

Biology Departmental Honors Program

Overview: The Biology Department Honors Program was created to acknowledge and reward students undertaking and completing a more rigorous, research-oriented curriculum while pursuing their Bachelors of Science degree in Biology at the University of Utah. The centerpiece of the Biology Honors Program is a research project culminating in the submission of a written thesis, and presentation of the student's thesis research in a public forum.

Admission to the Biology Honors Program. Applications for admission to the Biology Honors Program should be submitted to the Biology Honors Committee. Applications should include: (1) a transcript of all college-level courses completed; (2) a brief written proposal (<5 pages) outlining the research project to be undertaken; (3) a letter of support from the research advisor, and (4) an Honors application form available at the Biology Advising office.

Requirements. The Biology Honors Program is intended to be flexible and to provide maximum access to transfer students and to the approximately 700 Biology majors. To receive a Bachelor's of Science in Biology with Departmental Honors, students must:

Meet all University and Departmental requirements for a Bachelor's of Science degree in Biology.

Maintain a cumulative GPA of 3.5 overall, a minimum grade of B in all Biology courses, and a cumulative GPA of 3.5 in all Biology courses.

Complete at least 9 units (3 semesters)^{1,2} of independent research (Biology 4995 or Biology 4955) in a laboratory approved by the Biology Honors Committee.

Complete Biology 4999: Thesis preparation and submission to the Honors Program (3 units^{2,3}). All students must complete and submit a thesis discussing the results of their research project. To receive honors at graduation, students must receive a grade of B or better in Biology 4999. Details of thesis preparation are discussed at the end of this document. The Honors Advisor/Committee may request faculty in the specific research discipline to aid in evaluating the thesis.

Present the results of their research in an appropriate forum (i.e. Biology Undergraduate Research Symposium, University Undergraduate Research Symposium) approved by the Biology Honors Committee. Students should consult with the Biology Honors Advisor to arrange their presentation when they enroll in Biology 4999.

Complete at least additional 12 units² of Honors courses and electives fulfilling the requirements outlined in Table 1 (below).

¹ The minimum requirement is three semesters of research totaling 9 credit hours, but students are encouraged to pursue their research in greater depth.

² Required Honors courses and electives may be applied to major and graduation requirements.

³ Students should schedule a pre-thesis interview with the University Honors Program (<http://www.honors.utah.edu/curriculum-dept.html>) prior to enrolling in Biology 4999.

The Biology Honors Advisor/Committee will oversee all aspects of the Biology Honors Program. The Advisor/Committee will (i) approve the research proposal and admission, (ii) monitor the relationship between student and research supervisor, (iii) assess research progress, and (iv) approve the final thesis. To maintain high standards, the Advisor/Committee may request faculty in the specific research discipline to aid in monitoring and evaluating the research experience. For more information, contact the Biology advising office or the Biology Honors Advisor (Dr. Darryl Kropf, kropf@bioscience.utah.edu).

Table 1. Required courses and electives for Departmental Honors in Biology.

<p>The following courses (totaling 12 semester hours) must be completed by all students receiving Departmental Honors in Biology:</p> <p>Biology 4995 Honors Research; 3 semesters totaling 9 units of research are required for Departmental Honors in Biology. Students may substitute Biol 4955 (Independent Research) for the equivalent number of units of Biology 4995, subject to approval of the Biology Honors Committee. Biology 4955/4995 can be completed in any University laboratory approved by the Biology Honors Committee.</p> <p>Biology 4999 Honors Thesis Preparation (3 units).</p>	
<p>Electives. In addition to the required courses (above), students must complete at least 12 hours of electives. These electives can be fulfilled in two ways, as outlined below:</p>	
<p style="text-align: center;"><u>Departmental Honors in Biology:</u></p> <p>- Complete at least 12 units from approved Biology electives (see Appendix 1).</p> <p><i>Students completing the required courses, electives, and thesis will graduate with Departmental Honors in Biology.</i></p>	<p style="text-align: center;"><u>University and Departmental Honors:</u></p> <p>- Complete 3 University Honors courses (9 units). - 2 Intellectual Traditions courses (HON 2101, HON 2102, HON 2103) - 1 Writing course (HON 2211, HON 3200)</p> <p>- Complete at least 3 additional units from approved Biology electives (see Appendix 1).</p> <p><i>Students completing the required courses, electives, and thesis will graduate with University Honors and Departmental Honors in Biology.</i></p>

Appendix 1. Biology Courses which can be used to fulfill the elective requirements (units in parentheses) for graduation with Departmental Honors in Biology:

Biology 2021: Principles of Cell Science (4)

Biology 2870: Faculty Research Seminar (1)

Biology 3115: Computer Applications: Cell Biology (2)

Biology 3125: Molecular Evolution Laboratory (3)

Biology 3215: Cell Biology Laboratory (2)

Biology 3235: Developmental Biology Laboratory (2)

Biology 3245: Cell Neurobiology Laboratory (2)

Biology 3315: Vertebrate Morphology Laboratory (2)

Biology 3325: Comparative Physiology Laboratory (3)

Biology 3415: Ecology Laboratory (3)

Biology 3525: Molecular Biology of DNA Laboratory (3)

Biol 5011: Mathematical Biology I (3)

Biol 5012: Mathematical Biology II (3)

Biol 5110: Molecular Biology and Genetic Engineering (3)

