

Student Learning in Non-Major Biology Courses

Non-major undergraduate students can enroll in several courses offered by the Biology Department. Four courses have been approved to help students meet the university's General Education requirement for a life sciences course with laboratory. Three courses are open to all majors:

Biology 1070- Survey of Biology I (plant focus)

Biology 1080-Survey of Biology II (animal focus) (required for nursing majors)

Biology 1300 Introduction to Urban Environmental Science

Students enrolled in an Education major are required to take **Biology 1510- Biology Concepts** (plant focus) that includes topics aligned with standards for teaching science to children in K-12 grades.

Our goal in each of these courses is to help students develop literacy about biological concepts while experiencing scientific practices. Success in meeting this goal is measured in different ways by each instructor. Instructors include regular formative assessments that guide instructors in how they might alter or supplement their lessons to support the needs of all students. Summative assessments are also used and include quizzes and exams as well as performance-based instruments such as laboratories and presentations.

Standardized Assessment Plans for Biology 1070 and 1080

Biology 1070 and 1080 use two and three standardized assessment instruments, respectively to assess how well students learning. The standardized assessments were developed to gauge how well the courses are meeting the university's General Education outcomes IV and VI (see below). The aim is for students to perform at least at an acceptable level (70% or better) on each assessment with a target performance identified as 80% or better.

General Education outcomes met by Biology 1070 and 1080:

Outcome IV: Apply the basic vocabularies, questions, and methods of the humanities, social sciences, and natural sciences to the *process of inquiry*.

Outcome VI: Demonstrate an understanding of the interaction between science and technology, society, and the environment.

BIOL 1070 asks students to complete a *Photosynthesis and Scientific Methods Laboratory* that emphasizes scientific methods related to measuring photosynthesis and is completed in collaborative groups. Students also are given a *multiple choice pre and post test* to measure learning over the course of the semester. The 1070 course also embeds current scientific examples and curricular resources into lectures and discussion in order to engage students and link science learning with technology and societal issues (STS).

BIOL 1080 asks students to complete a *Photosynthesis and Scientific Methods Laboratory* similar to 1070 students, in which student groups are guided through a structured inquiry lab on photosynthesis and prompted to answer questions about

experimental design and interpretation. Students are also given a *multiple choice pre and post test*, but instead of assessing knowledge of several biology concepts, the test focuses on evolution and natural selection. Evolution is a major theme of the 1080 course and students are given the option to visit the Field Museum's exhibit, Evolving Planet, to help make connections between science, society and technological advancements. Biology 1080 also asks students to complete a third assessment, an *Evolution Beliefs Survey*. The survey is designed to assess potential misconceptions and understanding of the salient nature of Evolution theory to understanding humans and societal issues.