Proposal for Educational Program Outcomes Assessment

Department of Microbiology and Molecular Genetics
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Department of Microbiology and Molecular Genetics Educational Outcomes Assessment Plan
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Introduction

The Department of Microbiology and Molecular Genetics has established a permanent committee of four faculty members to assess undergraduate and graduate student outcomes. With guidance from the entire faculty to set degree program goals and delineate desired student outcomes, the assessment committee will outline assessment methodologies, propose annual assessment budgets, and manage data acquisition to complete annual assessment reports, using both direct and indirect measures of student accomplishment, directly related to the stated outcome goals.

Degree Programs

B.S in Microbiology
Cell and Molecular Biology
Medical Technology
M.S. in Microbiology/Cell and Molecular Biology
Ph.D. in Microbiology/Cell and Molecular Biology

Instructional Goals

The department of Microbiology and Molecular Genetics is preparing students to enter the world of biotechnology, an exciting and rapidly changing branch of science. Departmental faculty members are committed to a high standard of scholarship in the classroom and to student involvement in theoretical and practical aspects of modern biological research.

Desired Undergraduate Student Outcomes

General for all majors:

Graduates from all three majors should

(1) understand basic biological principles and laboratory techniques.
(2) be able to apply the scientific method.
(3) be comfortable applying quantitative methods to biological phenomena.
(4) be capable of critical thinking and problem solving.
(5) communicate effectively, in writing and in speech.
(6) possess safe and precise laboratory skills.
(7) be prepared for professional level jobs, graduate study, and/or graduate professional education.

Specific Outcomes for each of the 3 degree plans:

Graduates from these majors should

Microbiology

(1) be able to explain and apply the principles of microbial cell biology.
(2) understand the principles of microbial genetics.
(3) understand and appreciate the interactions and impact of microorganisms on humans.
(4) understand the interactions and impact of microorganisms on the environment.

Cell and Molecular Biology

(1) understand and apply the principles of eukaryotic cell biology.
(2) understand the principles of genetics and molecular biology.
(3) understand the impact of cell and molecular biology on the health and well-being of society.

Medical Technology

(1) demonstrate competency and qualify for a Medical Technology hospital internship.
(2) successfully complete a hospital internship.
(3) pass the American Society for Clinical Pathology (ASCP) accreditation exam.

Desired Graduate Student Outcomes

MS in Microbiology/Cell and Molecular Biology

Graduates should

(1) complete an original research project in Microbiology/Cell and Molecular Biology of quality suitable for publication in a refereed journal.
(2) master technical skills in Microbiology/Cell and Molecular Biology research.
(3) master the ability to interpret and communicate information presented in the areas of Microbiology/Cell and Molecular Biology.

PhD in Microbiology/Cell and Molecular Biology

Graduates should

(1) complete an original research project in Microbiology/Cell and Molecular Biology of quality suitable for publication in a refereed journal.
(2) master technical skills in Microbiology/Cell and Molecular Biology research.
(3) master the ability to interpret and communicate information in the areas of Microbiology/Cell and Molecular Biology.
(4) develop critical and independent thinking in the design of research strategies.

Assessment Methodology

Undergraduate

(1) Standardized testing. Graduating seniors will be encouraged to take the following exams, to directly assess Specific Outcomes as listed above (Cell/Molec #1,2, Med Tech #3). Data will be compiled every year by the assessment committee, for review by the departmental faculty.
Cell and Molecular Biology – Graduate Record Exam (GRE) B22 Cell and Molecular Biology subject test
Medical Technology – ASCP licensing exam

(2) Alumni survey (all majors) – An annual alumni survey, coordinated by the Office of University Assessment, will be conducted to assess graduate satisfaction with their education and preparedness for the workplace and graduate study. (General outcome 7)

(3) Tracking of upper division grades in core courses – Student achievement in courses central to their core knowledge and laboratory technique will be summarized for students each semester. The data resulting from this summary will directly assess General Outcome #1.
Microbiology (BIOL 3024, MICR 3224, 4214)
Cell and Molecular Biology (BIOL 3024, CLML 3014, 4113)
Medical Technology (BIOL 3024, MICR 3254)

(4) Exit interview (all majors) – Our department head or a member of the assessment committee or a senior graduate student (if necessary) will interview graduating seniors to assess student placement (General Outcome #7), assess satisfaction that they have achieved general outcomes (General Outcomes #1-6), and then complete a summary of the interview to share with departmental faculty.

Graduate

(1) Annual scholarly report. Each year, current and graduating students and faculty of graduated students will complete a form listing publications (including manuscripts in preparation or submitted), thesis or dissertation completions, presentations (national, regional, and local), and any awards (fellowships, grants, outstanding achievements, etc.). This report will directly assess MS Outcome #1 and PhD Outcome #1.

(2) Exit interview/survey. A faculty member, who has not served on a student's thesis committee, will interview the graduating students to assess each student's future plans, satisfaction with the program, and then complete a summary of the interview to share with departmental faculty (MS Outcomes #2-3 and PhD Outcomes #2-4).

(3) Alumni survey. An annual alumni survey, coordinated by the Office of University Assessment will be conducted, to assess graduate satisfaction with their education and preparedness for the workplace (MS Outcomes #2-3 and PhD Outcomes #2-4).
(4) The above assessments will be compared with student aptitude as determined by GRE scores (verbal and quantitative) and grade point average received prior to beginning a graduate program.

Integration of Assessment Data with Program Improvement

An annual assessment report summarizing test and course data, plus anecdotal information from interviews will be submitted to the full faculty for discussion, and to the Office of University Assessment for review. It is anticipated that perceived program strengths and weaknesses will be discussed, and that faculty recommendations for program adjustment will be made when necessary.