

Learning Goals for Students in Biology and a Description of Assessment Projects

A. Aims of the program/discipline (very brief)

Biology students learn about the characteristics and processes of life, the scientific method and its application in conducting original research, the history of the discipline, and the ethical and social implications of scientific discovery and its application. In support of the University's mission and objectives concerning liberal education, students in biology develop their skills in critical and analytical thinking as well as written and oral communication. Students who major in biology, biochemistry, neuroscience, biology-environmental studies, or biophysics become prepared for careers in the biological sciences or related fields, whether they conclude their formal education with the baccalaureate degree or continue their education in graduate or professional programs.

B. Specific Learning Goals and Assessment Plan

- 1) Biology students learn fundamental concepts in three major areas: cell and molecular biology, organismal biology, and ecology and evolution. (**Assessment: 1 - Determine the number of courses in each of the three areas that each student takes – essentially a transcript review and 2 - Student performance on standardized tests, such as the GRE Major Field Test**)
- 2) Biology students can use modern laboratory and field research techniques to conduct research. (**Assessment: Survey the methods sections of independent and directed research project papers to determine the types of techniques student use to conduct research**)
- 3) Biology students can integrate content, skills, and critical thinking to design feasible independent research projects within the framework of the scientific method. (**Assessment: Evaluate proposals and papers for course specific and SYE independent research projects**)
- 4) Biology students can critique and contextualize the published works of others in the scientific community, including the ability to critically analyze experimental design and data interpretation. (**Assessment: Evaluate literature reviews or critiques written in 200 and 300 level courses**)
- 5) Biology students can demonstrate quantitative literacy, including the application of statistical methods to analyze and interpret data. (**Assessment: Evaluate the results sections of papers written by students on their independent and directed research projects that required statistical analysis.**)
- 6) Biology students develop their scientific writing skills through the writing of papers within the context of scientific conventions of format, succinctness, objectivity and accuracy. (**Assessment: Evaluate samples of students' written work from their 100, 200, 300, and 400 level courses**).
- 7) Biology students develop their oral communication skills within the context of scientific conventions of format, succinctness, objectivity and accuracy through the presentation of papers and posters. (**Assessment: Evaluate paper and poster presentations in courses and at the Festival of Science**)