

Biology Senior Research

All biology majors are required to complete a year-long (6 units total) senior research experience. There are, however, a variety of options by which this requirement may be fulfilled.

Biology 193-194, Senior Research: Most biology majors conduct an independent senior research project in the laboratory of a biology faculty member. Biology 193-194 is a year-long course; a grade and 6 units of credit (3 per semester) are awarded only at the end of a full year (i.e., it is not possible to drop senior research mid-year and receive credit for the first semester). In addition to spending 10-12 hrs/wk working on a research project, Bio 193-194 also requires completion of a written research proposal and oral proposal presentation (fall semester) and a final written report and oral presentation (spring semester).

Although most students who take Bio 193-194 work with a member of the HMC biology department, it is also possible to do biology-related senior research with a faculty member in another HMC department (for instance, chemistry) or at one of the other Claremont Colleges. Students working with a faculty member outside of the HMC biology department are assigned a faculty "liaison" within the HMC biology department, and are required to fulfill the same requirements and meet the same deadlines as students working within the department. Students who wish to work outside of the HMC biology department must make all arrangements for doing so themselves, and should be aware that their host department/advisor may impose additional requirements on them (for instance, requiring presentations to another department/college or requiring a poster).

Biology 195-196, Intensive Research: Biology majors who wish to devote more than 3 units/semester to an independent research project may apply to do Intensive Research for 6 units/semester. Intensive Research may be taken in one or both semesters, and the additional 3 units/semester may substitute for an upper level biology elective course. Students taking intensive research are expected to devote at least 20 hrs/wk to their project, and must complete the same written and oral assignments as Biology 193-194. Registration for Intensive Research is by permission only. To be eligible to apply, students must: (1) have already completed one semester or a summer of research working on the proposed project with the same advisor; and (2) not be taking more than 18 units (i.e., 12 units in addition to research) in any semester in which they take Intensive Research. Prior to the start of the semester in which they wish to take Biology 195-196, eligible students must submit to the biology department: (1) a written research proposal, (2) a personal goals statement, and (3) a schedule of the courses to be taken concurrently with Bio 195-196. The biology department will review the application materials and determine if participation in Intensive Research is merited.

HMC Clinic Program: Biology majors may also fulfill the senior research requirement by participation in one of HMC's clinic programs, including Engr 112-113, Math 193, CS183-184, or Phys 193-194. In most years there are one or more engineering clinic projects with an environmental or biomedical focus. If a sufficient number of biology

majors in a given year are interested in clinic, the biology department will make an effort to recruit sponsorship of a biology-related clinic project. Topics of clinic projects are not available until the beginning of the fall semester.

While it is possible to participate in clinic and Bio 193-194 simultaneously, we do not recommend it (high risk of nervous breakdown at the end of spring semester). If a student wishes to continue independent biology research while also doing clinic, we recommend registration for either **Biology 161-162, Research Topics** or **Biology 197-198, Directed Reading** both of which can be taken for a variable number of units (1-3 per semester). Biology 161-162 has no writing requirements and units do not count towards upper level biology elective credit. Biology 197-198 requires either a formal written report of the research conducted, or, alternatively, an oral or poster presentation at a regional or national scientific meeting. A maximum of 2 units of 197-198 research may be counted as upper level biology elective credit.

Selecting a Research Project

Each year towards the end of the spring semester, the biology faculty give short presentations describing the senior projects that will be available in their labs during the next academic year. Following that presentation, rising seniors are expected to meet with professors individually to find out more information about projects and to indicate their interest in working on a particular project. A formal application for senior research, indicating first and second choices of projects, must be submitted to the biology department senior research coordinator at least one week prior to pre-registration for fall semester courses. Prior to pre-registration the department will notify students which advisor and project they have been assigned.