**Department of Mathematics**

 **Math1120A Course Outline**

**1. Course Information**

**Course Information**

Course Name: Fundamental Concepts in Mathematics

Course Code: Math 1120A

Academic Term: A, Fall 2025.

**List of Prerequisites**

Ontario Secondary School MCV4U or equivalence

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.

**List of Antirequisites**

Math 2155F/G.

**2. Instructor Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Instructor** | **Email** | **Office** | **Office Hours** |
| Dr. Yvon Verberne | yverber@uwo.ca | MC280 |  |

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please wait at least two business days for a reply.

Further office hours will be posted at the start of the semester. Office hours will be held in person.

**3. Course Syllabus, Schedule, Delivery Mode**

Math 1120B is an introduction to the methods and ways of thinking in modern mathematics. Math 1120b is a first course in math beyond calculus and linear algebra. This is the recommended first step for anyone interested in a Mathematics module! Topics include:

* Set Theory
* Proof techniques and logic
* Functions and relations (equivalence relations, orders)
* Elementary abstract algebra and analysis

**Course Learning Outcomes:**

Upon completion of the course, students will:

* Determining when a sentence is a statement, be able to produce truth tables, and apply these concepts to statements
* Write thorough, carefully written proofs using various proof writing techniques
* Be able to state and apply the definition of a set, and be able to apply basic set operations to sets
* Be able to state the formal definition of a function, apply various properties of functions, and be able to define functions between various sets
* Be able to define relations between mathematical objects
* Determining when two integers are congruent, and applying the definition of congruent integers in a proof setting

**Quiz Dates:**

|  |  |
| --- | --- |
| 1 | September 19 |
| 2 | September 26 |
| 3 | October 4 |
| 4 | October 24 |
| 5 | October 31 |
| 6 | November 14 |
| 7 | November 28 |
| 8 | December 5 |

All quizzes will occur during the first 15 minutes of class.

**Midterm Dates:**

|  |  |
| --- | --- |
| 1 | October 10, 1:30pm – 2:20pm |
| 2 | November 21, 1:30pm – 2:20pm |

Midterms occur during class time.

**Important Session Dates:**

Classes begin: September 4, 2025

Thanksgiving Weekend: October 11-13, 2025

Fall Reading Week: November 3-9, 2025

Last Day to Drop Second-Term Half Course Without Academic Penalty: December 1, 2025

Classes end: December 9, 2025

Study Day: December 10, 2025

Exam period: December 11-22, 2025

**Contingency plan**

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.

**4. Course Materials**

**Textbook:** *Proofs and Fundamentals: A first Course in Abstract Mathematics*, second edition, Ethan Bloch. Available in digital format from the Western Libraries. When accessing the book from the Western Library, the cost is $0.

**Costs of Textbooks on the Course Syllabus**

When accessing the book from the Western Library, the cost is $0.

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](https://brightspacehelp.uwo.ca/) page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

**Technical Requirements**

Should the course be required to move online, students will require access to a stable internet connection, a working microphone, and a webcam.

**5. Methods of Evaluation**

**Grading Scheme and Assessment Dates**

The overall course grade will be calculated as listed below:

Quizzes (Best 6 of 8 Equally Weighted) 10%

Midterm 1: max(Midterm 1 grade, Final Exam Grade) 25%

Midterm 2: max(Midterm 2 grade, Final Exam Grade) 25%

Final Exam 40%

Note that max(Midterm 1 grade, Final Exam Grade) (respectively, max(Midterm 2 grade, Final Exam Grade)) is a function which outputs your maximum grade between Midterm 1 (respectively Midterm 2) and your final exam grade. Therefore, a low midterm grade need not determine that students will receive a low final course grade.

Quizzes will take place during the first 15 minutes of class on September 19, September 26, October 4, October 24, November 7, November 14, November 28, and December 5.

Midterms will take place during class time (50 minutes) on October 10 and November 21.

No unauthorized aids, including any electronic devices, will be permitted during any of the assessments in this course.

