McGill University
Department of Mathematics and Statistics
MATH 470 –Honours Research Project - 3 credits

Hand-written submissions are no longer accepted.
This form must be submitted at least 5 business days(M-F) before the add-drop deadline of the semester.

Term: F20 _____ W20 _____ S20 24

Name: Elliot Forcier-Poirier Student Number: 260989602
McGill Email: elliot.forcier-poirier@mail.mcgill.ca
Program: Honours Mathematics and Computer Science Year: U1 ☐ U2 ☐ U3 ☐
Topic title: *(40 characters max)* Various Optimization Algorithms applied to a mining context

Course Description:

The project would involve learning about delayed column generation, Dantzig-Wolfe decomposition and several classical problems such as the cutting stock problem and the multi-vehicle routing problem. Toward the end of the project, these methods would be used in a strategic mine planning context to help optimize a real problem. The project would involve a component of implementing the column generation algorithms, as well as a simplified version of the simplex method.

Method of evaluation:

Participation (if applicable): ____ %
One-on-one meetings (if applicable): ____ %
Oral presentation (mandatory): ____ %
Final report (mandatory): ____ %

Student's Signature and Date:

Project Supervisor: Courtney Paquette Signature and Date: Courtney Paquette April 12, 2024

Co-Supervisor: Alessandro Navarra Signature and Date:

Coordinator: Professor A. Kelome, Chief Advisor Signature and Date:

This e-form (both pages) is to be emailed to Lori Hurdle (ugrad.mathstat@mcgill.ca) with all three (3) signatures.

FOR OFFICE USE ONLY:

CRN	SECTION	DATE COMPLETED	INITIALS

Updated: February 2024; LoriH. I:\everyone\FORMS\Undergraduate Forms

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Guidelines

MATH 470 - Honours Research Project

Prerequisite: Appropriate honours courses with approval of supervisor.

Rationale:

This course is intended for students who are interested in undertaking a project on their own initiative, very often in an area of mathematics of their own choosing. The course allows the student to develop their own specific interests.

Scope & procedures:

The course is open to students majoring in Mathematics, or in one of the Joint Major or Liberal programs in mathematics or statistics. It is normally taken by students who have completed two years in their program. In all cases, the topic would be within the grasp of the student. **At the end of the semester, the student will be required to write a report, either in the form of a survey article or a research report and pass a short oral examination on the project. Original research would not be expected.**

The student is first responsible for finding a project supervisor. It is strongly advised to do this well in advance, at the latest during the semester before they intend to take MATH 410. The project is then developed in collaboration between the student and the project supervisor who will help identify a co-supervisor. The co-supervisor will read the report, attend the oral presentation, and help the project supervisor determine the final grade. The co-supervisor could be involved in the project as well but this is not required.

The project supervisor must be a faculty member of the Department of Mathematics and Statistics (tenured professors, tenure-track professors, faculty lecturers) or an Associate member of the Department of Mathematics and Statistics. The co-supervisor could be a post-doc, a visitor, a member of another Department of the University, or an Associate member of the Department of Mathematics and Statistics.

In situations where the report is not submitted before the end of the semester, a grade of incomplete will be given and be subject to the usual Faculty regulations regarding deadlines for clearing the incomplete grade. This grade would be cleared on submission of the report and following the oral examination.

The project will require substantial independent work by the student. The tasks of assimilating the necessary material, the detailed writing of the report, and the literature searches are the responsibility of the student. The supervisor would meet with the student at intervals during the semester to discuss the progress the student had made. The supervisor will be responsible for having regular meetings with the student and reading preliminary drafts of the report and offering constructive criticism.

It is not expected that this course will entail any issues relating to ethics, safety, or security that are not of a routine nature.

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After giving his/her approval, the administration will email students with a course reference number (CRN) to facilitate registration that must be completed by the student via Minerva.