BIOL 93: Independent Research Internship in Biology

Information and Petition

(1) Read and save the information on pages 2-3, including the timetable of deadlines. Detach and keep these pages for yourself.

(2) Complete the Biology 93 petition including the registrar’s “form for adding a 93 independent research internship course” (pages 4-6).

(3) Meet with Prof. Nelson Lau (BIOL 93 Coordinator) the week of Aug. 31-Sept. 3, 2015 for Fall semester BIOL 93, or the week of Jan. 11-15, 2016 for Spring semester BIOL 93. Bring the completed and signed pages 4-5 of this petition with you to the meeting. Email Prof. Lau nlau@brandeis.edu to make an appointment for this meeting.

(4) Prof. Lau and the Biology Dept. will enroll you in BIOL 93 assuming the petition is complete and the faculty mentor and project requirements have been met.

BIOL 93 Coordinator
Professor Nelson Lau
Rosenstiel Center, Room 332, x6-2445
nlau@brandeis.edu
BIOL 93: Independent Research Internship in Biology

BIOL 93 is a one-semester course that enables the student to experience what life science research is like by working with a Biology department faculty sponsor in his/her laboratory at Brandeis University. In consultation with the student’s faculty sponsor, the student will design and execute an individual research project, culminating in an oral and written presentation about this work. Students are permitted to do BIOL 93 research with Brandeis life sciences faculty who are not in the Biology department (e.g., Biochemistry), but to do so, the student must obtain permission of the BIOL 93 Coordinator and the research involved must be of a biological nature, ask a biological question, and use biological techniques. Students cannot use BIOL 93 for off-campus internships.

Course credit. BIOL 93 does not count as an elective toward the Biology major, it is restricted to juniors and seniors, and it can be taken only once, either in the fall or spring semester. Rising seniors can do a summer research internship in the lab of a Biology faculty member and receive BIOL 93 course credit: to do so, juniors must obtain permission from the BIOL 93 Coordinator as well as their faculty sponsor in the spring semester preceding the summer internship. The student does summer research in the lab (a minimum of 10 weeks full-time) and fulfills the other BIOL 93 course requirements (oral presentation and written report, see below). In the subsequent fall semester, the student enrolls in BIOL 93a to receive course credit for this summer research.

How to enroll: There is no GPA requirement to enroll in BIOL 93. The student completes the petition for BIOL 93 (pages 4-6). This petition requires the signatures of both the Biology department faculty sponsor and the BIOL 93 Coordinator. The completed petition (pages 4-5) is returned to the BIOL 93 Coordinator who will enroll the student in BIOL 93.

Course requirements:
1. Research: the minimum Fall or Spring semester expectation is 10 hours of laboratory research per week.

2. Written report: equivalent to a laboratory rotation report, ~10 pages in length (excluding references); see timetable on page 3 for the due date. It should contain the following sections:

   Title Page, which includes your name, the title of your research, and date.
   Abstract (not more than 250 words), which summarizes the nature of the research project, the results obtained, and the relevance of those results.
   Introduction, which poses the research question asked in the context of current knowledge in the relevant field.
   Materials and Methods, which describes how the experiments were conducted.
   Results, which provides a written description along with some figures and tables, of the experimental data obtained.
   Discussion, which evaluates the results obtained and their relevance and significance to current models and data in the field.
   References, which includes complete citations (authors' names, paper titles, journal, volume, page, year). See the journal Cell for examples.
3. Oral presentation: specifics are left to the discretion of the faculty sponsor, e. g., this could be a data presentation during ‘group’ lab meeting, or a more formal presentation at the end of the semester to the lab, or a talk given at a meeting, etc.

Combining BIOL 93 and BIOL 99: Typically, students who elect to take BIOL 93 intend to do only one semester of research. However, students who really like the BIOL 93 experience may want to continue doing research. These students (if seniors) can then take one semester of BIOL 99, but this must be with the same research sponsor as BIOL 93 and BIOL 99 must be taken the semester immediately after BIOL 93 was taken. This two-semester combination of BIOL 93 and BIOL 99 may be used as one biology elective (and also as senior research) as long as the student fulfills the BIOL 93 requirements AND at the conclusion of BIOL 99 the student writes a senior research thesis (see the BIOL 99 petition for information about the senior thesis). The senior thesis may incorporate some of the BIOL 93 report but it must be significantly longer with substantially more data.

