

ANAT432 Course outline
Fall 2022 – Winter 2023
Honours Research Project

General Information

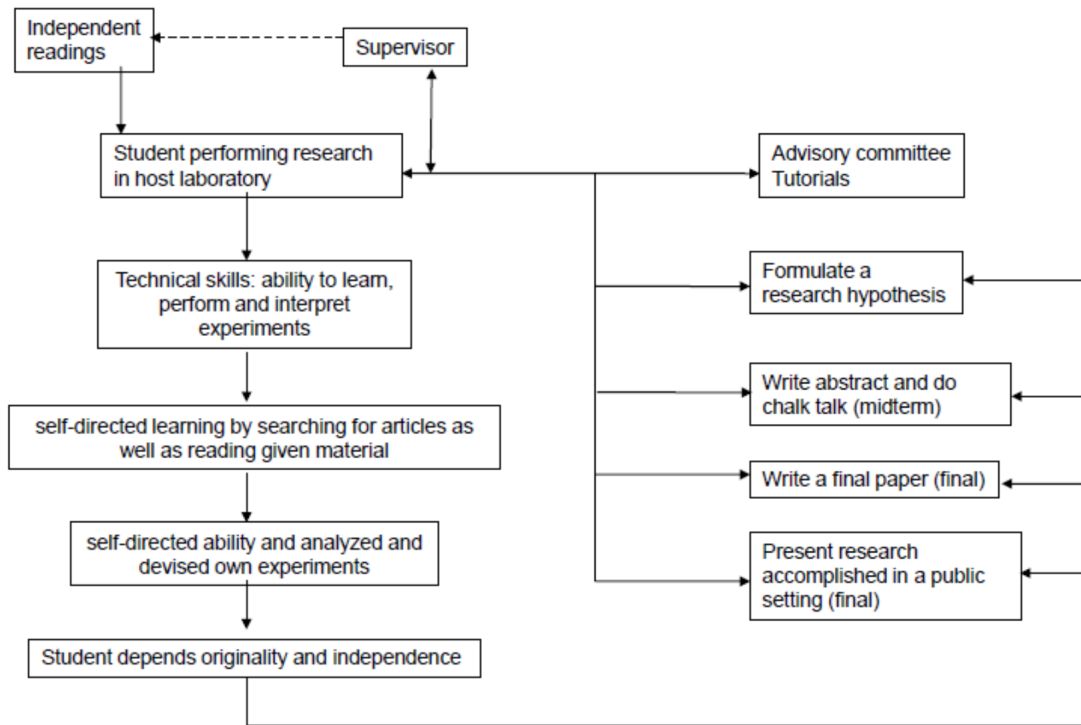
- ANAT 432, 9 credits (432-D1: 4.5 credits; 432-D2: 4.5 credits; 432L: 9 credits)
- Course coordinators: Dr **Huy Bui** (x4795; huy.bui@mcgill.ca)
- Topics: Supervised honours research project in biological sciences.
- Course instructors and examiners: Dr Susanne Bechstedt, Dr Huy Bui, Dr. Joaquin Ortega, Dr. John Presley.
- Regular classes: The course is designed as an intensive exposure to individually supervised, original research in cell biological and anatomical sciences. A variety of molecular, cell biological and biochemical methods are to be applied to basic problems in cell biology. Students are expected to work in the host laboratory for a minimum of 2 days per week for the fall and winter terms (or a minimum of 5 days per week for the summer term). In addition, students are expected to attend the tutorial sessions, write a final written report and defend their work in an oral examination. **NOTE: Due to the pandemic, it is possible that lockdown can be imposed. Therefore, students can perform data analysis or literature review as a backup plan.**
- Students should consult the course coordinators several weeks before registration.
- Prerequisite: BIOL 301 or permission from coordinators
- Course opening: Priority will be given for students in the Anatomy and Cell Biology Honours program. The course may also be taken, with special permission, by students in Anatomy Major Program with a minimum cGPA=3.2.
- Students must be supervised (full-supervision or co-supervision) by a member of the Department of Anatomy and Cell Biology. In case the supervisor is not a member of the department of Anatomy and Cell Biology, a co-supervisor who is a member of the department must be found. The role of the co-supervisor is to help the student understand and meet the course objectives. It is highly advisable that the student meets and reviews with the co-supervisor mid-term abstract, mid-term presentation, final report and final presentation. It is the responsibility of the student to contact and seek advice with the co-supervisor.

Learning Outcomes

Course goals or objectives: Students are expected to develop independent research skills in their host laboratory. The project must be hypothesis driven. By the end, students should have demonstrated abilities to work independently on a research project and be able to present their work in both a paper format and an oral presentation format.

Special topics: Tutorials will be given on how to develop a scientific hypothesis, write an abstract, present the project in a chalk talk format, give an oral presentation, write a scientific paper.

