

PHYSL 469 - Undergraduate Research Thesis (2)

Students taking PHYSL 469 must have successfully completed PHYSL 468 in the Fall term (see form for PHYSL 468).

Students taking PHYSL 469 are asked :

- (i) To have successfully completed PHYSL 210 or PHYSL212/214
- (ii) To review the following guidelines to understand expectations in this course.
- (iii) To fill in the attached form with the proposed supervisor and hand it out to the course coordinator (Drs. Silvia Pagliardini or Emmanuelle Cordat) **before the end of September**.
Course coordinator email addresses are: Drs. Silvia Pagliardini
(silviap@ualberta.ca) and Emmanuelle Cordat (cordat@ualberta.ca).

Objectives

The one term (6 credits) course PHYSL 469 is the second part of a 12 credit program in two terms, taken in conjunction with PHYSL 468. Students must have completed PHYSL 468 in the Fall term to be able to undertake PHYSL 469. Exceptions must be discussed with the course coordinators. Students will continue their research project initiated in the Fall term as PHYSL 468, and in the same research laboratory. Upon completion of their PHYSL 469 research, students will produce and defend an honours thesis that also includes results obtained during the first part of their project in PHYSL 468.

Work performed in a laboratory within the Department is strongly encouraged. Co-supervision 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.

Expectations

- *Expectations for lab work*

Students are expected to dedicate a minimum of 16 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 actively be involved in their research project. This includes reading the scientific literature related to their research project.

- *Expectations for oral presentations*

Students will orally present their research proposal at the end of the term. The presentation will be 20 minutes maximum and should not include more than 25 slides. The oral presentation will be followed by a question period. **The selection of a fourth examiner (in addition to the supervisor and Drs. Pagliardini and Cordat), who will be an expert in the research field and who will also grade the written thesis, is the responsibility of the supervisor and should be the same as for the first term (PHYSL 468).** This examiner can either be internal or external to the department.

- *Expectations for written thesis*

Students are required to prepare and deliver a **20 page written final thesis**, double spaced, not including abstract, acknowledgements, contents and abbreviations pages, figures, tables, chapter headings and references, presenting their research work performed over the two terms. The thesis **must be handed** to the supervisor and other examiners **at least one week before** the oral examination. Supervisors are encouraged to provide students with suggestions on the structure and the content of the proposal, but are not required to revise drafts of the document and SHOULD NOT revise the final version of the document.

This written thesis should be organized in Chapters as follows:

Thesis title page, abstract (maximum one page), acknowledgements, contents and abbreviations pages. These are not included in the 20 page limit.

Chapter 1: Introduction/background- This section should provide the necessary but not excessive and 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.

Chapter 2: Methods- Materials and techniques used during the research project should be described with sufficient details to be reproducible. The origin of chemicals, antibodies and relevant materials should be provided. Statistical analysis used in the project should be reported.

Chapter 3: Results- Similar to a research publication, this section should describe research results based on the methods used, be logically organized, and explain the scientific reasoning and progression of the project.

Chapter 4: Discussion should provide an analysis of the results obtained during the research project and should be put in the context of the scientific research field. Limitations of the research or technical approach, and alternative methodologies should be highlighted.

References, figures and tables.

References, figures, tables and figure/table legends are not included in the 20 page limit. Figure and table legends should be comprehensible without reference to the text.

A final version of the thesis (incorporating edits and changes suggested by the examiners) will be hardcover bound at the expense of the department (one copy for the student, one copy for the supervisor, and one copy for the department).

Grading

Final grading will be organized 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.

30% for the oral presentation of the research project completed over the two terms. Time management, clarity of presentation and quality of answers to questions will be evaluated.

30% for student's performance in the laboratory. This includes taking ownership of the project, the student's performance at the bench, punctuality and behavior in the laboratory, quality of the results, and interaction with other laboratory members.

30 % for the written final thesis. The report should follow the guidelines provided above, and provide a good discussion of the results obtained, even if results are negative.