

IMM450Y - Research Project in Immunology

IMM450Y is a full credit course in which the student takes part in an original research project in the laboratory of a faculty member associated with the Immunology Specialist program. The program is designed to provide an opportunity for the student : (1) to discover if he/she has an interest in and a capability for a career in research; (2) to discover in detail, through active participation, the research projects being undertaken in a specific laboratory. Moreover, it allows for faculty appraisal of the potential of the student for graduate research education.

The student is expected to devote a minimum of seven hours per week (normally one full day or two half days) to the course from the week the fall term lectures begin to the last week of the spring term in which lectures are given. This time is to be spent in the laboratory carrying out experiments. Data evaluation, literature reading, report and oral presentation preparation are to be done outside of the laboratory time. The time available should be sufficient for the student to complete a project and to become familiar with a number of techniques used in cellular or molecular biology.

Grade Breakdown

Lab work/participation (for 1st term)	-20%
Lab work/participation (for both terms)	-50%
Final Report	-20%
Final Presentation/Participation	-10%

Lab work/participation (20 + 50 marks)

The professor in charge of supervising the student will provide you with 20 marks prior by 10 January 2020 that marks your work and participation in the laboratory. The remaining 50 marks will be provided at the end of the course which will grade your overall work throughout the academic year.

Written report (20 marks)

The main objective of this report is to give students an opportunity to learn how to write a manuscript. The students are encouraged to seek help from their supervisors to write (and re-write) the report before submission to the course coordinator. The focus is on the learning process, not necessarily on how much result that you have generated. Thus, it is recommended that the students start drafting the reports a month ahead of the deadline. Additional results acquired after finishing the report may be presented in the oral presentations.

Due: Wednesday March 31th, 2021 at 3:00 p.m. A copy of the report should be emailed to the Immunology office at undergraduate.immunology@utoronto.ca. Reports received after this deadline will be penalized - 4 marks (20%) will be deducted per day.

Format: Typed, 12 point font, double-spaced; should not exceed 8 pages (excluding references, tables and figures). Reports that do not conform to this format will be penalized (2 marks will be deducted). 'Mini-manuscript': Check papers in the Journal of Immunology as examples.

Abstract: Not more than 200 words. A summary of your objective and key accomplishment

Introduction: Background of your project and the objective(s). Any hypothesis?

Methods: Use sub-headings to describe the different techniques used in your project.

Results: Use sub-headings to describe your findings. If possible, organize your data in Tables, and show your results in good quality figures. Assemble all the figures at the end of the report. All Figures must be accompanied by clear and concise legends.

Discussions: Organize them in the points that you would like to make (use sub-headings):

1. The interpretation of your results;
2. How your results might have advanced the current knowledge in your area of interest;
3. Can you build a model based on the results that you've got?

Presentations (10 Marks)

Wednesday March 31st, Thursday April 1st, or Friday April 2nd, 2021. Students must present their work in the afternoon in one of these 3 days. The presentations start at 1PM to 4PM. Please email the office at undergraduate.immunology@utoronto.ca to let us know the day that you can present. If and only if you have a class scheduled for all 3 days, we will organize an alternate time/day for your presentation. Failure to show up will result in 0 marks for oral presentations/participation. Students **MUST** attend **ALL** the presentations for the day that you selected.

Presentation (8 marks): evaluation will be based on organization and clarity of the talk; and the ability to handle questions. 8 minute presentation; 2 minutes for questions.

Participation during the question period (2 marks): Up to 2 marks will be awarded for the level of participation (i.e. asking questions) during the student presentations. No marks will be given to students who did not ask any questions.

COVID 19 contingency plans

The students will work in the laboratories and practice physical distancing measures during their training. In the event that the laboratory closes due to COVID19, students will then be asked to carry out a literature review and write a grant proposal. The length and scope of the grant proposal to be written will depend on the timing of lab closure, should this happen. For example, if the lab closes earlier in the academic year (e.g. October), then the student will be asked to write a 10 page grant proposal. Should

the lab close later in the year (e.g. January), the student will be asked to write a 5 page proposal. The proposal will be written with the Supervisor, and could include preliminary data figures provided by the Supervisor.”

Important notice

The research being conducted by you, the undergraduate student, is part of an overall research program of the principal investigator and undergraduate projects are frequently connected with data produced by other lab members and collaborators. Hence, results and methodologies of your research project is the property of the principal investigator. If you wish to present your work in any manner to the general public or to your peers (e.g. at meetings, posting it on the internet), you must first get permission from the principal investigator to do so.

If there are any questions, please email Dr. Alberto Martin (alberto.martin@utoronto.ca).