

Honors Program in Biological Sciences (revised Fall 2013)

Overview

The goal of this Honors program is to give our most talented students an exceptional background in biological research. Participation in this program will increase their level of commitment and productivity while preparing them for successful postgraduate careers. The program is specifically designed for students going into research careers in graduate school, MD/PhD programs, or medical school with a significant research component.

Requirements

To graduate with **honors**, students will have to maintain [the support of their research mentor](#), a 3.2 Science GPA or higher and complete:

1. At least three semesters (for at least four credits total) AND one summer of independent research at Notre Dame in the same lab. Students are expected to apply for REU, COS-SURF or other summer funding and continue working in the same lab until they graduate.
2. A thesis of 25 - 40 pages.
3. A graduate level course in the area of research
4. A presentation at a national or regional meeting. Undergraduate conferences will typically not qualify, although the committee will consider this option under unique circumstances.
5. One disciplinary research seminar each year (1 credit seminar, see below)

Eligibility

The program will accept junior Biological Sciences and Environmental Science majors in good academic standing (Science GPA 3.2 or higher) who have already completed at least one semester of undergraduate research in a professor's laboratory at Notre Dame. Students who are doing research in the Department of Biological Sciences but are not Biology or Environmental Science majors are not eligible.

Application

A. Cover Letter

Submit one page. Include your email, college, major, year, mentor. Also include how long you have worked with your mentor; whether you are in the Ysuko Scholars or Glynn Honors program; why you are applying to the Honors Program, and your career plans, including an explanation of how your research experience would fit into your career plans, both immediate and long-term.

B. Research Statement

Submit 5 - 6 pages, single-spaced: (1) Research Experiences (description of the research undertaken to date, in courses and with research mentors and how you developed from each experience); (2) Research Intent (description of proposed research that provides sufficient detail, 3-4 pages, to demonstrate the viability and worthiness of the research, and enable reviewers unfamiliar with your specific area of research to provide a reasonable assessment)*; (3) Significance of Proposed Research (a paragraph describing the broader impact – how could the information generated by this research be applied or have an impact on scientific knowledge); (4) Timeline of your research by semester until graduation. Your application packet should be reviewed by your mentor before you submit.

*The Research Intent, (2) above, should adhere closely to the following structure:

- Background (with references)
- Preliminary Results, if applicable

-Two or More Specific Aims of Proposed Project that each include the following subsections: hypothesis, rationale (for that aim), experimental strategy with methods, interpretation and significance.

The Research Intent (2) should also include:

- Intellectually deep hypotheses and an ambitious and multi-faceted project that would necessitate multiple specific aims (2 – 4 aims is the average)
- A description of experiments that will be conducted through the spring of senior year
- Research that is driven by the scientific thought process versus a mostly a technical contribution
- The student's role and project should be clearly defined, if the student is part of a research team on a large project.

C. Transcript

D. Nomination Letter from Faculty Mentor

This letter should include an overall assessment of a student's potential and past performance. It should also include a statement on the research likely to be presented or published, the mentorship the student will receive, and the likelihood of the student completing the Honors Program requirements. Please email to honorsnd@nd.edu by November 1.

Application Deadline

Application materials are **due by November 1**. Application materials should be emailed to the Department of Biological Sciences at honorsnd@nd.edu

Selection and Notification

Selection by the Undergraduate Research Committee in Biological Sciences will be based on a cover letter, research statement, transcript, and nomination letter from their faculty research mentor. Applicants will be notified by November 20.

Primary Contact

For more information or if there are questions, please contact: Michelle Whaley, Undergraduate Research and Honors Program Coordinator – Department of Biological Sciences, whaley.3@nd.edu, (574) 631-9343, Jordan 226.

Thesis Information

Students will write parts of their thesis in the senior research seminar with input from the advisor and the seminar instructors. The final version of the thesis will be written with the advisor, and will be submitted by **April 1**. Each thesis will be reviewed by one member of the Undergraduate Research Committee or an outside reviewer by April 15. The students will be notified by April 16 if a rewrite is needed. The rewrite will be due April 26 and will have to be approved by the same reviewer by May 3. If the thesis is not approved, a second committee member will read the thesis and confer by May 10. Guidelines for the thesis and thesis reviewers will be provided in the senior seminar.

Research Seminars (Graded)

The purpose of the seminar is to create a small learning community where students and practicing scientists can connect. The seminar learning goals are to support and develop each student's independence, scientific communication skills, critical review skills, and understanding of their research in the context of the larger field. The seminar will have the added benefit of helping students prepare for graduate applications and fellowships.

Junior Year Seminar Goals (offered each Spring)

Students will be able to:

1. Critically evaluate research data in a journal club presentation
2. Design scientifically defensible experiments and projects
3. Create and present a professional research talk or poster
4. Articulate career goals following career exploration
5. Identify common research ethics issues and articulate solutions to these issues
6. Write a research proposal or report supported by primary literature

Senior Year Seminar Goals (offered each Fall)

Students will be able to:

1. Critique research talks (2 departmental seminars)
2. Deliver effective research presentation (with accepted juniors)
3. Write a sophisticated research thesis (intro and results sections)
4. Deepen broad and interdisciplinary thinking skills
5. Understand the research culture (junior and senior faculty speakers)
6. Prepare for post-graduate work in research