

**MATH 1228A - METHODS OF FINITE MATHEMATICS**

## COURSE OUTLINE

SUMMER 2023

1. COURSE INFORMATION

---

<b>Instructor:</b>	Sergio Zapata	<b>Delivery Mode:</b>	Online
<b>Email:</b>	<a href="mailto:szapatac@uwo.ca">szapatac@uwo.ca</a>	<b>Class Day/Time:</b>	Asynchronous
<b>Office Hours:</b>	See course OWL site	<b>Class Location:</b>	NA
<b>Office Location:</b>	MC 286	<b>Term:</b>	Summer 2023

---

**Prerequisites.** One or more of Ontario Secondary School MCV4U, MHF4U, MDM4U, Mathematics 0110A/B, 1225A/B, 1229A/B.

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

**Antirequisites.** Mathematics 2124A/B, 2155F/G, Statistical Sciences 2035, 2141A/B, 2857A/B.

## 2. COURSE DESCRIPTION

**List of topics covered.** Techniques of counting, probability, discrete and continuous random variables.

**Learning Outcomes.** Upon successful completion of this course, students will be able to:

- Use the methods of finite mathematics to solve complex and novel problems.
- Communicate and use the language of mathematics relevant to the course effectively.
- Determine the number of possible combinations for a given situation using the different counting techniques such as counting trees, permutations, combinations, etc.
- Demonstrate working knowledge of the concept of sample spaces and be able to identify appropriate sample spaces for probability situations.

- Determine the probability of events using different tools such as equiprobable sample spaces, probability trees, Bayes' theorem, etc.
- Use probability distribution functions and cumulative distribution functions of continuous and discrete random variables to compute the probabilities of events defined by the random variables.
- Use continuous random variables to approximate the probability of events defined by discrete random variables.

**Delivery mode.** This course is designed to be delivered in an asynchronous format. This means that the main content of the course will be released weekly in the form of videos and notes on the course OWL site (<https://owl.uwo.ca>). Students should make a serious effort to understand all course material, read the textbook, watch the videos, and do the assigned homework each week.

**Important dates.**

Classes begin: May 8, 2023

Last day to drop: June 12, 2023

Classes end: July 28, 2023

Exam Period: July 31 – August 3, 2023

**What is expected of the student?**

- Students are expected to demonstrate ability to apply the techniques of counting and probability to solve real-life problems.
- Students must assume responsibility for staying up to date with course content and for being aware of posted deadlines. As you can see in the table below, there is a lot covered in this course. Therefore, **it is essential that you keep up with the course material and the suggested exercises week by week.**
- **Students are expected to seek out help when needed.** The course instructor will host drop-in office hours regularly throughout the week. The schedule will be posted on OWL in the coming weeks.

## Course Content Schedule\*.

---

Week	Dates	Topic	Book Section
1	May 8 - 14	Sets and set operations, counting with trees	1.1, 1.2
2	May 15 - 21	The fundamental counting principle, arranging objects	1.3, 1.4
3	May 22 - 28	Choosing a subset of a specified size, two Problems That are Really the Same	1.5, 1.6
4	May 29 - June 4	Are the groups distinguishable? basic concepts and properties of probability	1.6, 2.1
5	June 5 - 11	Equiprobable sample spaces, conditional probability and independence of events	2.2, 2.3
6	June 12 - 18	Probability trees Bayes' Formula	2.4, 2.5
7	June 19 - 25	Independent trials	2.6
8	June 26 - July 2	Probability distributions mean, variance and standard deviation	3.1, 3.2
9	July 3 - 9	Independent random variables Continuous random variables	3.3, 4.1
10	July 10 - 16	The family of normal random variables	4.2
11	July 17 - 23	Discrete random variables which are approximately normal	4.3
12	July 24 - July 28	Catch up/review	

---

\*The instructor reserves the right to change the course content schedule if he perceives the need. Please check OWL announcements regularly for any changes to this schedule.

### 3. COURSE MATERIALS

**Course Web Site.** The video lectures will be made available through the course OWL site. Various useful supplemental materials, such as homework problems, lecture notes, practice tests, etc are posted on the course OWL site. In addition, there are forums on which students may post questions. Students are responsible for checking the course OWL site 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.

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

**Required Textbook.** A (required) custom textbook is posted (free) on the course OWL site. Note: it is not an e-book, just pdf files.

**Technical Requirements.** Gradescope (<https://www.gradescope.ca>) will be used as a grading platform for written work in the course. A free account will be created on your behalf, although you will be required to verify the account and change the password during the first week of class. Details regarding the set-up of your account and the submission requirements for your written work will be posted on OWL. It is the responsibility of the student to ensure their work is submitted in the correct format (PDF or PNG.) Submitting work in an improper format may result in your work not being graded, and this cannot form the basis of a regrade request.

Additionally, students will need:

- a laptop or computer;
- a stable internet connection;
- to have installed recent versions of Chrome AND Firefox browsers, a pdf reader, and Zoom on their computer;
- a working microphone and webcam;
- a device for scanning (either a scanner or an app that can be used in conjunction with your device's camera).

