Honors in Biology

The Honors in Biology Program provides students with an opportunity to work closely with faculty who serve as intellectual and technical mentors in their exploration of biological research. Honors students also participate in a 2-credit research seminar, providing exposure to a broad range of current science in the Biology research community.

Students have the opportunity to translate formal coursework into research practice. Undergraduates fully engage in scientific inquiry and the process of doing science as independent researchers, and learn first-hand the dedication, commitment, perseverance, and technical skills required to see a project to fruition. Students benefit from learning how to develop and test scientific hypotheses, as well as the inevitable setbacks that punctuate the scientific enterprise. The end result is one of learning the practice of science through questioning nature, mastering modern technologies, and collecting, analyzing, and interpreting data under the guidance of a faculty mentor. These experiences provide excellent preparation for graduate training and/or professional careers.

Eligibility Requirements:

1.) GPA in Biology courses ≥ 3.5
2.) Overall GPA ≥ 3.0
3.) Approval of the Honors Program application by the Biology Department's Research & Honors Committee.

Program Requirements:

1.) Graduation with a major GPA of ≥ 3.5 in biology courses
2.) Participation in one semester of the 2-credit Research Seminar, CAS BI 497/498
3.) Two semesters of mentored research (typically CAS BI 401/402; see next page for allowable alternatives)
4.) Completion and defense of a written senior thesis
Program Guidelines:

Research:

Most Honors in Biology students will register for and complete two semesters of mentored Honors Research in Biology (BI 401/402) during their senior year. Honors students in BI 401/402 typically complete an original laboratory or field-based research project under the supervision of a faculty member in the Department of Biology (or with an advisor at the Medical School). All 8 credits count toward the Biology major; in the case of laboratory or field-based research projects, 4 of these credits also may be counted as one of the three upper-level laboratory courses required for Biology majors.

Honors students are expected to spend a minimum of 12 hours per week engaged in their research project, including time spent analyzing data and preparing the senior research thesis.

Alternative Research Pathways:

To accommodate additional students in the Honors in Biology Program and allow flexibility in course scheduling (e.g., participation in study abroad programs in fall semester of senior year), students who have already had significant research experience with their project mentor prior to senior year, may register for Honors Research in Biology in spring semester only (BI 402), provided that all other requirements described are met.

Acceptable substitutes for BI 401 include: 1) a full-time summer research experience (e.g., REU/UROP); 2) one semester of directed research during junior year and/or fall semester of senior year (BI 391/392; BI 491); or 3) a petition from the research mentor describing other significant research efforts and accomplishments by the student in their laboratory (e.g., two semesters or more of paid REU or UROP experience). For credit toward the Honors Program, a minimum grade of a B+ is required in the alternative research courses listed above. For students graduating in January, these alternatives may be combined with BI 401 and thesis presentation and defense during Fall semester to complete the requirements of the Honors Program.

Seminar:

All Honors in Biology students must complete one semester of the Honors in Biology Seminar (either BI 497 or BI 498), a two-credit research seminar. Students in BI 497/498 must attend any one of the weekly research seminar series offered in Biology (Biomolecular Seminar, EBE Seminar, Neuroscience Seminars), as well as the occasional department-wide Biology seminars offered during the semester in which they are enrolled. Students must also complete a writing assignment that reviews the research of one of the speakers during the semester. Students will register for BI 497/498 with either their academic advisor or research mentor, who will provide details on the writing assignment and grade the paper. The course grade is based on attendance at seminars and the written assignment. A minimum grade of B+ in BI 497/498 is required to graduate with Honors.
Thesis/Defense:

The Honors in Biology Program culminates in a written senior thesis successfully presented and defended before a faculty committee.

In most cases, the senior thesis will be based on the student's field or laboratory research and will be written in the general format of a standard MA/PhD research thesis, as follows: Title page, Committee Signature page, 1-page Abstract, Introduction, Materials & Methods, Results (with Figures, Tables, and legends), Discussion, and References (with full citations).

