we proudly share with our faculty and current grad students. Peer-review publication is the ultimate standard of quality and originality of scientific research. To have so many of our students publish so well and quickly bespeaks their quality. The GPO meets with all grad students annually, reviews their progress, and encourages them to present and publish their research before they graduate.

**Additional Comments**