

*This syllabus is a general representation of the course as previously offered and is subject to change.*

## **BIOL 447 – Principles and Methodology in Biological Research**

General Course Syllabus (*Last updated: March 2020*)

### **About the Course:**

**Course Description:** BIOL 447 assists students in the preparation and defense of a successful B.Sc. Honours thesis. This course enhances written and oral presentation skills, stimulates peer-based constructive criticism, and emphasizes the importance of relating highly discipline-specific research results into a broad biological context.

Restricted to either: (a) Honours students in Biology or (b) Combined Honours students with Biology as one of their specializations.

**Course Format:** Seminar (a combination of lectures, tutorial style discussions and student-led presentations).

**Credits:** 3

**Co-requisites:** BIOL 449

### **Course Learning Outcomes:**

By its nature, this course does not aim to present or evaluate student's comprehension of any new conceptual material. Rather, the objective is to help students develop the advanced skills in analysis, synthesis and evaluation needed to prepare an honours thesis, and provide focused and relevant scientific critiques.

By the end of this course, students will be able to:

- Prepare well-structured, scientifically valid short research proposals.
- Prepare short and highly focused oral research presentations.
- Provide constructive criticism to peers on both writing samples and oral presentations.
- Serve as effective examiners in mock defenses.
- Defend a research thesis in a mock examination.
- Prepare a high quality written draft of the introductory and materials and methods sections of the B.Sc. thesis.

### **Textbooks and Additional Resources:**

No textbook; the course website on Canvas ([canvas.ubc.ca](https://canvas.ubc.ca)) will contain course information and required reading materials.

## Evaluation:

Assessment	Weight	Notes
Class Participation	10%	Includes quality and quantity of contributions
Thesis Review	10%	Critical evaluation of a B.Sc. thesis
Seminar Reviews	10%	Critical evaluation of a seminar
Oral Presentations	20%	Student presentation of thesis
NSERC Proposal	10%	Draft proposal for fellowship application
STAR Methods	10%	Document research material and methodology
Thesis writing	30%	Annotated bibliography and outline, 5%; Intro, 25%

### DETAILS ON ASSESSMENTS:

**Critical evaluation of a B.Sc. thesis:** Each student will choose one past undergraduate thesis from the Biology office, and provide a summary and constructive critique.

**Critical evaluation of a seminar:** Each student will attend a departmental research seminar of their choice and prepare a one-page single-spaced review of the main points of the seminar and their critique (what was good and what could be improved for both the presentation aspects and the science).

**Student presentations:** Each student will present an individual short 15 min seminar (12 min talk + 3 min questions) on their thesis topic, objectives, methods, and predicted outcomes (some students might not have actual data at this point). Peers and instructors will review the presentation and provide feedback. The instructors will assign a grade after all of the presentations are complete. Presentations will be graded on organization, clarity of thesis objectives and proposed research, appropriate citations and background, presentation skills.

**NSERC Proposal Draft:** This is a one-page single-spaced proposal for an NSERC (or CIHR) Canada Graduate Scholarship-Master's Program (CGS-M; \$17,500 for 12 months, non-renewable). The goal of this activity is for students to prepare a proposal that they could submit if they wish. Students may either use their honours thesis project or a different proposed topic with a potential graduate supervisor. The proposal will be judged by the NSERC criteria: significance, feasibility and merit of proposed research. Students will submit one draft for peer review and a final version to the instructor.

**Annotated Bibliography and Intro Outline:** Students will prepare a one-page outline of their thesis introduction. The annotated bibliography should include full citations of literature they will require to support the key points, a brief summary of the main claim and evidence, and an analysis of why the research is particularly relevant to their study.

**Thesis writing:** The goal of this assignment is for students to prepare a draft of the Introduction and Methods sections of their thesis, as well as to become familiar with the literature in the field upon which their thesis is based. Students should check the guidelines for their honours thesis on the Biology website.

## Schedule of Topics:

A sample schedule from 2019W1 is below:

Week	In Class Activity	Assignment due
1	<b>Introduction:</b> Course objectives Overview of Assignments and Evaluations Seminar reviews Writing Proposals BIOL 447 Alumni Visit	Send your project proposals to Instructors
2	<b>Thesis Writing:</b> Guidelines for Introductions Bibliographic exercises (citations, organizing) Time management Project timeline	
3	<b>Ethics in Research / Planning:</b> Discussion <b>Thesis Writing:</b> Methods	Project timeline
4	<b>Preparing for Research/Public Speaking and Seminars</b>	Intro Outline Annotated Bibliography
5	Visit from Kimberley Rawes 1.0: You and your career Short (grad) student presentation on preparing an NSERC proposal Discussion of seminar visits	Honour's thesis review
6	Stats and my thesis	Seminar review
7	<b>Student Research Talks</b> Group discussion and evaluation	
8	<b>Student Research Talks:</b> Group discussion and evaluation	
9	<b>Student Research Talks:</b> Group discussion and evaluation	
10	<b>Thesis writing:</b> Results Pair up and peer-review NSERC proposals	NSERC Proposal draft
11	<b>Oral Exams:</b> Discussion and Tactics Four x Mock Exams	NSERC Proposal final
12	Visit from Kimberley Rawes 2.0 <b>Publishing your Research:</b> the submission and peer-review process	Introduction draft (for feedback before final submission)
13	Work on Introduction and Methods (no formal class)	Introduction and Methods

## **University Policies:**

*UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.*

*UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.*

*UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.*

*UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.*

*Details of the policies and how to access support are available on [the UBC Senate website](#).*