Biol 5130: Plant Biochemistry and Molecular Biology (3)

Biol 5210: Cell Structure and Function (3)

Biol 5215: Cell Biology Advanced Projects Laboratory (2)

Biol 5220: Molecular Neuroscience (3)
Biol 5221: Human Evolutionary Genetics (3)
Biol 5230: Mechanisms of Development (3)
Biol 5240: Plant Developmental Biology (3)
Biol 5255: Prokaryotic Genetics (2)
Biol 5265: Eukaryotic Genetics (2)
Biol 5275: Microbial Diversity (4)
Biol 5280: Biological Microscopy (2)
Biol 5285: Biological Microscopy Laboratory (1 to 3)
Biol 5290: Fundamentals of Biological Microscopy (1)
Biol 5312: Human Dissection (1 to 4)
Biol 5330: Neural Mechanisms of Behavior (3)
Biol 5340: Analysis of Vertebrate Structure and Function (3)
Biol 5350: Ecological Physiology (3)
Biol 5360: Human Form, Function and Evolution (3)
Biol 5365: Form, Function, and Adaptation of Plants (4)
Biol 5370: Mammology (3)
Biol 5375: Mammology Lab (1)
Biol 5385: Ornithology (4)
Biol 5395: Advanced Field Ornithology (2)
Biol 5401: Vertebrate Paleontology and Evolution (3)
Biol 5410: Molecular Evolution and Population Genetics (3)
Biol 5420: Advanced Ecology (3)
Biol 5425: Advanced Ecology Lab (2)
Biol 5435: Plant Systematics (4)
Biol 5445: General Entomology (4)
Biol 5450: Abundance and Distribution of Organisms (1)
Biol 5455: Desert Ecology Field Course (5)
Biol 5460: Plant Ecology (3)
Biol 5465: Plant Ecology Laboratory (2)
Biol 5470: Stable Isotope Ecology (3)
Biol 5475: Stable Isotope Ecology Laboratory (3)
Biol 5480: Plant-Animal Interactions (2)
Biol 5490: Ecosystem Ecology (3)
Biol 5910: Mathematical Models in Biology (2)
Biol 5955: Scientific Immersion (3)
Biol 5960: Advanced Special Topics in Biology (1 to 5)

Biol 6XXX: Any 6000-level Biology course.

Biol 7XXX: Any 7000-level Biology course.

Departmental Honors in Biology
Admission and curriculum plan/checklist

Student information

Student: _____

Student ID#: _____

Phone: _____

e-mail: _____

Faculty research advisor

Faculty research advisor: _____

e-mail: _____

Faculty research advisor signature:

Curriculum plan

Required courses: 12 units

Course number	Course name	Units	Semester planned	Semester completed	Notes
Biol 4995*	Honors research				
Biol 4995*	Honors Research				
Biol 4995*	Honors Research				
Biol 4999	Honors Thesis	3			
Three semesters totaling 9 units are required. Biology 4955 can be substituted for Biology 4995 with approval of Biology Honors Committee					

Electives: 12 units minimum

Course number	Course name	Units	Semester planned	Semester completed	Notes

Graduation with (check one): Departmental Honors University and Departmental Honors

Approved by Biology Honors Advisor

Biology Honors Advisor: _____
Please print Signature Date

_____ Original to Chair/Biology Honors

_____ Copy to University Honors

_____ Copy to file

Biology 4995 and 4999 – Honors Research and Thesis Preparation

The centerpiece of the Biology Honors program is an intensive research experience in a laboratory at the cutting edge of science. In Biology 4995 (or 4955, with approval by the Biology Honors advisor/committee), students will be trained in laboratory techniques and then work intensively on a research project for three semesters under the guidance of their faculty research advisor. It is expected that the honors student will have a semi-independent project with the opportunity to make substantial new discoveries. Following completion of three semesters of research, students must enroll in Biology 4999: *Thesis Preparation* (typically in the semester in which they plan to graduate). Biol 4999 is a writing intensive course in which the student prepares their research thesis in consultation with their faculty research advisor. The format of the Honors thesis should be consistent with standard scholarly practice (i.e. Abstract, Introduction, Methods, Results, Discussion, and References cited) and must conform to the Honors Program guidelines. Most theses are 30-50 pages long (double spaced). Examples of theses submitted in past years are available in the Marriot Library (Science and Special Collections) and in the Honors Program office (1975 De Trobriand, Bldg 619). The student's research advisor is responsible for helping the student prepare a quality thesis, and must approve the thesis prior to its submission to the Biology Honors Advisor. Once approved by the research advisor, the thesis should be submitted to the Biology Honors Advisor for approval *no less than 2 weeks before the deadline published by the University Honors Program*. The Biology Honors Advisor will often require additions or revisions to the thesis document prior to its approval. Final approvals by the Chair of Biology and University Honors Program are also required. As per University Honors policy, the thesis must be completed 'with distinction,' and a grade of B or better in Biology 4999 is required for graduation with honors.

Preparation of a quality thesis is a time-intensive process. Students are encouraged to begin preparation of their thesis, with guidance from their research advisor, early in the semester in which they are enrolled in Biol 4999.

By signing below, the student and research advisor acknowledge the requirements for successfully completing Biology 4995 and 4999.

Student signature: _____ Date: _____

Faculty research advisor signature: _____ Date: _____