BROWN

Section I: General Information

BIOL 1950 (fall) and 1960 (spring) are the undergraduate independent study courses designated for academic credit sponsored by BioMed Faculty. BIOL 0960 (fall/spring) is a half credit Independent Study in Science Writing course incorporating a nontechnical science journalism component into the Biology curriculum. Assignments may include investigative or analytical reviews, or feature articles on ethical or social impacts of new discoveries in the biological sciences. BIOL 0960 is not for concentration credit in the biological sciences programs.

Once the project proposal is received and approved, faculty sponsors will be notified by the BUE Office to provide the Banner override and email the student to enroll in their section of independent study courses. Each faculty member in the Division has their own section of BIOL 1950, 1960, 0960. Students will register for their faculty mentor's section. Faculty who are supervising Biology Independent Study for the first time will need a section created for them. Please contact the Office of Biology Undergraduate Education to facilitate this.

Students intending to use an independent study course to fulfill a concentration requirement must obtain approval from the concentration advisor prior to submission of the proposal. Project proposals will be **due by 5:00pm on the Friday prior to the add/drop deadline** date to allow time for review. Specific due dates for each semester will be emailed to all concentrators. Students should follow up with their faculty sponsor if they have not received the Banner override within 24-48 hours of submitting the online proposal form.

Section II: Student and Sponsor Information

Below is the information we have automatically collected via Shibboleth. Please ensure this is correct.

First name: ${e://Field/First%20name}
Last name: ${e://Field/Last%20name}
Brown University email address: ${e://Field/Email%20address}

Enter your Banner ID
(Nine character number beginning with a "B")

Semester level

Indicate your concentration

List your concentration

Will this project be used to fulfill the capstone requirement?

Note: When independent study is used to satisfy the capstone for the Biology AB, the final product should take the form of a substantial research paper/project that goes beyond a typical term paper by paying closer attention to an overarching question or aim, methodology, consideration of evidence, and context within a sub-disciplinary field of interest. **If you are using this project to fulfill the capstone requirement, a substantial research paper must be part of the evaluation section described later in this form.**

- Yes

- ○ No

Semester & academic year of proposed project

- ○ Fall, BIOL 1950
- ○ Spring, BIOL 1960
- ○ Fall or Spring, BIOL 0960
- ○ Fall or Spring, via another department

Does this proposal fulfill requirements via Biology or another Department's Independent Study?

- ○ Biology
- ○ Other Department

Are you being compensated for this independent study?

- ○ Yes
- ○ No

Please enter the semester, academic year and Independent Study course & section number for the outside department

Faculty sponsor name (first and last)

Faculty sponsor department

Faculty sponsor type

- ○ On-campus faculty
- ○ Clinical faculty

Faculty sponsor email
(After completing this form, an automatic email will be sent to this individual, please be sure the email is correct)

Do you intend to use this independent study to satisfy a concentration requirement?

- ○ Yes
- ○ No

Concentration advisor name (first and last)

Have you discussed this proposal with your concentration advisor and obtained approval to use the course toward your concentration? The final proposal will be submitted to your advisor for record. The concentration advisor should approve the course through the ASK declaration.

- ○ Yes
- ○ No
- ○ Pre-declared student but hoping to use this toward a future concentration

Section III: Title, Project Proposal, and Other Information

Project title

How the independent study will be completed?

- ○ In-person
- ○ Hybrid (please describe):
- ○ Remote (please describe):

Have you completed a Biology Independent Study before (enrolled in BIOL 1950 or BIOL 1960) with this project?

- ○ _____ Yes (indicate most recent semester completed):
- ○ No

Project abstract

Provide a summary of what you will do, how you will do it, what you expect the outcomes will be, and why this work is of value.

Independent study learning objectives

Identify 3-5 learning objectives for your independent study. You may choose from the list below but require 1-2 learning objectives specific to your project.

