Honors and High-Honors in Biology

Guide for Students and Advisors

Colgate University
Introduction

This guide describes the process by which students majoring in biology, molecular biology, and environmental biology may graduate with honors or high-honors. Graduation with honors or high-honors results from satisfaction of three interrelated requirements: (1) a minimum GPA requirement, (2) a deep commitment to a research project conducted with a Colgate faculty member or as part of the Colgate Study Group to the National Institutes of Health (NIH) or Singapore, and (3) successful completion of several written and oral reporting requirements. Each of these three requirements is detailed below. Additionally, the department reserves the right to disqualify student eligibility based on instances of academic misconduct, including but not limited to plagiarism and other forms of cheating.

Obtaining honors or high-honors in biology should not be viewed as a reward for high grades. Indeed, many more students will meet the GPA requirement than are invited to stand for honors or high-honors. Having “a deep commitment to a research project” is the requirement most often overlooked or underappreciated by students. Students must have the support of a research advisor, who can attest to an extraordinary level of commitment to research from the student.

1. GPA Requirement

To qualify for honors, students in BIOL, MBIO, and ENBI must have a GPA of at least 3.3 based on all courses applied toward the major, including any required extra-departmental courses (e.g., required chemistry courses). Starting with the 2017-2018 academic year, this GPA requirement (3.3) will also be used to establish eligibility for graduation with high-honors. Thus, the GPA requirement will be the same for both honors and high-honors. This should highlight the fact that the difference between these two levels of acknowledgement is not based on grades and classroom performance; rather it is based on commitment to and proficiency in research.
2. Commitment to Research

An extraordinary commitment to and demonstrated proficiency in research are absolutely required for graduation with honors or high-honors, and no level of classroom performance (as reflected in the GPA) can compensate for this requirement. For honors, the research project should be completed over the course of at least one semester. For high honors, the project should be completed over the course of at least two semesters. A summer dedicated to research may count as one of these two semesters.

Although the research requirement differs between graduation with honors and high-honors, students should not presume that they will be awarded high-honors if they have simply conducted two semesters (or a semester and summer) of research. The faculty of the department will determine whether graduation with high-honors is warranted based on the quality and quantity of the work performed and the demonstrated commitment to the research. High-honors designation is reserved for a very small number of students that demonstrate a very extraordinary level of commitment to and capacity for research.

Academic year work toward an honors or high-honors project must be conducted (1) as part of a research tutorial (BIOL 479-490) or independent study course (BIOL 491) that is approved by the department chair to count as a research tutorial, or (2) research conducted at the NIH or Singapore as part of Colgate’s Study Groups. Summer projects conducted in pursuit of honors should be conducted with Colgate faculty members or at NIH.

Students are encouraged to talk with their research advisors early about their interest in pursuing graduation with honors. This includes students going to NIH/Singapore, who should discuss with a faculty member of the biology department the possibility of pursuing honors before leaving for NIH/Singapore or early during
their time at NIH/Singapore. Students should select, in consultation with their advisor, a second reader within the biology department. Additional readers may be selected at the discretion of the advisor.

Commitment to a research project will be determined based on the level of support from the faculty advisor and additional reader(s) along with all faculty members based on the papers, oral presentation, and other experience with the candidate. See below for a more detailed explanation of criteria on which commitment can be demonstrated.

3. Reporting Requirements

Papers

For honors and high honors students in BIOL, MBIO, and ENBI, a two-chapter thesis is required.

The first chapter of the thesis consists of a review paper. This should be a comprehensive review of a research field relevant to the project, as decided by the student and their advisor. Analysis and descriptions of the field should be drawn from the primary scientific literature, not just review papers or book chapters. The review should begin with a one- or two-paragraph abstract. The body of the review should provide a brief history of the field and a comprehensive analysis of the recent findings and questions in the field. The review should end with an insightful description of why the research project is significant and important in light of this information (i.e. how the research project enhances our understanding of these ideas) and what questions remain in the field. Figures that enhance understanding of the information presented are normally included. The review is normally 10-20 pages, double-spaced with a proportional font and 1-inch margins. Page range includes the figures but not the literature cited section. These review papers should normally include references to at
least 20 papers of which only 20% (of the total number of references) should be review papers or book chapters.

