

SS3657 Course Outline

1. Course Information

Course Information

Course Number: SS3657A
Course Name: Intermediate Probability
Academic Term: Fall, 2024
Lectures: MWF: 11:30-12:30pm
Lecture Classroom : NCB-114
Tutorial: W: 5:30-6:30pm
Tutorial Classroom: SSC 2028

List of Prerequisites

A minimum mark of 60% in Statistical Sciences 2858A/B and in Statistical Sciences 2503A/B or Calculus 2503A/B.

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

Instructors	Email	Office	Phone	Office Hours
Dr. Wenqing He	whe@stats.uwo.ca whe23@uwo.ca	WSC213	519-6612111 ext. 86982	Mon. 12:30pm- 1:30pm (In person)
TA: Xiangshi Li	xli3492@uwo.ca			

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

3. Course Syllabus, Schedule, Delivery Mode

A continuation of the study of multivariate probability and stochastic processes. This course builds on the background developed in the second year courses and focuses on the more advanced aspects of multivariate probability, namely transformations where the domain of random variables must be carefully considered.

Learning Outcomes

This course is intended to provide students with an understanding of intermediate probability. The students are expected to expend from univariate probability to multivariate probability, to understand joint distribution, conditional distribution as well as their properties.

Table of Contents and Schedule

1. Basic probability
2. Random variables and their distributions
3. Joint distribution
4. Expected values
5. Functions of random variables
6. Limit theorems

Key Sessional Dates

Classes begin: September 5, 2024

Canada Life Day: September 13. No class

Fall Reading Week: October 12 – 20, (including Thanksgiving, Oct. 14)

National Day for Truth and Reconciliation: September 30, 2024, no class

Classes end: December 6, 2024

Exam period: December 9 – 22, 2024

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

Main Textbook: John A. Rice, Mathematical Statistics and Data Analysis, third edition

Reference Textbook: Lee J. Bain and Max Engelhardt, Introduction to Probability and Mathematical Statistics. Second edition

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.

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.

5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Assignments (4)	_18__%
Tests (3)	_40__% (Better two get 15% each, the other gets 10%)
Final Exam	_42__%

Four assignments due in class on

Sep. 23
Oct. 28
Nov. 18
Dec. 6

Three tests in Tutorial Time (closed book, one double-sided letter-size formula sheet is allowed)

Test #1: Sep. 25 (5:30-6:20pm)
Test #2: Oct. 30 (5:30-6:20pm)
Test #3: Nov. 20 (5:30-6:20pm)

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](#).

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. Since flexibility is incorporated into the weighting of grades for the term tests assessment component, those tests are excluded from this and therefore always require formal supporting documentation.

When a student mistakenly submits their one allowed Academic Consideration request **without supporting documentation** for the tests, the request cannot be recalled and reapplied. This privilege is forfeited.

Accommodated Evaluations

- Late assessments without valid medical or supporting documentation will be counted 0.
- Late assessments with valid medical or supporting documentation should be submitted within 24 hours.
- No make-up tests. If valid documents are provided, the weight of the missing test will be redistributed to the final exam.
- You must pass the final exam to pass the course.

Rounding of Marks Statement

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 will NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

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.

Non-programable calculators are allowed in the tests. Any other electronic devices cannot be used as calculators in the tests.

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.

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

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

if you have any questions regarding accommodations.

University Accreditation Program – Canadian Institute of Actuaries (CIA)

Honours Specialization in Actuarial Science

If you graduate from Western with an HSP in Actuarial Science, this course will be one of the courses that you will take in your program that will allow you to be exempt from the preliminary exams of the Society of Actuaries (SOA). If your plan is to become a fully qualified actuary working in Canada, then all you would need to do is graduate from your HSP in actuarial science and you would then be eligible for the CIA Capstone Exam. Taking and passing this exam, along with completing two online modules and a practice education course, would make you eligible to become an ACIA (Associate of the Canadian Institute of Actuaries).

Major in Actuarial Science

If you graduate from Western with a major in Actuarial Science, the CIA accreditation program will not apply to you. If your plan is to become a fully qualified actuary, then you will need to continue to write and pass the preliminary exams of the SOA.

Please see the following link for full details:

<https://www.cia-ica.ca/starting-your-journey/actuarial-education-in-canada/>

In addition to the university's internal policies on conduct, including academic misconduct, candidates pursuing credits for writing professional examinations shall also be subject to the **Code of Conduct and Ethics for Candidates in the CIA Education System**.

<https://www.cia-ica.ca/publications/223159e/>