- [ ] Conduct laboratory skills (e.g., microscopy, cell culture, molecular techniques, program learning, etc.)
- [ ] Analyze data and interpret findings
- [ ] Evaluate scientific literature
- [ ] Present research findings appropriately and effectively
- [ ] Communicate effectively with a research team
- [ ] Insert 1-2 learning objectives specific to your project here:

Evaluation Components

Indicate the criteria on how the independent study will be evaluated being sure to keep in mind the learning objectives indicated above. The use of multiple evaluation components provides the opportunity to highlight your contributions to the research project. If you are using this project to fulfill the capstone requirement, a substantial research paper must be part of the evaluation section described later in this form.

- [ ] Formative feedback on laboratory skills
- [ ] Lab notebook
- [ ] Lab meeting presentations
- [ ] Final presentation
- [ ] Final paper/thesis
- [ ] Other (please specify):

Evaluation

Explain how the selected evaluation components provide opportunities for ongoing feedback and assessment throughout the independent study.

Mentor-student meetings

Enter the meeting schedule with your mentor. At minimum, communications should happen regularly (i.e. weekly emails) and in person / via Zoom in person weekly or bi-weekly.

Workload summary

BIOL 1950 and 1960 are full credit courses that require a minimum of 180 hours of total work time. BIOL 0960 is a half credit course that requires a minimum of 90 hours of total work time.

- ○ By clicking this box, I certify that I will complete 180 hours of BIOL 1950/1960 (or 90 hours for BIOL 0960) of work time for BIOL 1950/1960 (or 90 hours for BIOL 0960). Describe how you will complete the required hours:

The following grading option has been agreed upon:

- ○ ABC/NC
- ○ S/NC

Section IV: Guidelines and Expectations for Students and Faculty

Faculty should agree to be an independent study course sponsor if able to provide adequate mentoring and advising throughout the semester.

It is the joint responsibility of the student-faculty pair to ensure that the student is intellectually involved in an original research project with expectations appropriate to their level of education and experience.

Faculty are responsible for supervising undergraduates in lab settings and ensuring they have had the proper training.

BEARCORE: The **B**rown **E**thics **A**nd **R**esponsible **C**onduct **O**f **R**esearch (BEARCORE) program is designed to educate young researchers and trainees from a variety of academic fields on how to conduct their scientific investigations responsibly and with integrity. BEARCORE is an in-person training program that may be supplemented by on-line instruction through the Collaborative Institutional Training Initiative (CITI). It is held each spring and fulfills NIH and NSF requirements. While BEARCORE is used primarily by trainees and new researchers to fulfill NIH and NSF RCR requirements, it is open to anyone in the Brown community. Biology undergraduates are strongly encouraged to participate in BEARCORE trainings at the onset of research in a BioMed faculty member's lab group. More information on sessions can be found on the BEARCORE webpage.

Lab Safety: It is the responsibility of the faculty sponsor and the faculty sponsor's institution to ensure that all Brown University students working in the laboratory have received all necessary site-specific safety training and lab-specific practical training from their faculty sponsor and the faculty sponsor's institution before any work is initiated. The faculty sponsor and the faculty sponsor's institution must also ensure that all appropriate personal protective equipment (PPE) is readily available and that students utilize the appropriate task-specific PPE when working in the laboratory.

IRB: Projects that involve work with human subjects may require IRB (Institutional Review Board) review before they can be undertaken. The IRB process should be addressed with the research project sponsor, and set in motion in time to allow the full project to be undertaken following IRB approval. It must be determined whether hospital vs. Brown campus IRB is appropriate, in each instance.

Animal Care and Use: Any student doing animal research is required to adhere to the IACUC policy entitled, "Training and Education Policy for Personnel Working with Laboratory Animals." This policy lists all of the required training for any individual working within the Animal Care facility at Brown. The Principle

Investigator (PI) of the IACUC protocol under which the student will be working also certifies (among other things) the following statements: 1) All personnel who work with animals under this protocol have received, or will receive, appropriate training in protocol procedures and animal handling methods prior to working with animals. The PI will ensure that individuals not listed in this protocol do not participate in the protocol experiments. 2) All listed personnel will read this protocol after it has been approved by the IACUC and before undertaking any procedures on laboratory animals.

Faculty may contact Dean Achilli with questions about independent study at anytime.

IMPORTANT NOTE: Once you have submitted this proposal, be sure to navigate to cab.brown.edu to request an override for your faculty sponsor's section of BIOL 1950/60.

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