The second chapter of the thesis is a paper in the format of an appropriate scholarly outlet. The paper should be presented in a format appropriate to the discipline, determined in consultation with the advisor, but will normally include the following sections: abstract, introduction, methods, results, discussion, and literature cited. A paragraph or two at the end of the discussion should address the significance of the results in the specific area of the sub-discipline and its contribution to the field in a broader context.

Papers may be submitted to the research advisor for review and improvement, but will normally be submitted to (the) other reader(s) at the end of the process. Papers must be made available to the faculty in their final form no later than 7 calendar days before oral presentation to the department. Those failing to meet this deadline will not be considered for graduation for honors.

Oral Presentations

Candidates for graduation with honors or high-honors must give a 15-minute oral presentation to the entire Biology Department with an additional 5 minutes for questions. Students will be strictly held to the 20-minute maximum time allotted for their presentation and questions. Those students taking more than 15 minutes during their presentation will reduce the time available for questions and jeopardize their case for honors or high-honors. Students not done presenting at the end of 20 minutes will be asked to stop their presentation at that time.

The oral presentation will be evaluated by the biology faculty in attendance. You should adequately introduce your research topic in a way that all can understand the background of your topic and appreciate the significance of your objectives. You also
should explain your methods in sufficient detail so all will understand the approach you have taken. When discussing your results, you should use figures/tables that are clear and readable from anywhere in the room. Avoid small print and overly complicated figures or tables. You should conclude your talk with a summary of your findings, statements describing the significance of your results and future directions or studies that might be considered based on your results. The presentation normally is given during one of the last two free-periods (Tuesday 11:30-12:30) before the end of the semester.

**Determination on Award**

Students should not assume that honors will be awarded just because the student is eligible and has completed the reporting requirements. Furthermore, students satisfying the minimum research requirement for high honors (2 semesters) should not assume that they will therefore be granted high honors. Graduation with honors or high honors is dependent on the determination by the department that the following is satisfied:

1. The research advisor and other faculty, if applicable, are able to testify that the student’s investment and proficiency in research generally, and the thesis project in particular, are reflective of a very high (honors) or exceptionally high (high honors) level of commitment to research. Evaluation of investment is nuanced and specific to each student-faculty relationship. However, students can demonstrate investment with a commitment of time, energetic intentional work on their project, enthusiasm to learn things outside of their specific research area and help others, and curiosity about work in their selected field.
2. The research project must represent an original, high-quality investigation that contributes to our understanding of the field of inquiry. The student must have made a substantial intellectual contribution to the project in addition to carrying out the actual research. Generally, the expectations for quality, quantity, and originality of research findings are higher for high-honors than honors candidates. However, the department may be sympathetic to challenges (e.g., difficulties in acquiring necessary permits, machine malfunction) that are outside of the student’s control.

3. The research paper (chapter of the thesis) is well-written, the research problem described well, and the results and their implications put in the context of the field in which the study was conducted. Although data and time limitations often preclude submission of student papers for publication in this form, the manuscript’s writing quality and attention to detail should be appropriate for a submission to a peer-reviewed journal.

4. Similarly, the review paper should be of high quality. The student should synthesize information within the given field and make novel conclusions or develop novel hypotheses based on what is known. In this work, students should demonstrate that they have exhausted the relevant literature and that they understand key findings within the selected area.

5. The oral presentation should be of high quality, not over the time limit, and well delivered. The responses to questions should reflect a high level of knowledge, understanding, and investment.
Honors and High Honors

A student may be allowed to stand for honors in the department following approval of their research advisor. Both honors and high honors in biology require an overall GPA of 3.30 in courses counted toward the major, a demonstrated deep commitment to and proficiency in research in biology, an oral presentation to the department, a review paper, and a research paper submitted to the research adviser and other readers as appropriate. The research project evaluated for honors must be based on at least one (honors) or two (high honors) semesters or summers of research. The awarding of honors and high honors will be decided by the faculty in consultation with the advisor and other readers as appropriate and will be based on the demonstrated commitment to research and the quality of the research project, the thesis, and the oral presentation. Research projects submitted for honors or high honors must be carried out on campus or on the NIH or Singapore study group.