
MATH*4600 - Advanced Research Project in Mathematics

Winter 2024 Course Outline

Section: 01

Credits: 1.00

Land Acknowledgement: Guelph

The University of Guelph resides on the ancestral lands of the Attawandaron people and the treaty lands and territory of the Mississaugas of the Credit. We recognize the significance of the Dish with One Spoon Covenant to this land and offer respect to our Anishinaabe, Haudenosaunee and Métis neighbours. Today, this gathering place is home to many First Nations, Inuit, and Métis peoples and acknowledging them reminds us of our important connection to this land where we work and learn.

Calendar Description

Each student in this course will undertake an individual research project in some area of mathematics, under the supervision of a faculty member. A written report and a public presentation of the project will be required. Students interested in taking this course must contact the course coordinator at least one month in advance of the first class day of the semester.

Prerequisite(s): 1.00 credits in Mathematics at the 3000 level or above.

Restriction(s): Approval of a supervisor and the course coordinator.

Department(s): Department of Mathematics and Statistics

Course Components

The course components consist of the following:

- 1) Regular meetings with your supervisor.
- 2) A short mid-semester meeting with the course coordinator.
- 3) A research proposal.
- 4) A final presentation.
- 5) A final written report.

Details on each of these are discussed in the following sections

Regular Meetings with your supervisor

The supervisor will establish a regular set of meetings with the student (typically weekly). Through these meetings the supervisor will assess the student's participation and engagement, effort extended, work progress, and adherence to the project time-line. This assessment will account for 15% of the students mark.

Instructor Information

Rajesh Pereira

Email: pereirar@uoguelph.ca

Meeting with the course coordinator

This will just be an informal meeting where each student should be prepared to briefly (less than 5 minutes) discuss the research project they will be undertaking. This will be scheduled in the middle of the semester. This will not be marked.

You can also contact the coordinator at any time at the email address above and arrange a meeting if you have any concerns or questions.

The initial research proposal.

This report should be 2-3 pages in length (12 point font, 1 inch margins, single spaced). This proposal should describe the research that will be conducted and the methods or techniques that will be used. A time-line for the remainder of the semester must be included that specifies tasks to be completed and dates at which various milestones are expected to be reached. This time-line must be signed by the supervisor.

NOTE: If the student and project supervisor have had previous research collaborations in the past, such as a summer research semester, both student and supervisor are required to disclose this information and clearly describe how the current research is different from, or a significant extension to, the work previously done (additional one page maximum).

This report will be due Friday Feb 2 with a 10% penalty per day that it is late. The report will be read by the supervisor and the course coordinator but marked by the supervisor only. This mark will be 15% of the final mark.

Course Level Learning Outcomes

Students who successfully complete this course will learn

How to conduct mathematical research.

How to find and evaluate relevant items in the mathematical literature.

How to present mathematical ideas to an interested audience.

How to organize and write a written report about your work.

Oral Presentation

This will be a presentation of about 20 minutes in length using computer-generated slides. All members of the class are expected to be present for all talks. The intended audience is the other class members, that is, an audience that is mathematically and statistically literate, but not necessarily experts in the specific research area. Students are expected to ask questions of the presenter after the presentation.

This will be scheduled on the last week of classes at a time when all of the students and supervisors are available.

The presentation will be worth 20% of the final grade and the mark will be determined jointly by the supervisor and the coordinator (or jointly with the coordinator and another faculty member if the coordinator is the supervisor).

The Final Report

A typeset final report, 15-20 pages in length (12 point font, 1 inch margins, single spaced, appendices and references not included in page count). The language of this report should be formal and professional, as if it were being submitted to a journal. The use of Latex is encouraged but not mandatory. The report should provide a thorough discourse of the project, including pertinent background, a summary of at least two relevant papers from the literature and how they relate to the project, the methods employed in the project, results obtained, and a discussion of those results. The audience for the report is someone with at least as much understanding of the material as the student, that is, the student writer is not trying to convey information to other members of the class, who may not have much knowledge of the area, but rather to someone familiar with the field.

The final report is due Friday April 19th and worth 50% of the final mark. The mark will be determined jointly by the supervisor and the coordinator (or jointly with the coordinator and another faculty member if the coordinator is the supervisor).

Assessment Breakdown

Description	Weighting (%)	Due Date
Research Proposal	15%	Friday Feb 2
Final Oral Presentation	20%	Last week of classes
Final Report	50%	Friday April 19
Supervisor's Mark	15%	End of Semester

Last Day to Drop Course

The final day to drop Winter 2024 courses without academic penalty is the last day of classes: April 08

After this date, a mark will be recorded, whether course work is completed or not (a zero is assigned for missed tests/assignments). This mark will show on the student's transcript and will be calculated into their average.

Experiential Learning Component

Experiential Learning (EL) at the University of Guelph means learning through action. EL activities provide students with the opportunity to apply course material to real-world, meaningful contexts.

This course has integrated the following Experiential Learning Components: Research or Scholarly Creation (<https://www.uoguelph.ca/experientiallearning/students/search-experiential-learning-opportunities/curricular-and-course-based-opportunities-0/>).

Upon successful completion, this experiential learning course will be reflected on the student's Professional and Career Development Record (PCDR). Learn about the PCDR and experiential learning at www.uoguelph.ca/pcdr (<https://www.uoguelph.ca/experientiallearning/pcdr/>).

Standard Statements for Undergraduate Courses

Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-misconduct/>) is outlined in the Undergraduate Calendar.

Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability. Use of the SAS Exam Centre requires students to make a booking at least 10 days in advance, and no later than the first business day in November, March or July as appropriate for the semester. Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time. For students at the Guelph campus, information can be found on the SAS website. (<https://www.uoguelph.ca/sas/>)

Accommodation of Religious Obligations

If you are unable to meet an in-course requirement due to religious obligations, please email the course instructor within two weeks of the start of the semester to make alternate arrangements.

See the Academic calendar for information on regulations and procedures for Academic Accommodations of Religious Obligations (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-accommodation-religious-obligations/>).

Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all undergraduate students except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in the Undergraduate Calendar - Dropping Courses (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/dropping-courses/>).

Email Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Health and Wellbeing

The University of Guelph provides a wide range of health and wellbeing services at the Vaccarino Centre for Student Wellness (<https://wellness.uoguelph.ca/>). If you are concerned about your mental health and not sure where to start, connect with a Student Wellness Navigator (<https://wellness.uoguelph.ca/navigators/>) who can help develop a plan to manage and support your mental health or check out our mental wellbeing resources (<https://wellness.uoguelph.ca/shine-this-year/>). The Student Wellness team are here to help and welcome the opportunity to connect with you.

Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g., final exam or major assignment).

Recording of Materials

Presentations that are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

Resources

The Academic Calendars (<http://www.uoguelph.ca/registrar/calendars/?index>) are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs.

When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. See the Undergraduate Calendar for information on regulations and procedures for Academic Consideration. (<https://calendar.uoguelph.ca/undergraduate-calendar/undergraduate-degree-regulations-procedures/academic-consideration-appeals-petitions/>)