

APPLMATH 4999Z - Course Outline - FW 2023-24

1. Course Information

Course Information

Applied-Math Project, APPLMATH 4999Z, FW 2023-24 Times and Location: Tues 12:00-1:00

This course will be delivered in person. Please note that this is a full-year half-credit course.

Regular meetings with a faculty mentor will be arranged by the student. These should happen at least once every other week when classes are in session.

List of Prerequisites

Registration in the fourth year of a program in Applied Mathematics.

Unless you have either the requisites for this course or written special permission from your Dean's Designate (Department/Program Counsellors and Science Academic Counselling) to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

Dr. Lyle Muller (Assistant Professor), Email: lmuller2@uwo.ca, Office: WIRB 4168, Phone x88790, Office hours by appointment

Students must use their Western (@uwo.ca or @ivey.uwo.ca) email addresses when contacting their instructors. Please use "APPLMATH 4999Z" (exactly as typed) in the subject line of your email.

3. Course Syllabus, Schedule, and Delivery Mode

Course Content

The student will work on a project under faculty supervision. The project may involve an extension, or more detailed coverage of material presented in other courses. Credit for the course will involve a written as well as oral presentation.

Course Learning Outcomes

This course will be delivered **in person**. It serves as a capstone experience for students in the Applied Mathematics undergraduate program. By the end of the course the student will have achieved competencies related to conducting research in an area of applied math. Specifically, the student will be able to:

- carry out an effective search of the peer-reviewed literature relevant to a given topic;

- summarize and evaluate peer-reviewed literature relevant to a given topic;
- apply new and existing mathematical knowledge to answer a non-trivial question in the natural sciences, social sciences, computational sciences, or related area;
- discuss findings giving consideration to the peer-reviewed literature relevant to a given topic, and giving consideration to the limitations of the mathematics that have been applied;
- communicate effectively in both written and oral forms;
- conduct discussions about research topics in a collegial, productive, and inclusive manner.

Key Sessional Dates

Fall Term

Fall Classes begin:	September 7, 2023
Last day to add:	September 15, 2023
No classes:	September 29, 2023
Holiday:	October 9, 2023
Fall Reading Week:	October 30 to November 5, 2023
Last day to drop:	November 13, 2023
Fall Classes end:	December 8, 2023

Winter Term

Winter Classes begin:	January 8, 2024
Holiday:	March 29, 2024
Spring Reading Week:	February 17 to 25, 2024
Winter Classes end:	April 8, 2024

Although the intent is for this course to be delivered in person, should any university-declared emergency require some or all of the course to be delivered online, either synchronously or asynchronously, the course will adapt accordingly. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

Course Materials

Materials required for this course will vary. Check with your faculty mentor directly. If you need access to computational resources but are unsure how to access them, please feel free to approach the Course Coordinator with a request.

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class, and all course material will be posted there.

Learning Management System (OWL)

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

4. Methods of Evaluation

Course Grade

The final course grade will be determined by student performance on a literature search, literature review and project proposal, a midterm status report, a final oral presentation, a final essay, and participation throughout the course.

Literature Search [5%]: Due Thursday, October 5 by 11:59 PM Use tools suggested by UWO Library representatives to identify 10 - 20 key references related to your project. Describe your search procedures (databases used, search terms, inclusion/exclusion criteria) and create a list highlighting in 1-2 sentences why each item is relevant to your work.

Literature Review and Proposal [15%]: Due Thursday, October 26 by 11:59 PM 1,000-word essay that addresses the following points:

- What topic are you studying? Generally speaking, why is your topic interesting?
- Based on your literature search, what is the current state of knowledge related to your topic? What gap(s) in understanding exist?
- Which gap in understanding will you work toward addressing? Why is it important to do so?
- How do you propose to go about addressing said gap? What milestones will you work toward?

Midterm Status Report [5%]: Due Thursday, 7 December by 11:59 PM A written document that reminds the reader about your topic and your question/goal. A bulleted list describing milestones achieved to date. A second bulleted list describing a timeline for project completion in Winter term.

