

# Mathematics 3020A-001 Course Outline (Fall 2020-21)

## *Introduction to Abstract Algebra*

### 1. Course Delivery

The class will be divided into two groups according to the first letter of their surname. Each group is invited to attend one of two optional in-person classes per week as shown in the following table:

| Surname | Time                       | Location |
|---------|----------------------------|----------|
| A-L     | 9:30-10:30 am on Tuesdays  | MC 105B  |
| M-Z     | 9:30-10:30 am on Thursdays | MC 105B  |

Due to physical distancing restrictions, students may *not* attend *both* in-person classes. In-person attendance is otherwise optional. Students not in physical attendance will be invited to join the in-person classes via Zoom. The class notes for both days will be posted on the OWL course website. Additional asynchronous materials will also be posted on the course website.

### 2. Prerequisites

Mathematics 1600A/B and one of Mathematics 1120A/B, 2120A/B, 2124A/B, 2151A/B, 2155F/G, Applied Mathematics 2811B, Computer Science 2214A/B.

Unless you have either the prerequisites for this course or written special permission from your Dean to enrol 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.

### 3. Instructor Information

**Instructor:** David Riley, Professor

**Contact information:** [dmriley@uwo.ca](mailto:dmriley@uwo.ca), MC 136. I will try to answer all simple questions by email. If you need to book a Zoom meeting, please let me know. Students must use their Western (@uwo.ca) email addresses for all University correspondence.

## 4. Course Syllabus

This course is an introduction to modern algebra. The subject starts by noticing that addition and multiplication make sense for more than just the integers: we are comfortable with these operations on rational, real, and complex numbers, as well as on polynomials. How about matrices? When is division defined? When does it make sense to talk about factorization? A systematic look at what's going on here turns out to be a gateway to modern mathematics. Along the way, we see how to understand symmetry, via the notion of groups.

Topics include:

- numbers and polynomials
- binary operations and useful axioms
- rings and ideals
- factorization questions
- introduction to field theory
- introduction to groups

## 5. Course Materials

**Textbook:** *Abstract Algebra: An Inquiry-Based Approach* by Jonathan K. Hodge, Steven Schlicker and Ted Sundstrom (Chapman and Hall/CRC, 1<sup>st</sup> edition, 2013). Note: free on-line from the UWO library (hardcopies are available for purchase).

**Website:** materials will be posted on OWL (<http://owl.uwo.ca>).

**Technical Requirements:** Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for using OWL and Zoom.

## 6. Methods of Evaluation

**Evaluation:** five assignments (10% each), one 25% take-home midterm exam, one 25% take-home final exam.

**Exam dates:** to be announced.

**Missed assignments and exams:** If you miss an assignment or exam due to medical or non-medical reasons, you must contact your faculty's Academic Counselling Office, as soon as possible, to apply for accommodation. If accommodation is granted, the corresponding weight of the missed assignment or midterm exam will be added to the weight of your final exam. See also 7 below.

**Other submission policies:** All assignments and exams are to be submitted online as instructed. No late assignments or exams will be accepted.

*The remaining policies are standard to courses offered in the Faculty of Science*

## **7. Accommodation and Accessibility**

### **Accommodation Policies**

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf)

### **Academic Consideration for Student Absence**

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student's final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Consideration\\_for\\_absences.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf)

and for the Student Medical Certificate (SMC), see:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf)

### **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar:

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

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (see [http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See Academic Calendar for details (under [Special Examinations](#)).

## **8. Academic Policies**

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, 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 his/her official university address is attended to in a timely manner.

### **Contingency plan for an in-person class pivoting to 100% online learning**

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will **not** change. Any remaining assessments will also be conducted online as determined by the course instructor.

**Remote learning sessions for this course may be recorded.** The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or

group study purposes. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

**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:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

## 9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters:

<https://www.uwo.ca/sci/counselling/>

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 Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. 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.

Students who are in emotional/mental distress should refer to Mental Health@Western ([http://www.health.uwo.ca/mental\\_health](http://www.health.uwo.ca/mental_health)) for a complete list of options about how to obtain help.

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