Concept Map



Course Materials

Students are expected to read a significant number of papers in the area of their research proposal and techniques used in their project. Guidance will be provided by supervisors, but student is expected to find most of the papers to read by himself/herself on PubMed or other resources, such as reviews, other papers.

Assignments and Evaluation

- 10% Midterm, distributed as follow:
 - 5% oral presentation (chalk talk format)
 - 5% abstract
- 35% Supervisor evaluation
- 30% Final report written as a scientific paper
- 25% Oral presentation and defense

Grading

The Department of Anatomy & Cell Biology will **NOT** revise/upgrade marks except on sound academic grounds. Once computed, the marks in this course will **NOT** be altered/increased arbitrarily. Decimal points will be “rounded off” as follows: if the final aggregate mark is computed to be 79.5%, the mark will be reported as 80% (an A-); a final aggregate mark of 79.4% will be reported as 79% (a B+). These marks are FINAL and Non-negotiable.

In accordance with the *Charter of Students' Rights*, and subject to its stated conditions, you have the right to consult any written submission for which you have received a grade. You also have the right to discuss this submission with the examiner. If you want to have a formal final examination reread, you must apply in writing following guidelines of the Faculty of Arts and Science. Guidelines are posted in the following web-page:

http://www.mcgill.ca/study/2016-2017/university_regulations_and_resources/undergraduate/gi_final_examinations

Seminars and tutorial attendance (compulsory)

Attendance to the tutorial in the class is COMPULSARY. As part of your training, you are also requested to attend the equivalent of 8h of seminars (8 units) for the Fall/Winter and 4h of seminars (4 units) during the summer. Considered as 1 seminar unit are:

1. The formal seminars given by guest professors such as the one given in the

Seminars Series of the department of Anatomy and Cell Biology (for schedule and more details check the department website, <http://www.mcgill.ca/anatomy/seminar-series>) and/or the ones held in other departments at McGill and/or surrounding hospitals, research institutes and University (1 seminar unit).

2. The research in progress seminars, such as the ones given by the Cell Biology graduate students seminars during which graduate students/postdoctoral fellows present their on-going work (2 students presentation of 20 minutes counts for 1 seminar unit).

3. The formal graduate seminars given by graduate students such as Master or PhD seminars or PhD defense (1 seminar unit).

You are requested to keep a record of the seminars you attend using the form below. Make sure to submit these forms with your final report.

Group meeting attendance (highly recommended): doesn't count for seminar credit

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Hypothesis

(to be submitted with one week after the orientation session)

Length: 10 lines to 1/2 a page

The hypothesis should provide some background information on your project, state your hypothesis (what is the question that you will answer) and describe how you will answer it (what you want to do).

Instructions for mid-term

MIDTERM ABSTRACT

The abstract will count for 5% of your final grade.

The general format is that of an abstract submitted for an international conference, such as the American Society for Cell Biology conference. More details will be providing during the Abstract Tutorial.

Format Requirement: 1 Page Maximum, font Times New Roman, size 12, single-spaced with an 1-inch margin. At the top of the page put your name, student number, your supervisor name and the title of your project.

The following sections must be present in the abstract (preferably labeled):

Introduction

A few sentences on the background and hypothesis or purpose of your project. In this section, there should be a progression from general (the largest scientific question/ interest of the field) to specific (your project).

Materials and Methods

Briefly outline the important methods, antibodies and reagents you have used or will use in your project.

Results

Outline briefly any results you have obtained to date.

Future Directions

Describe what you hope to achieve by the end of your project. Don't worry we will not mark you down if you don't get these results by the final!

IMPORTANT!!!: Please check over your abstract with your supervisor or somebody else in the lab before submitting it. **THIS IS ESSENTIAL.**

The abstract must be submitted:

- in exact format as required above
- in PDF format
- with filename pattern YourFullName_Abstract.PDF
- by email to huy.bui@mcgill.ca by the established deadline

Failure to follow guideline, format will result into grade deduction.

Instructions for Midterm

MIDTERM ORAL

The Midterm Oral examination will count for 5% of your final grade.

The midterm is a 15-minute oral examination.

In the first 5 minutes, the students will be asked to explain their project without any PowerPoint or other visual support. This should not be recitation of the abstract learned by heart, as speaking and writing style are different.

Then, they will be questioned on various details of the project (theory and methodology) for the remaining 10 minutes.

At the end of the midterm the student will receive some constructive feedback on how to improve their performance and what points to focus on for the final. The feedback is designed to help those students who seem to be struggling and cannot be a guarantee for the final grade.

Instructions for preparing the final report

The final report will count for 30% of your final grade.

