Course Outline

Course Title

Microbiology Advanced Research Project

(as will appear in the eCalendar)

MIMM 496

General Information
Course #: MIMM 496
Term: Two consecutive Fall, Winter, Summer semesters
Year: 2018
Pre-requisites: MIMM 212, MIMM384, MIMM385 (or equivalent)
Course schedule: Approximately 9 hours per week (lab), exact schedule approved by supervisor
Number of credits: 6 Credits – Consecutive Fall, Winter or Summer Terms Course location: Lab of chosen supervisor

Course Coordinator
Dr. Gregory T. Marczynski, Ph.D. Associate
Professor gregory.marczynski@mcgill.ca

Telephone for office appointments: (514) 398-3917
Office hours for students: By appointment **Office location:**
Lyman Duff Medical Building
3775 University St., Room 506A
Montreal, QC H3A 2B4

Course Overview
This two-semester course is intended for undergraduate Science students who want a rigorous research experience beyond that of a one semester course (MIMM 396/397) and who are unlikely to take the Honours Research Project course (MIMM 501/502). MIMM 496 provides more opportunities to research a specific field, to more fully test a hypothesis and to engage with McGill scientists. This course contains a significant research component that requires substantial supervised research work by the student and the submission of two written reports worth 50% of the final grade. The Supervisors' evaluation of the students' research performance will determine the remaining 50% of the final grade. Application for MIMM 496

requires the permission of the lab supervisor and students are advised to directly contact the lab supervisors as early as possible.

Learning Outcomes

The student will learn about a specific area of research in either microbiology and/or immunology depending of their supervisor's area of expertise. They will learn how to form a testable hypothesis that can be addressed with the methods available in their supervisor's lab and probably other facilities at McGill. They will gain some proficiency in basic methods microbiology and/or immunology depending of their supervisor's methodologies. Students will also write a research report that conforms to the basic outline and requirements of scientific journals. More generally, the student will learn how contemporary research is conducted.

Instructional Method

The Principle Investigator (Professor) in charge of the lab will supervise the research project. Informal discussions in lab and more formal discussions as lab meeting presentations before all members of the lab.

Required Course Materials

All materials will be supplied by the supervisor.

Course Content

Details depend on research interests and expertise of chosen lab. A lab experience organized around a defined lab project that supports the research goals of the principle investigator. (The project is formulated by the supervisor, discussed by both supervisor and student and then reviewed by Dr. Marczynski.) Direct supervision and interaction with active scientists plus lab record keeping (on paper or electronically) according to the record keeping standards of an active lab.

Evaluation

The submission of two written reports worth 50% of the final grade and the Supervisors' evaluation of the students' research performance will determine the remaining 50% of the final grade. More specifically, the first semester will be graded on a first written report worth 20% of the final grade and a supervisor's first evaluation also worth 20% of the final grade. The consecutive second semester will be graded on a final written report worth 30% of the final grade and the supervisor's final evaluation also worth 30% of the final grade. The first written report will emphasize the theory and background for the project. The second written report will primarily deal with the research results and plans for follow-up experiments. Both reports will be graded by the primary lab supervisor (Professor) and by a second lab supervisor (Professor) currently participating in this course. A copy of both research reports will be sent to the course coordinator, Dr. G. Marczynski. The grades from both supervisors will be averaged.

The Supervisors will use the following rubrics for grading:

Rubrics for marking first and second semester lab performance evaluations.
These 10 rubrics are equally weighted.

1 Intellectual ability and understanding of project
2 Motivation, commitment and enthusiasm
3 Curiosity, imagination, inventiveness, creativity
4 Industry in work and ability to meet deadlines
5 Technical ability, manual skills, problem solving
6 Perseverance, resilience, initiative, autonomy
7 Organization, precision, data collection and recording
8 Analytical skills, logic, insight, creative thinking
9 Judgement, common sense, discipline, good decisions
10 Interpersonal communication, interactions

Rubrics for marking first and second semester research report evaluations.
For the first semester evaluations, rubrics 1 to 5 have double value.
For the second semester evaluations, rubrics 6 to 10 have double value.

