

PHYSL 467 - Undergraduate Research Project

Students taking PHYSL 467 are asked to:

- (i) have successfully completed PHYSL 210 or PHYSL212/214
- (ii) review the following guidelines to understand expectations in this course.
- (iii) fill in the attached form with the name and signatures of proposed supervisor & additional examiner and hand it out to the course coordinator for approval (Drs. Silvia Pagliardini or Emmanuelle Cordat) **before the UofA deadline for Fall/Winter course registration**. Course coordinator email addresses are: Drs. Silvia Pagliardini (silviap@ualberta.ca) and Emmanuelle Cordat (cordat@ualberta.ca).
- (iv) register for the course with Ms Donna Simpson in the Physiology office (7-55 MSB/PhysPhar Reception <PhysPharReception@ualberta.ca>).
- (v) Attend the mandatory introductory lecture that will be held at the end of September.

Objectives

PHYSL 467 is a two term (6 credits) course that will provide undergraduate students with basic training in a research laboratory. Students will have the opportunity to interact with a Physiology professor to be guided in the design, completion, and analysis of research experiments. Under the supervisor's guidance, students will also learn how to prepare and deliver an oral presentation and to present their experimental findings both in writing and orally in front of the examining committee (supervisor, cosupervisor and course coordinators).

Students that have already taken **PHYSL 461** are allowed to take **PHYSL 467** in the same laboratory or in a different laboratory. In case the course is taken with the same supervisor, the project must have different aims and objectives from the previous project. Summer students who worked previously with the proposed supervisor are allowed to take **PHYSL 467** in the same laboratory as long as both proposal and final examination clearly state what was the summer contribution to the project.

Work performed in a laboratory within the Physiology Department is strongly encouraged. Cosupervision with Professors from other departments is possible, provided that a supervisor from the Department of Physiology is identified. In this case, it is the responsibility of the student and the hosting Professor (from outside the Department) to identify a Department member who will act as "Supervisor". The hosting professor will be listed as "Co-supervisor", even if the research project is conducted in his/her laboratory. We strongly encourage students to discuss with the course coordinators their choice of potential supervisors outside our department prior to contacting them.

Expectations

- *Expectations for lab work*

Students are expected to dedicate a **minimum of 8 hours per week** in the laboratory. Depending on the type of research and project, students should be prepared to spend more time in the laboratory.

Students will be expected to regularly keep a detailed and up-to-date notebook transcribing all the experimental details, challenges, results and conclusions.

Students are expected to understand and be actively involved in a research project. This includes, but is not limited to experimental design, data collection, data analysis, participation to lab meetings, and reading of the scientific literature related to their research project. Because of different laboratory organization, experimental approaches and work philosophy of each Professor, students are encouraged to discuss course and workload expectations with the potential supervisor before registering for the course.

- *Expectations for oral presentations*

Students will orally present their RESEARCH PROPOSAL between **November 15 and 30** and their final RESEARCH THESIS between **April 15 and 30**. The presentations will be 20 minutes maximum and should not include more than 25 slides. The oral presentations will be followed by a question period. The selection of a fourth examiner (in addition to the supervisor and the course coordinators), who will be an expert in the research field and who will also grade the written thesis, is the responsibility of the supervisor. This examiner can either be internal or external to the department. **The student, supervisor and external examiner are required to attend both FALL and WINTER examinations.**

Given the short amount of time spent in the laboratory, experimental results cannot necessarily be all positive and of publication quality, in which case, the student will discuss challenges encountered and troubleshooting attempted during the course.

- *Expectations for the final written report*

Students are required to prepare and deliver a **10 page written original report**, double spaced, not including figures, tables and references, presenting their experimental results. The report must be sent via email to the supervisor and other examiners **at least one week before** the oral examination, preferably as a PDF document (e.g., if the exam is scheduled for Wednesday at 11am, the report is due on the previous Wednesday before 11:59pm). Marks for late papers will be reduced by 10 % per day. **Supervisors are encouraged to provide students with suggestions on the structure and the content of the report, but are not required to revise drafts of the document and SHOULD NOT revise the final version of the document.**

This written report should be organized as follows:

Introduction/background- This section should provide the necessary but not excessive or superfluous background information to allow the reader to understand the context of the research and the experimental question investigated. Relevant references should be included. This section should also include the research hypothesis.

Methods- Materials and techniques used during the research project should be described with sufficient detail to be reproduced. The origin of chemicals, antibodies and relevant materials should be provided. Statistical analyses used in the project should be reported.

Results- Similar to a research publication, this section should describe research results obtained during the term, be logically organized, and explain the scientific reasoning and progression of the project. Negative results should also be included.

Discussion- Should provide an analysis of the results obtained during the research project and put them in the context of the scientific research field. Limitations of the research or technical approach, and alternative methodologies should be highlighted.

References, figures, tables and figure and table legends are not included in the 10 page limit. Figure and table legends should be comprehensible without reference to the text.

Grading

Final grading will be assigned as follows:

10% for satisfactory and regular upkeep of notebook. The notebook will be regularly examined by the supervisor, and the final document will be handed to the examining committee for evaluation.

15% for the Fall oral presentation.

25% for student's performance in the laboratory. This includes taking ownership of the project, the student performance at the bench, punctuality and behavior in the laboratory, quality of the results, and interaction with other laboratory members.

25% for the final written report. The report should follow the guidelines provided above, and provide a good discussion of the results obtained over the course period, even if results are negative.

25 % for the final oral presentation. Time management, clarity of presentation and quality of answers to questions will be evaluated.

PHYSL 467 Grading Metric

Outstanding	97-100%	4.0	A+
Excellent	91-96 %	4.0	A
Very Good	84-90 %	3.7	A-
	77-83 %	3.3	B+
Good	73-76 %	3.0	B
	70-72 %	2.7	B-
	64-69 %	2.3	C+
Satisfactory	61-63 %	2.0	C
	57-60 %	1.7	C-
Minimal Pass	54-57 %	1.0	D

Academic Integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold

the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at

<http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx>) and avoid any behaviour that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and will result in failing of the course and suspension or expulsion from the University.

COVID-19 regulations

Students accepted in their research laboratory are required to follow the guidelines approved for their respective host laboratory. These guidelines may include wearing a mask and personal protective equipment when coming to the laboratory. **Specific guidelines must be discussed with the supervisor prior to starting the course.** Failing to follow these rules may result in inability to complete the course.

PHYSL 467 Registration

Student Name: _____

ID#: _____ 4th Year Honor student? _____

Student's Email address : _____

Title of proposed research project: _____

PHYSL 210/214 completed? _____

Supervisor name: _____ email: _____

2nd examiner/co-supervisor: _____ email: _____

If applicable, provide Human or Animal protocol #: _____

Has the student discussed with the supervisor and have both agreed to the requirements of the course (see guidelines) and proposed project?

Is Human/Animal Ethics approval in place for the project? If YES, indicate REO#, AUP#

What time is allocated in the student's schedule for undertaking the proposed project (Day of the week, hours per day)?

What arrangements are there for supervision of the student by the supervisor in person? If supervisor's lab members are involved in the day to day supervision, please indicate name and position.

Supervisor's signature _____

Date

Co-Supervisor's signature _____

Date

Student's signature _____

Date

Course coordinator's signature _____

Date