

MATH 9602A Course Outline

1. Course Information

Course Information

Mathematics 9602A, Elliptic Curves

List of Prerequisites

Mathematics 9023A/B recommended.

Unless you have either the requisites for this course or written special permission from the Graduate Chair 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

Instructors	Email
Dr. Chris Hall	chall69@uwo.ca

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

Office hours are in person.

3. Course Syllabus, Schedule, Delivery Mode

This is an introductory course on elliptic curves. They are mathematical objects which play key roles in Wiles's proof of Fermat's Last Theorem, the Birch and Swinnerton-Dyer conjecture (a Millennium Prize Problem), and public-key cryptography. This course will provide foundations for understanding these roles. Topics to be covered include:

- basics of algebraic varieties and curves
- geometry of elliptic curves
- elliptic curves over finite fields

Topics to be covered if time and interest permit include:

- elliptic curves over the complex numbers

- elliptic curves over global fields

Key Sessional Dates:

Classes begin: September 5, 2024

Reading Week: October 12 – 20

Classes end: December 6, 2024

Exam period: December 9 – 22, 2024

4. Course Materials

There are several good texts on elliptic curves. We will primarily follow:

- J. Silverman, *The Arithmetic of Elliptic Curves*, 2nd edition.

An electronic copy is available from the university library:

https://ocul-uwo.primo.exlibrisgroup.com/permalink/01OCUL_UWO/r0c2m8/alma991044378409605163

All course material will be posted to OWL: <https://westernu.brightspace.com/>

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

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

5. Methods of Evaluation

Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

Assignments (5)	10%
Midterm Test	30%
Presentation	20%
Final Exam	40%

There will be six exercise sets, each posted to OWL one week before it is due. The lowest mark will be dropped. The tentative deadlines are Sep 20, Oct 04, Oct 25, Nov 08, Nov 22, and Dec 06 at **5pm**. Submissions will be via gradescope.ca.

An in-class midterm exam is tentatively scheduled for Oct 29. The scope of the exam will be given (in class or on OWL) by Oct 22.

Each student should prepare a 25-minute presentation to deliver in-class the last week of classes. A rubric for the presentation and a list of possible topics will be posted to OWL after the midterm. Students should select a topic and seek approval by Nov 19.

Evaluation Scheme for Missed Assessments

Students who miss the midterm exam and present supporting documentation will be given an opportunity to write a make-up exam tentatively scheduled for Nov 5. If the student misses this opportunity and has supporting documentation, the weight of the midterm will be shifted to the final exam.

When a student misses the Final Exam and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

Coursework with Assessment Flexibility

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

Assignments. This course has 6 assignments, and the 5 assignments with the highest marks are counted towards your final grade. Students are expected to submit each of the assignments by the deadline listed. For assessments submitted past the deadline, a late penalty of 25% per day will be applied.

6. Additional Statements

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

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. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf.

Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy,

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

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.

No electronic devices will be permitted on tests and exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Support Services

Please visit the Science & Basic Medical Sciences Academic Advising 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/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) 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 find information about support services for survivors, including emergency contacts at

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

To connect with a case manager or set up an appointment, please contact support@uwo.ca.

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