(Marks WILL be deducted if you do not follow these instructions)

- A. The PDF version of your report must be sent to the course coordinators.
- B. The report should be written in double-space, character size 12, with 2cm margins. In addition, the report should **not exceed 10 pages** of text (excluding the cover page, the contributions page, the abstract, the figures, tables and legends). The page count below is to be used as a guideline of the length of each section for a “well-balanced” report.
- C. The report should include the following sections, unless otherwise indicated:
1. Cover page:
 - a) Title (no more than 2 lines)
 - b) Date
 - c) Name of student and student number
 - d) Name of supervisor
 - e) Course number
 2. Acknowledgements (not required).
 3. Contributions: short paragraph clearly stating your contributions to the work presented and acknowledging other lab members. The report should focus on your contributions to the work, not the work of others. This is different from the Acknowledgements section.
 4. Abbreviations list (abbreviations should still be fully name the first used in text and abstract).
 5. Abstract-1 paragraph 10-15 lines (separate page)
 6. Introduction (with hypothesis) 2-3 pages
 7. Methods 2-3 pages
 8. Results 2-3 pages of text (not including figures, tables and legends)
 9. Discussion 2-3 pages
- Total text (sections 6-9) 10 pages maximum**
10. Figures Number of figures as required (as many as necessarily)
 11. References 1-3 pages
 12. Tables not required (used as needed)
 13. APPENDIX not required (used as needed)

D. In the introduction please highlight your hypothesis, either by using bold or italic characters.

E. Each figure should have a title and a self-explanatory legend (understandable without reading the text). Figures should be numbered in the order they are mentioned in the main text.

F. Reference style should be used as in the journal Nature, see:-

<http://www.nature.com/nature/authors/gta/index.html#a5.4>

G. More guidelines will be provided during the compulsory Paper Writing Tutorial

G. Endnotes/ footnotes use them only if you feel it is absolutely required. This section may include a list of useful abbreviations and/ or a description of statistics that were applied to your data.

H. All abbreviations must be explained in full the first time they are used (even if listed in the abbreviation list).

IMPORTANT: No altered copies of the report can be handed in after the due date. There will be penalties for late submission. Please check your report carefully before handing it in.

Instructions for Preparing the Final Oral Presentation

The final oral presentation will count for 25% of the final grade.

The oral defense is open to the public. Students registered to the course are expected to attend. Supervisors, lab members, family and friends are welcome.

A. The student will present a 15-minute PowerPoint presentation of their research project (described B-F below). This will be followed by a 15-minute oral defense/questions by committee and/or audience (described G-I below).

B. The oral Presentation should include:

1. A brief, but comprehensive introduction. Including the background to your particular project and the hypothesis or overall purpose of the project.
2. The main findings of your project, remembering to give enough information so that the results are easy to interpret.
3. Conclusion of the specific findings of the project. Remember models of your theories can be useful. Also try to emphasize how you see your findings fit into the field and what future work should be done.

- Remember to be concise and clear.

C. The powerpoint presentation should be saved onto the departmental laptops (Room M30 Strathcona building) before the dateline (see course schedule).

E. The oral Powerpoint presentation cannot be longer than 15 minutes. You will be told to stop if the presentation is too long. Therefore, we advise you to carefully check the length of your prepared presentation before submitting. NO changes can be made to the presentation after it has been submitted

F. IMPORTANT – Please check that your figures display correctly on the laptops and if you plan to show movies that they work. If you have any questions regarding this, please contact the course coordinator (Huy Bui).

G. The presentation will be followed by 15 minutes defense during which you will be questioned on any aspect of the theoretical or experimental background to their project as well as on the PowerPoint presentation or written proposal (please have a copy of your report available to you). The questions could cover your background knowledge on your subject, your comprehension of your project and the experiments you did, your ability to interpret the results, your ability to drive conclusion from the work you did, your understanding of the impact and limitation of your work.

H. The aim of the defense is for the student to demonstrate a comprehensive

knowledge of their project and to be able to defend their results, conclusions and perspectives.

I. Two members of the committee will have read your report prior to your presentation and will be asking the most questions. The other judges will not have read your report but can ask questions. Your presentation should thereby be understandable by itself.

J. More detailed guidelines will be provided during the compulsory Oral presentation tutorial.

McGill Policy Statements

1- “McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures” (see www.mcgill.ca/students/srr/honest for more information). (approved by Senate on 29 January 2003)

« L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site www.mcgill.ca/students/srr/honest/). »

2- “In accord with McGill University’s Charter of Students’ Rights, students in this course have the right to submit in English or in French any written work that is to be graded.” (approved by Senate on 21 January 2009)

« Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue). » 3- “End-of-term course evaluations⁶ are one of the ways that McGill works towards maintaining and improving the quality of courses and the student’s learning experience. You will be notified by e-mail when the evaluations are available on Mercury, the online course evaluation system. Please note that a minimum number of responses must be received for results to be available to students.”