A literature-based thesis is also allowable. It is expected to be a comprehensive review and synthesis of a focused topic in modern biology. Although there are no formal page requirements for this document, such theses are likely to be at least 50 pages in length including figures and tables, plus 50-100 references. Most importantly, such documents should demonstrate the student's comprehensive mastery of the current literature on a given topic, as well as the identification of research trends, inconsistencies, and unanswered questions. A general format for the Literature-based thesis is as follows: Title page, Committee Signature page, 1-page Abstract, Introduction, Multiple Topic Sections (with Figures and Tables), Summary/Perspectives, and Future Directions.

The thesis committee will include the student's research mentor and two additional faculty members. At least two members of the committee must be faculty members in the Biology Department. In certain cases, a student may elect to carry out his or her research in a laboratory at an off-campus site, such as the Boston University Medical Campus (BUMC). In such a case, the other two members of the thesis committee must be faculty members in Biology.

Grades in BI 401/402 are based on the student's performance in laboratory or fieldwork, the written thesis, and the student's defense. A minimum grade of a B+ in both BI 401 and BI 402 is required to graduate with Honors.
Application for Honors in Biology

Student Information
(Please print all information)

First and Last name: 

BU ID Number: 

Phone Number: 

E-mail Address: 

Major: 

Expected date of graduation (month/year): 

GPA: Overall: Biology Courses: 

Indicate the semester(s) during which you will be conducting Honors Research:

☐ Fall ☐ Spring

Indicate the semester during which you will attend the Honors Seminar:

☐ Fall ☐ Spring

Project Title: 

Faculty Project Advisor information*
(Please print all information)

First and Last name: 

School/Department Affiliation: 

E-mail Address: 

Office Phone Number: 

Biology Faculty Sponsor (if primary research mentor is not in Biology): 

Sponsor Signature (if applicable): 

Sponsor E-mail Address (if applicable): 

*Sponsors who are using their participation in UROP as part of their Honors in Biology work must have their UROP advisor sign the application in addition to the Biology Faculty member who will be sponsoring them for the 2-credit Honors Seminar.
Please respond to the following questions.
Responses should be typed and attached to application.

Honors in Biology

1. Briefly describe your intended project, including the basic research question(s), methods of investigation, the data to be collected and how they will be analyzed, and the significance of the proposed work. *The proposal should be formulated in conjunction with the faculty mentor(or off-campus advisor).*

2. Explain how this project will contribute to your academic career goals.

3. Include a bibliography relevant to your work.

4. Attach an unofficial copy of your BU Transcript.

*Students who are using their participation in UROP as part of their Honors in Biology work must have their UROP advisor sign the application in addition to the Biology faculty member who will be sponsoring them for the 2-credit Honors Seminar.

If you are not conducting both semesters of Senior Honors Research, CAS BI 401/402, please indicate the alternative track you are proposing below:

☐ Junior/Senior Research (BI 391/392; BI 491)

   Research Section: _____________________________

   Grade: _____

☐ Full-time Summer Research Experience:

   *Summer Program/Year Participated (ex. UROP/YYYY):*

   ____________________________________________

☐ Research Mentor Petition

   *Please attach the petition to this application*

Student Signature: __________________________________ Date: ______________
To be completed by the faculty project advisor:

Student’s name: ____________________________________________

How long and in what capacity have you known the student?

________________________________________________________________

________________________________________________________________

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Please evaluate the applicant’s aptitude for independent research according to the criteria listed below. Please add any applicable comments.

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Comments:

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I have read the student’s proposal and recommend that it be accepted as an Honors in Biology project.

Faculty Project Advisor (Print): ______________________________________

Faculty Project Advisor (Signature): __________________________________

Director of Undergraduate Studies (Print): ______________________________

Director of Undergraduate Studies (Signature): ___________________________

Department Chair (Print): _____________________________________________

Department Chair (Signature): _________________________________________

Undergraduate Program Specialist (Print): _______________________________ Date of Submission: ________