

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 BIOL 93 petition **including** the registrar's "form for adding a 93 independent research internship course" (pages 4-6).

(3) Meet with Prof. Press (BIOL 93 Coordinator) the week of Aug. 29-Sept. 6, 2016 for Fall semester BIOL 93, or the week of Jan 17-23, 2017 for Spring semester BIOL 93. Bring the completed and signed pages 4-6 of this petition with you to the meeting. Email Prof. Press press@brandeis.edu to make an appointment for this meeting.

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

BIOL 93 Coordinator

Dr. Joan Press

Rosenstiel Center, Room 511, x6-2450

press@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 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 to do 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 4-6) 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 (excluding references); see timetable on page 3 for when this is due.

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** the student at the conclusion of BIOL 99 writes a **senior research dissertation** (see the BIOL 99 petition for information about the senior thesis). The senior dissertation may incorporate some of the BIOL 93 report but it must be longer and provide a brief review and introduction, much more data, and a lengthier discussion.

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 candidacy for senior honors.

BIOL 93 TIME TABLE for 2016-2017 ACADEMIC YEAR

If enrolling for FALL SEMESTER 2016:

During the week of Aug. 29-Sept. 6, 2016

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 19, 2016:

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.

If enrolling for SPRING SEMESTER 2017:

During the week of Jan. 17-23, 2017

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 12, 2017

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.

THE NEXT 3 PAGES ARE THE BIOL 93 PETITION. Complete these 3 pages and **take them to the BIOL 93 Coordinator.**

Student's Name: _____
(Print) First Last

Telephone #: _____ Mailbox #: _____

Email: _____

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

I plan to 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 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 in my lab for BIOL 93. 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. 19, 2016, if Fall semester; May 12, 2017, if Spring semester); and (ii) to give an **oral presentation** (whose day, time and format I can specify).

I will email the BIOL 93 Coordinator 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

_____other (please specify)_____

I, the research sponsor, will provide appropriate safety instructions as required for each of the hazards that may be encountered by this student while conducting research in my laboratory.

Signature of Research Sponsor

Date



Form for Adding a 93 Independent Research Internship Course

Name: _____ ID: 2 _____

Email: _____ Phone: _____

Subject: _____ Course: 93A Term: Fall 20____ / Spring 20____

Faculty Sponsor: _____ Email _____

Internship Site (Off-campus only): _____

1) Research Project Description

Describe the student's research problem/project in the space below or on an attached sheet. Include proposed methods of research:

2) Supervision

Describe the type and frequency of supervision to be given to the student:

3) Standards for Evaluation of Course Work

- , Quality of written research report
- , Quality of oral presentation of results in a public forum (symposium, research group)
- , Other criteria as listed below:

Additional Grading Criteria:

4) Research Project Title/Topic *(will not appear on transcript)*:

Internship Dates: _____ to _____ # Internship Hours/Week: _____

Faculty Sponsor (*Signature*): _____ Date: _____

Student (*Signature*): _____ Date: _____