**Proctortrack** Examinations in this course will be conducted using the remote proctoring service, Proctortrack. 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. More information about this remote proctoring service is available in the Online Proctoring Guidelines at <https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. Information about the technical requirements are available at <https://www.proctortrack.com/tech-requirements>.

#### 4. ASSESSMENT DESCRIPTION

The assessments for this course will be as follows.

---

Assessment	Format	Weight	Date
Online Quizzes best 5 of 6, equally weighted	OWL	10%	
Midterm 1	Gradescope	20%	Saturday, June 10 <sup>th</sup> 7:00 pm - 8:30 pm
Midterm 2	Gradescope	25%	Saturday, July 8 <sup>th</sup> 7:00 pm - 8:30 pm
Final exam	Gradescope	35%	Scheduled by the OOR
Best of Midterms and Final Exam		10%	

---

**Quizzes.** There will be six online quizzes available through the “Online Quizzes” tab of the course OWL site. Each quiz consists of eight multiple choice questions covering three sections of the textbook. The quiz schedule (as well as other information about the quizzes) can be found on the course OWL website.

Students will have two attempts to complete each quiz; but each attempt initiates a new quiz, so your second try is a new randomly generated quiz. (That is, it won't have the same questions as your first attempt.) Of the 2 quiz attempts, the highest mark will be recorded as the student's quiz grade. The student's best five of the six online quizzes, each counted equally, will be used to calculate the grade for the Online Quizzes component.

**Midterms.** They will be 90 minutes in duration and will consist of a mixture of short answer and multiple-choice-style questions. **Midterm 1 will cover Chapter 1 and Midterm 2 will cover Chapter 2.** This will be a closed book test.

**Final exam.** It will be 180 minutes in duration and will consist of a mixture of short answer and multiple-choice-style questions. The final exam will be scheduled by the registrar during the final exam period. **It will cover all the material you learned in the course.** This will be a closed book exam.

## 5. COURSE POLICIES

### Email policy.

- Any email sent to the instructor must include a properly descriptive subject line that consists of **the course number followed by a very brief phrase that summarizes the subject of your message.**
- For privacy reasons, I will not respond to emails from non-uwo.ca addresses.
- Grades are final, non-negotiable and will not be discussed, in any case, via email.
- Provided you follow the email policy, you can expect to receive a response to your message within 48 hours. Response times may be longer depending on the volume of emails received. It is your responsibility to ensure you raise your concerns in a timely manner.

### Additional policies.

- All students are expected to engage online in a professional and respectful manner. This includes all interactions with peers, as well as communication between TAs or your Professor. Failure to do so will result in academic discipline.
- Course content created by a faculty member is considered the faculty member's intellectual property; it should not be distributed, shared in any public domain, or sold by a student or other third party without prior written consent of the faculty member.

## 6. STUDENT ABSENCES

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 at <https://www.uwo.ca/univsec/pdf/academicpolicies/appeals/accommodationmedical.pdf>

The Student Medical Certificate is available at <https://www.uwo.ca/univsec/pdf/academicpolicies/appeals/medicalform.pdf> Students who have a direct conflict between a test and another academic requirement (i.e. test/class/lab/tutorial), and also students for whom a test conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, should contact the Academic Counselling Office in their Faculty of Registration as soon as they become aware of the conflict and not later than two weeks before the test. Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to complete a course component may submit a request for academic consideration to the Academic Counselling office of their Faculty of Registration.

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

**Quizzes.** *Medical cases:* A student who misses an online quiz due to a medical reason must contact the Academic Counselling Office of the Faculty of Registration immediately and request academic consideration covering the quiz closing date. If academic consideration is granted, either the quiz will be extended by 48 hours or the weight of the quiz will be transferred to other quizzes.

*Non-medical cases:* Considering that each online quiz is worth only 2% (less than 10%) of your grade, the academic counselling units cannot offer academic consideration for absences due to non-medical reasons. There is no guarantee that you will be accommodated for a missed quiz for reasons other than medical due to the fact that we will drop the lowest quiz mark and the quizzes will be open for 6 days. We will dismiss excuses like “I forgot the deadline”, “my computer died last night”, and “my internet disconnected half an hour before the deadline”.

**Midterms.** If you missed the midterm, you must provide an academic consideration covering the date of the test. In this case, a makeup test will be arranged in the week following the test date. If you miss the term test and the corresponding makeup test and have appropriate permission for both, then the final exam will be re-weighted to include the weight of the missed term test.

**Final exam.** If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

**Note.** Missed assessments can only be excused through one of the mechanisms above. Being asked not to attend an in-person course requirement due to potential COVID-19 symptoms is not sufficient on its own.

**Missing a quiz, a term test, or the final exam will result in a grade of zero unless appropriate permission is sought and granted.**

## 7. 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 University’s list of recognized religious holidays (updated annually) at <https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

**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/AcademicAccommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/AcademicAccommodation_disabilities.pdf).

## 8. ACADEMIC POLICIES

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

In accordance with policy, [https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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 his/her official university address is attended to in a timely manner.

**The use of calculators and other electronic devices during the term tests or final exam is prohibited.**

**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).

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

## 9. 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/>.

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 at (519) 661-2147 if you have any questions regarding accommodations.

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/mentalhealth>) 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>.