

Program-Level Assessment: Annual Report

Program Name (no acronyms): Biochemistry and Mol. Biol. Department: Biochemistry and Mol. Biol.
Degree or Certificate Level: PhD College/School: School of Medicine
Date (Month/Year):12/22 Assessment Contact: Tomasz Heyduk
In what year was the data upon which this report is based collected? 2021-22
In what year was the program's assessment plan most recently reviewed/updated? 2021
Is this program accredited by an external program/disciplinary/specialized accrediting organization? no

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

We re-assessed Learning Outcome #1, since as the result of 2021 assessment of this Outcome, changes have been made to one of our courses to improve this Outcome.

Learning Outcome #1:

Possess an appropriate level of knowledge on current biomedical science as related to biochemistry and molecular biology and the ability to evaluate and critique publications; possess the ability to identify and select meaningful problems to be addressed in bioscience research, to frame testable/falsifiable hypotheses concerning an important research question; be able to create and implement experimental protocols with suitable controls to test a scientific hypothesis, and to interpret the results of experiments in light of the hypothesis driving them.

2. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe the artifacts in detail and identify the course(s) in which they were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

The grades and overall performance of the students in the written Preliminary Examination and Oral Comprehensive Examination which are administered as a part of Preparation and Evaluation of Scientific Research Proposals (BCHM-6250). This course was not offered online, at the Madrid campus, or at any other off-campus location.

3. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (please do not just refer to the assessment plan).

In BCHM-6250, the students develop hypothesis-driven research proposals on their area of research using an NIH Pre-doctoral proposal format under the supervision a committee of faculty. The committee is formed by the Thesis Advisor (non-voting member) and five voting members: BMB PhD Program Director, 2 Course Directors, and two Faculty members selected by the student with sufficient familiarity with the topic, who act as proposal reviewers. This year we modified the course to allow a stronger participation of student thesis advisor in achieving the teaching objectives of the course. In the past, we limited participation of student advisors in this course to challenge students to

develop their ideas, hypotheses and research methods independently. However, we believed it would be beneficial to have a have involvement of the thesis advisors in the course since they are the best experts on the areas of the students' research proposals. We also believed that this could be done without compromising the goal of assuring student independent thinking.

To evaluate student performance, at mid-term, students present their project orally in front of all faculty and students involved in the course and submit the mid-term written proposal for evaluation to their Committees. The students receive written critiques that cover the following evaluation criteria: Idea and Critical Thinking, Presentation, NIH Style Critique (Overall Impact, Significance, Approach During). Students respond to these critiques by submitting a revised proposal which is graded by the Committee. Receiving a passing grade is equivalent to passing the written preliminary exam and allows the student to progress to the oral examination. For the oral exam, the Committee assesses the student's ability to master the research subject of his/her Ph.D. thesis, including the ability to think critically and creatively about this area, and to communicate their ideas. Students must also demonstrate a firm grasp of biochemistry and related areas of molecular biology, especially as it relates to lecture and seminar courses taken, independent studies and rotations completed.

4. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

We observed improvement in the quality of written proposals (as judged by the comments from Written Examination committees). All students passed their written and oral preliminary exams. The students, when polled, expressed satisfaction with the changes that we've made to the BCHM-6250 course this year.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

We have made the changes into BCHM-6250 course initially for one year. After assessing the impact of these changes, we concluded that the changes into BCHM-6250 course should be made permanent. Departmental Handbook for Graduate Students was amended to reflect these changes.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

These results were discussed at the meeting of BMB Training Committee. The Chair of the BMB Training Committee reported these results to the faculty at our monthly faculty meeting.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies

- Course content
- Teaching techniques
- Improvements in technology
- Prerequisites

- Course sequence
- New courses
- Deletion of courses
- Changes in frequency or scheduling of course offerings

Changes to the Assessment Plan

- Student learning outcomes
- Artifacts of student learning
- Evaluation process

- Evaluation tools (e.g., rubrics)
- Data collection methods
- Frequency of data collection

Please describe the actions you are taking as a result of these findings.

We made the changes into the teaching techniques in BCHM-6250 course permanent.

If no changes are being made, please explain why.

n/a

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

The changes into the teaching techniques in BCHM-6250 course described above.

B. How has this change/have these changes been assessed?

The assessment of these changes is described above.

C. What were the findings of the assessment?

The findings of the assessment are described above.

D. How do you plan to (continue to) use this information moving forward?

We will monitor student's performance in BCHM-6250 course yearly to determine if further tweaking of teaching techniques in this course might be needed.

IMPORTANT: Please submit any assessment tools (e.g., artifact prompts, rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.