Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Summaries of independent research
Deliver effective oral and visual summaries of independent research.

**Related Measures**

**M 1: Annual presentation**
During the annual presentation of independent research during "Works in Progress Seminars", students will be assessed for their oral presentation skills using a rubric.

Source of Evidence: Presentation, either individual or group

**Target:**
90% will meet the expectations set forth using a departmentally approved scoring rubric once a year.

SLO 2: Master of Concepts and experimental approaches
Demonstrate mastery of advanced concepts and experimental approaches in an area of biological research

**Related Measures**

**M 2: General Exam Presentation**
General exam seminar. Students will present a seminar on their research topic outlining the scientific background, proposed experimental design and analysis, and anticipated significance of the project to the advancement of science.

Source of Evidence: Academic direct measure of learning - other

**Target:**
90% of students in the program will meet the targets set forth in the rubric for the General Exam.

SLO 3: Written Proposal
Integrate current scientific knowledge into a research proposal aimed at making an original contribution to an advanced technical field of biology.

**Related Measures**

**M 3: Presentation of a research proposal**
Presentation of a research proposal in the form of a departmental seminar.

Source of Evidence: Presentation, either individual or group

**Target:**
90% will meet expectations set forth on a departmentally approved scoring rubric with an average of 2.0 (having met all criteria).

SLO 4: Present results to general audience
Apply advanced concepts and experimental approaches to a novel problem in biology. Present and evaluate the results of original dissertation research to a general audience

**Related Measures**

**M 4: General Exam**
Write and defend a written dissertation proposal to the student's advisory committee (General Exam). The proposal will be scored by the committee using an approved rubric.

Source of Evidence: Academic direct measure of learning - other

**Target:**
90% of student dissertation presentations will be scored with an average of 2.0 (having met expectations overall) set forth in a departmentally approved scoring rubric during the closed defense of the research proposal.

SLO 5: Integrate original research into a specialized field of biology.
Write a dissertation that synthesizes previous research in support of an original research project, and evaluates the results of original research in the context of current knowledge

**Related Measures**

**M 5: Completion and defense of a dissertation**
Completion and defense of a dissertation in an area of the biological sciences appropriate to the student's interest. The dissertation will be scored using a departmentally approved rubric.

Source of Evidence: Academic direct measure of learning - other

**Target:**
90% of students defending their dissertation will write a document that scores an average of 2.0 (meeting all criteria) based upon the rubric.