**Use of Generative AI Tools:** Generative AI tools are prohibited for each course assessment. A word of warning to students attempting to use these tools for the homework: These tools are frequently incorrect when used for courses which contain mathematical proofs. This leads students to misunderstand the course information, which can have long term consequences. Please reach out to the course instructor or one of your teaching assistants instead of turning to generative AI tools.

**General information about missed coursework**

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs,* posted on the Academic Calendar:

<https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf>,

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](http://academicsupport.uwo.ca/accessible_education/).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar’s webpage:

<https://registrar.uwo.ca/academics/academic_considerations/>

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

* Final exam

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

**Evaluation Scheme for Missed Assessments**

*Quizzes:*

The lowest two quiz grades will be dropped, and the remaining 6 quizzes will be weighted equally.

*Midterm Examination*:

The midterm tests will be during class time on October 10 and November 21 and will be 50 minutes in length. These will be closed book midterms, and while cumulative, will be heavily focused on the material leading up to the midterm. No unauthorized aids, including any electronic devices, will be permitted during either of the midterms. We note that there are no makeup midterms as each midterm is calculated as max(Midterm XX grade, Final exam grade).

*Final Examination:*

A student who misses the final exam due to an illness or other verified reason must follow the instructions under “General information about missed coursework” in this syllabus.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](https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_70)), 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:

**Flexible Completion**

**Quizzes:** Each student will have their lowest 2 quizzes dropped at the end of term. Should extenuating circumstances arise, students do not need to request Academic Consideration for the first 2 missed quizzes. Academic consideration requests will be denied for the first 2 missed quizzes. All requests after the first 2 quizzes will be denied.

**Midterm Examinations:** Each student will have their midterm examination grades calculated as max(Midterm XX grade, Final exam grade). Should extenuating circumstances arise, students do not need to request Academic Consideration for either of the two midterms.

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](https://www.westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=5&SelectedCalendar=Live&ArchiveID=#SubHeading_70)), especially for those who miss multiple final exams within one examination period.

**6. Additional Statements**

**6.1 Religious Accommodation**

When conflicts arise 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 of 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>

**6.2 Academic 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](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_disabilities.pdf).

**6.3 General Academic Policies**

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

**Use of @uwo.ca email:** 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 email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

**Requests for Relief** (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

<https://uwo.ca/univsec//pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf>

Procedures on Request for Relief from Academic Decision (Undergraduate):

<https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf>

Procedures on Request for Relief from Academic Decision (Graduate):

<https://uwo.ca/univsec//pdf/academic_policies/appeals/graduate_requests_for_relief_procedure.pdf>

**6.4 Scholastic Offences**

Policy on Scholastic Offences: <https://uwo.ca/univsec//pdf/academic_policies/appeals/scholastic_offences.pdf>

Procedures on Scholastic Offences:

<https://uwo.ca/univsec//pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf>

**Use of Electronic Devices During Assessments**

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

T presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

**Use of Generative AI Tools**

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work. In this course, **Generative AI Tools are prohibited from use on all course assessments.**

A word of warning to students attempting to use these tools for the ungraded homework: These tools are frequently incorrect when used for courses which contain mathematical proofs. This leads students to misunderstand the course information, which can have long term consequences. Please reach out to the course instructor or one of your teaching assistants instead of turning to generative AI tools.

**6.5 Support Services**

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, 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.

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. If you have any questions regarding accommodations, you may also wish to contact Accessible Education at

<http://academicsupport.uwo.ca/accessible_education/index.html>

Learning-skills counsellors at Learning Development and Success ([https://learning.uwo.ca](https://learning.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.

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/>.

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

 **7. Course Activities**

**Lectures**

There are three weekly lectures on Mondays, Wednesdays and Fridays from 1:30pm-2:20pm in SCC 2020. It is highly recommended that you attend classes and choose to participate during class by asking questions, answering questions I ask of the class, and attempting all exercises we cover in class. This class is taught in an active learning format, and the best results will come from your participation in the class activities.

**Office Hours**

The course instructor will hold one hour of office hours per week from 2:30-3:20pm in MC280. More office hours will be announced at the start of the semester. If you are unable to attend these office hours, please email me to set up an individual appointment. While you are not required to attend office hours, it is an excellent opportunity to ask questions or ask for clarifications of the course work. Students who attend office hours tend to do the best, and it is important to clarify any difficulties you’re having as they come up. In addition, this helps to give me the opportunity to get to know you!

