

MSU Departmental Assessment Plan

2009

Department: Veterinary Molecular Biology
Department Head: Mark T. Quinn, Ph.D.
Assessment Coordinator: Mark Quinn

Degree/Major/Option Offered by Department:

Bachelor of Science in Biotechnology-Animal Systems Option

Major: Biotechnology-Animal Systems Option
Assessment Coordinator: Mark T. Quinn, Ph.D.
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Assessment Management Structure

1. The Assessment Coordinator will be responsible for developing and revising the assessment instruments (advising survey, exit survey) and annually collating the results of these instruments.
2. The Department Head and/or Assessment Coordinator will conduct senior exit interviews to discuss the program.
3. Teaching faculty and graduate teaching assistants will provide information on the course outcomes and issues.
4. On an annual basis, the Department Head and Assessment Coordinator will review the assessment data obtained and prepare a summary for the faculty.
5. All assessment information will be summarized and presented annually by the Assessment Coordinator at a faculty meeting for discussion and evaluation of corrective action, as needed. All faculty members will have input into the final report and plan.

Degree Objectives

Prepare students to use their training in biotechnology to solve agricultural, engineering, natural resource and social problems in a creative and humane fashion. Graduates should be equipped to work in agricultural, industrial or pharmaceutical industries where biotechnology is used as part of the development and production processes. They will also be capable of working in agricultural, forensic, medical, and academic research laboratories.

Expected Competencies

The Biotechnology degree is a College Degree. There are three options: Animal Systems, Plant Systems, and Microbial Systems. These options are administered by the Departments of Plant Science & Plant Pathology, Veterinary Molecular Biology, and Microbiology, respectively. The Animal Systems Option will be described in the following plan.

Discipline-Specific Knowledge

General (all options): Modern chemistry including the general principles of organic and biological chemistry; proficiency in mathematics through calculus and applications of mathematics to science including physics; general biological principles; microbiological methods, including genetics, and the technologies associated with recombinant DNA.

Animal Option: Animal physiology including reproductive physiology; diseases affecting animal health, anatomy, and endocrine physiology; advanced training in biochemistry and biochemical methods; modern animal cell methods including cell culture, immunology, microscopy, immunocytochemistry, and advanced methods in animal genetics. Ethical practice of science will be integrated throughout all courses as well as

being the focus of an upper division course. Ultimately, students should understand and will be required to discuss the ethical ramifications of their work and the impact of science on society in general.

Competency in these areas will be evaluated through quizzes, exams, and evaluations of laboratory skills for each course. In addition, the internship provides an opportunity for students to put into practice what they have obtained through coursework. Performance in the Internship and Capstone course allows assessment of the overall competency developed by our students.

Communication Skills

Biotechnology majors should be able to learn scientific processes through seminar and professional presentations as well read technical and scientific articles at a high level of comprehension. These same skills should also enable students to understand written and oral instructions given by laboratory supervisors. Students should be able to explain basic laboratory procedures to peers and work study students. They should be able to organize their thinking and observations into professional and scientific articles and reports. Students should be able to present oral presentations in both seminar and professional formats.

Problem-Solving Skills

Highest priority is a creative approach to problem solving. Students will be able to develop an analytical approach for the solution of a given problem. Their analytical skills will draw upon their understanding of gene cloning techniques including how genetic material is transferred to enable them to select and prepare reagents necessary to isolate target compounds.

Curriculum Assessment Plan

Evaluation of Teaching

The Biotechnology-Animal Systems courses will be evaluated through current student feedback, Knapp/Aleamoni forms, feedback from internship supervisors, and student performance in the senior capstone course. Feedback on student performance by Internship supervisors will allow us to assess whether our students are being prepared sufficiently for internship experiences and whether the students are competent in lab skills and research methods. The results of the Knapp/Aleamoni forms will be discussed at the annual faculty evaluation interview carried out by the Head of Department.

Evaluation of Advising

VMB faculty members take an active role in advising undergraduate students. VMB is responsible for advising students in the pre-veterinary option and students enrolled in the Biotechnology degree. Advising will be assessed with a biannual written survey of the advisees in the Spring semester.

Capstone Assessment

Students are required to develop a publication-style manuscript and a research seminar describing their internship work and outcome. Students are also required to develop and submit resumes for evaluation. Students are required to make as well as attend a number of oral scientific presentations to develop their scientific presentation skills. Finally, students are required to read the scientific literature and provide reports to verify their ability to understand and synthesize scientific articles. These requirements provide the criteria for assessment of students progress and capabilities.

Curriculum Review

Specific strengths and weaknesses of the curriculum will be determined through feedback from internship supervisors and the results of a graduate exit survey. In addition, entry rates into professional or graduate schools and employment success will be monitored.

Plan for Utilizing Data

Information obtained from the assessment instruments will be reviewed by the Department Head and Assessment Coordinator (see above). This information will then be compiled into a narrative format and presented once a year at a faculty meeting. An overall assessment of student outcomes and the corresponding strengths and weaknesses of the program will be presented. The teaching faculty and graduate teaching assistants will have the opportunity to provide input on the assessment process. Inadequacies of the curriculum, facilities, or internship opportunities will be identified for discussion and corrective action. A written summary of the discussion is maintained on file. Any curriculum changes will be integrated into the program and catalog. The assessment is submitted for posting on the MSU web site.