

HONORS PROGRAM IN BIOLOGICAL SCIENCES

Independent Research in Biological Sciences forms the basis for the Honors Program. In the fall quarter of the senior year, students signal their intention to submit a Senior Thesis by providing an electronic provisional Abstract of the proposed work to the Honors Coordinator for the Program in Biological Sciences at gjg853@northwestern.edu. The Associate Director of PBS currently serves as the Program's Honors Coordinator.

I. Requirements for Honors in Biological Sciences

1. A minimum GPA of 3.30 in courses pertaining to the Major, including required life science courses and also including all major-required physics, math, and chemistry courses.
2. Completion of **at least six months of research on an Honors project, and completion of at least two quarters** of Independent Research (BIOL SCI 399), with satisfactory 399 grades.
3. Submission of a Thesis that is a significant independent research accomplishment. Questions regarding Honors should be referred to the honors coordinator.

II. Identification of a Senior Thesis Advisor

Students may begin Independent Research after completion of five quarters of course work. To take part in Independent Research, students must identify an appropriate supervisor. A directory of research training faculty and their research interests is available on the PBS webpage. Faculty from Northwestern University, Northwestern University Medical School, and Evanston Hospital participate in the program and cover a wide range of research areas. Students identify a supervisor by visiting with faculty whose research areas are of interest and exploring with them the possibility of doing research in their laboratory. By mutual agreement, a plan of study is then prepared. The supervisor's responsibilities are to provide guidance in choosing an independent research project, a supportive research environment, advice in the execution and interpretation of experimental results, and in the writing of the Thesis.

III. Structure of the Senior Thesis

1. Provisional Thesis. The Thesis consists of Abstract, Table of Contents, Literature Survey, Materials and Methods, Results, Discussion, References, and Curriculum Vitae. A provisional Abstract should be no more than one page long and is due by a stipulated date in the fall quarter. The Abstract briefly defines the problem and describes the experiments that will be carried out. It should be submitted electronically in Word format.

2. Final Thesis. The final Thesis must be at least 40 pages in length, double-spaced. Its Literature Survey should place the student's work in context. Previous published or unpublished work (in the Supervisor's lab or elsewhere) should be discussed, and its relationship to the Thesis experiments described. The Materials and Methods section should have sufficient detail to allow evaluation of the experimental procedures used by the student. The Results section should include figures and tables as necessary to document the experiments, placed at appropriate points in the text. The

presented experiments and their results are normally expected to reflect the work of the student, not the work of others. In any instance of collaboration, specific credit must be given to those involved. The Discussion section analyzes why particular experiments succeeded or failed. The relationship of the results to the work of other researchers should be described here. This section should be used to examine the scientific significance of the student's work, and to suggest possible future directions for related research. A consistent style of referencing should be used throughout the Thesis. The Reference list must include (among other things) names of all authors and the full titles of their papers.

IV. Evaluation of Theses

1. Provisional Thesis. The student must turn in a Provisional Thesis to the Supervisor by the end of Winter Quarter. A grade in Winter 399 cannot be given until this has occurred. Obviously, some (even most) data will usually not yet be available at this time, but the student should nonetheless write the Provisional Thesis as a complete document, with all required sections, making assumptions about the final experimental results that may or may not prove correct, and will almost always require later modification, as data accumulate. The Supervisor reads and edits this Provisional Thesis, and then provides the Honors Coordinator with a signed form, expressing confidence in the ongoing research of the student and assuring PBS that the Provisional Thesis has been edited.

2. Final Thesis. A final Thesis must be turned in to your research Supervisor by a specified date in late April or early May. A copy is due in the Biological Sciences Office (Hogan Hall, Room 2-144) by a slightly later specified date. A signed letter from the Supervisor, in a sealed envelope, must be physically attached to the Thesis when it is received by the PBS office, recommending the student for Honors and/or a Prize. (PBS will not accept a Thesis without this letter, and Honors cannot be considered without a nomination by the Supervisor.) A Reader is then assigned to each Thesis. When the Honors Board meets, letters from the Supervisor and the Reader are considered, along with the Thesis itself. For Program Honors, there must also be a 3.30 or greater average in all courses required by the Major. After debate, the Board votes with regard to whether Program Honors should be recommended to Weinberg College. It also votes with regard to winners of our four Prizes; the latter decision is based solely on the quality of the Theses.

V. Due dates for Honors materials for academic year 2007-8:

For Abstract: to Honors Coordinator by email attachment by October 22, 2007

For Provisional Senior Thesis: to Supervisor by end of Winter Quarter 2008

For Final Senior Thesis:

- to Supervisor by May 1, 2008

- to PBS office by May 8, 2008

General questions about the Senior Thesis may be directed to the Program in Biological Sciences Office at 847-467-2310.