*Math-Physics Accelerator:* The Math-Physics Accelerator is a great resource for students who require additional help with the course material. The schedule for the Math-Physics Accelerator can be found at the following link:

https://physics.uwo.ca/undergraduate/current\_students/mathphysics\_accelerator.html

**Homework**

There will be suggested exercises recommended from the textbook which correspond to the class material. These exercises are posted here and will also be posted on our OWL website. It is highly recommended that you complete each of the recommended exercises and write up the solutions to these exercises as if you were going to submit them for credit.

|  |  |
| --- | --- |
| Section | Questions |
| 1.2 | 2, 4, 7, 8, 11, 12, 13 |
| 1.3 | 1, 2, 3, 6, 7, 8, 10, 11, 13\* |
| 1.5 | 1, 2, 3, 4, 7, 8, 9 |
| 2.2 | 2, 3, 4, 5, 6, 7 |
| 2.3 | 2, 3, 5, 7 |
| 2.4 | 2, 3, 4, 5, 6, 8, 9, 10 |
| 2.5 | 3, 4, 5, 6, 7, 8, 9 |
| 3.2 | 1, 2, 3, 8, 9, 10, 11, 12, 13, 14, 15, 16 |
| 3.3 | 1, 2, 3, 4, 5, 10, 11, 15, 16, 17, 18, 19 |
| 3.4 | 1, 2, 4, 5, 6, 7 |
| 4.1 | 1, 5, 6, 7, 8\* |
| 4.2 | 1, 3, 5, 8, 9, 10, 11, 12, 14\*, 15\* |
| 4.3 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10\*, 11\*, 12\*, 13\*, 14\* |
| 4.4 | 1, 2, 4, 5, 6, 7, 12, 13, 14\*, 18\* |
| 4.5 | 1, 2, 3, 4, 5, 6 |
| 5.1 | 1, 2, 3, 4, 5, 7 |
| 5.3 | 1, 2, 3, 4, 5, 9 |
| 5.2 | 1, 2, 3, 4, 5, 6 |
| 7.4 | 2, 3, 4, 5, 6, 8 |
| 6.3 | 1, 2, 3, 7, 8, 9 |
| 6.5 | 1, 2, 4, 6, 7, 8 |

**Quizzes**

Quizzes will occur during the first 15 minutes of class on September 19, September 26, October 4, October 24, November 7, November 14, November 28, and December 5. These quizzes are designed to make sure that you are keeping up with the course material. The material on the quizzes is not meant to be representative of the questions on the midterms or the final exam. To accommodate absences, your lowest two quiz grades will be dropped. No unauthorized aids, including any electronic devices, will be permitted during any of the quizzes.

**Midterms**

The midterm tests will be during class time on October 10 and November 21 and will be 50 minutes in length. These will be closed book midterms, and while cumulative, will be heavily focused on the material leading up to the midterm. No unauthorized aids, including any electronic devices, will be permitted during either of the midterms. We note that there are no makeup midterms as each midterm is calculated as max(Midterm XX grade, Final exam grade).

**Final Exam**

The final exam will be during the final exam period. The exact date and time will be made available later on in the semester. This will be a closed book final exam, and no unauthorized aids, including any electronic devices, will be permitted during either of the midterms. The final exam will be cumulative, and more information regarding the final exam will be made available closer to the final exam date. A student who misses the final exam due to an illness or other verified reason must follow the instructions under “Missing a Course Assessment” in this syllabus.

**Math-Physics Accelerator Help Center**

The Math-Physics Accelerator Help Center is an invaluable resource to students studying mathematics or physics. If you are struggling with the material in this course, please consider a visit to the Math-Physics Accelerator Help Center to chat with some of our knowledgeable teaching assistants. The calendar for the Math-Physics Accelerator Help Center is found at the following link:

[https://physics.uwo.ca/undergraduate/current\_students/mathphysics\_accelerator.html](file:///Users/yvonv/Downloads/Math-Physics%20Accelerator%20Help%20Center%20to)