Final Oral Presentation [20%]: March, in class Classes in March will be devoted to student presentations. Sign up will be available through OWL.

Final Essay [35%]: Due Thursday, April 4 by 11:59 PM The final essay will represent the full report of the research activities undertaken by the student during FW 2023-24. It should be written so that a reader with experience in mathematics but no domain-specific knowledge can understand in detail the application to the research problem. Results should be presented clearly and discussed thoroughly in the context of the relevant literature. Citations should follow standard practice of the area of application. In keeping with university academic policy, essays should be at least 2500 words (not including abstract, not including captions associated figures and/tables where applicable, and not including citations).

Participation [20%]: The coordinator will award 10 of the 20 points available for participation based on attendance, engagement, and constructive comments on their peers' work throughout the course. Over the course of the Fall and Winter terms, students will provide informal updates in a seminar format. The

remaining 10 points will be awarded by mentors, based on their assessment of the student's engagement with research.

For all assessments in the course, a penalty for late submissions will be applied at a rate of 10% per day, holidays and weekends included. To receive a passing grade in APPLMATH 4999Z, the student (1) will be expected to participate in no less than 3/4 of the scheduled Tuesday classes and (2) must receive at least a passing grade on the final essay portion of the course (i.e., no less than 50% credit on the final essay).

5. Student Absences

If you are unable to meet a course requirement due to illness or other serious circumstances, please follow the procedures below.

Assessments Worth Less Than 10% of Course Grade

For work totalling less than 10% of the final course grade, excused absences can be accommodated by providing a student in need with a one-week grace period. After the one-week grace period expires, late penalties will be applied at a rate of 10% per day, holidays and weekends included. The project-based nature of this course means that long-term and/or extended excused absences will have to be dealt with on a case-by-case basis.

Assessments Worth At Least 10% of Course Grade

For work totalling 10% or more of the final course grade, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the [University's medical illness policy \(click here\)](#) and review the [Student Medical Certificate \(click here\)](#). In the event that the links do not work, type either

- https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration.pdf (for policy)
- https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf (for certificate)

into your browser.

In this case, excused absences can be accommodated by providing a student in need with a one-week grace period. After the one-week grace period expires, late penalties will be applied at a rate of 10% per day, holidays and weekends included. The project-based nature of this course means that long-term and/or extended excused absences will have to be dealt with on a case-by-case basis.

Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult [the University's list of recognized religious holidays \(click here\)](#), which is updated annually. Alternatively, you may wish to enter

- <https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>

directly into your browser.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. Students can consult [the policy on Academic Accommodation for Students with Disabilities \(click here\)](#). Alternatively, type

- [www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf)

into a browser.

6. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca> ([click here](#)).

In accordance with [policy \(click here\)](#), the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner. The policy referenced above can also be accessed by typing

- https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf

into your browser.

Scholastic offences are taken seriously and students are directed to read the appropriate [policy \(click here\)](#), specifically, the definition of what constitutes a Scholastic Offence. This policy can also be accessed by typing

- http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

into your browser.

In the event of a health lock-down, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide personal information (including some biometric data) and the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at <https://remoteproctoring.uwo.ca> ([click here](#)).

7. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/> ([click here](#)).

Students who are in emotional/mental distress should refer to Mental Health@Western by visiting their website <https://uwo.ca/health/> (click here) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will information about support services for survivors, including emergency contacts [is available \(click here\)](#). If you cannot access the link you can type

- https://www.uwo.ca/health/student_support/survivor_support/get-help.html

into your browser. To connect with a case manager or set up an appointment, please email support@uwo.ca.

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact [Accessible Education \(click here\)](#) if you have any questions regarding accommodations. If the link provided does not work, type

- http://academicsupport.uwo.ca/accessible_education/index.html

into your browser.

Learning-skills counsellors at the [Student Development Centre \(click here\)](#) are ready to help you improve your learning skills (alternatively, type <https://learning.uwo.ca> into your browser). They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/> (click here).