It is unlikely that one semester of BIOL 93 and one semester of BIOL 99 will provide research sufficient for senior honors. A 3- semester combination of research courses may also be taken: BIOL 93 in spring of junior year or over the summer before senior year (see above), and two semesters of BIOL 99 in senior year, all with the same research sponsor. This 3-course combination may be used as one elective for the Biology major and it may provide sufficient research for the student to be a candidate for senior honors.

**BIOL 93 TIME TABLE for 2015-2016 ACADEMIC YEAR**

If enrolling for FALL SEMESTER 2015:

*During the week of Aug. 31–Sept. 3*

To enroll in BIOL 93a, meet with the BIOL 93 Coordinator and bring the attached BIOL 93 petition with you. This petition must be signed by you and also by your faculty sponsor.

*By December 17, 2015, 3pm:*

Written report is due. Submit one copy to your faculty sponsor and a pdf copy to the Biology office.

Oral presentation: Timing and format are at the discretion of the faculty sponsor. It is recommended to schedule this with your faculty sponsor no later than one week from the report due date and even earlier if suitable.

If enrolling for SPRING SEMESTER 2016:

*During the week of Jan. 11-15, 2016*

To enroll in BIOL 93a, meet with the BIOL 93 Coordinator and bring the attached BIOL 93 petition with you. This petition must be signed by you and also by your faculty sponsor.

*By May 11, 2016, 3 pm*

Written report is due. Submit one copy to your faculty sponsor and a pdf copy to the Biology office.

Oral presentation: Timing and format are at the discretion of the faculty sponsor. It is recommended to schedule this with your faculty sponsor no later than one week from the report due date and even earlier if suitable.

THE NEXT 2 PAGES ARE THE BIOL 93 PETITION. Complete these 2 pages and take them to your meeting with the BIOL 93 Coordinator.
PETITION FOR BIOL 93
RESEARCH INTERNSHIP AND ANALYSIS IN BIOLOGY

Student’s Name: _______________________________________________________________
(Print) First                                       Last
Telephone #: ___________________________  Mailbox #:________________________________
Email: ____________________________________________

A. PETITION TO ENROLL IN INDEPENDENT RESEARCH (BIOL 93)

I will take BIOL 93 with: _______________________________________________________
(PRINT the Name of your Research Sponsor)

Department Affiliation of Your Sponsor: __________________________________________

Title of Research Project:

Brief description of the proposed research including questions asked, goals, and techniques.

I understand that taking BIOL 93 requires that I submit a written report to my research sponsor and to the Biology office by the deadline specified on the timetable, as well as give an oral presentation on my work.

__________________________________________________ Student’s Signature

BIOL 93 Coordinator has discussed BIOL 93 requirements with this student.

___________________________________________________ BIOL 93 Coordinator’s Signature
B. TO BE COMPLETED BY THE FACULTY RESEARCH SPONSOR

I accept this student for BIOL 93 (Independent Research). I understand that in addition to a minimum work load of 10 hours per week, the course requirements for the student to complete BIOL 93 are (i) to give me a written report (similar to a graduate student rotation report) by the deadline specified (Dec. 17, 2015 for the Fall semester; May 11, 2016 for the Spring semester); and (ii) to give an oral presentation (whose day, time, and format I can specify).

I will email the BIOL 93 Coordinator (Nelson Lau, nlau@brandeis.edu) at the conclusion of the semester to confirm that the student has fulfilled both of these course requirements. I will also assign the student a grade for the course.

_____________________________________      _____________
Signature of Research Sponsor                  Date

# internship hours/week expected of this student   [minimum is 10 hrs/week]

C. TO BE COMPLETED BY THE FACULTY RESEARCH SPONSOR

If the research to be conducted by this student involves any of the potential hazards listed below, please put a check next to that hazard:

_____ radiation or radioactivity

_____ chemical hazards, e. g., drugs, poisonous or explosive materials, carcinogens

_____ physical hazards, e. g., high voltages, pressure, or temperature; intense laser sources

_____ microbiological hazards, e. g., infectious or disease-producing bacteria or viruses

_____ recombinant DNA or genetic engineering

_____ use of or exposure to human tissues/cells/fluids/samples, etc.

_____ other (please specify)_____________________________________________________________________

I will provide any required and appropriate safety instructions for each of the hazards the student may encounter while conducting research in my laboratory.

_____________________________________   __________
Signature of Research Sponsor                Date