1 Abstract, well organized
2 Intro clear, complete
3 Problem or hypothesis clearly stated
4 Paper error free
5 References
6 Logic and analysis
7 Research results
8 Graphics clear
9 Discussion
10 Future research

These rubrics will be provided on standardized spreadsheets and each requires written comments to explain the marks. These evaluations will be reviewed by the coordinator and made available to students for feedback.

Report specifications: The written text of the research reports must be a minimum of 10 numbered pages with 1-inch margins, 1 ½ line-spacing and 12-point type Times New Roman font. The paper will include a Title page, Introduction, Results and Discussion, Summary, Reference list and any appendices. The title page, list of references, and data tables or figures that you refer to in your discussion should be appended to the paper but are not included in the 10-page text limit. Submit copies of your paper to your supervisor and the course coordinator by the last day of classes in the term. Research supervisors must submit their grades to the course coordinator by the end of the examination period.

McGill Policy Statements

Required Course Outline Statements [in keeping with Senate resolutions]

Language of Submission:

"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. This does not apply to courses in which acquiring proficiency in a language is one of the objectives." (Approved by Senate on 21 January 2009 - see also the section in this document on Assignments and Evaluation.)
Note: In courses in which acquiring proficiency in a language is one of the objectives, the assessments shall be in the language of the course.

The FRENCH TRANSLATION about this right may also be used on your course outline: « 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). »

Academic Integrity:

"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)

The FRENCH TRANSLATION of the Academic Integrity statement may also be used on your course outline:

« 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/).»

Text-matching Software:

Instructors may avail themselves of software freely available on the internet that can be used for text-matching. If you intend to use such software, *you **must** inform students in writing before the end of the add/drop period of your intention to do so.* The Policy on Text-matching Software provides details on required statements and appropriate

implementation. (Approved by Senate on 1 December 2004) You may use this text in your course outline:

Text-matching software is used in this course. Item 2 of the text-matching policy states, in part:

2. Students shall also be informed in writing before the end of the drop/add period that they are free, without penalty of grade, to choose an alternative way of attesting to the authenticity of their work. Instructors shall provide students with at least two possible alternatives that are not unduly onerous and that are appropriate for the type of written work.

If you prefer that an alternative way of attesting to your work's authenticity be used, you may choose from these alternatives:

[Per the policy, as an instructor you must choose "**at least two possible alternatives** that are not unduly onerous and that are appropriate for the type of written work, and the alternatives shall be chosen from the following, as appropriate:" **(bold added).**]

a) submitting copies of multiple drafts;
b) submitting an annotated bibliography;
c) submitting photocopies of sources;
d) taking an oral examination directed at issues of originality;
e) responding in writing to a quiz or questions directed at issues of originality;
f) providing a written report regarding the process of completing the work; other alternatives devised by the instruction, provided that they are not unduly onerous, that they are meant to attest for authenticity of the written work, and that they meet the approval of the Dean or Disciplinary Officer in the faculty in which the course is offered.

Additional Statements

The following statements are optional and you are encouraged to include them on course outlines as appropriate:

- "The University Student Assessment Policy exists to ensure fair and equitable academic assessment for all students and to protect students from excessive workloads. All students and instructors are encouraged to review this Policy, which addresses multiple aspects and methods of student assessment, e.g. the timing of evaluation due dates and weighting of final examinations."

- "© Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of

copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures."

- *"As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the* Office for Students with Disabilities*, 514-398-6009."*

- "End-of-course evaluations 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. Please note that a minimum number of responses must be received for results to be available to students."

- In keeping with McGill's preparedness planning strategies with respect to potential pandemic or other concerns, the Administration suggests that all course outlines contain the statement: "In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change."

- Additional policies governing academic issues which affect students can be found in the McGill Charter of Students' Rights (see document).

- McGill has policies on sustainability, paper use and other initiatives to promote a culture of sustainability at McGill. (See the Office of Sustainability.)

- Guidelines for the use of mobile computing and communications (MC2) devices in classes at McGill have been approved by the APC. Consult the Guidelines for a range of sample wording that may be used or adapted by instructors on their course outlines.