

Course Outline for Statistical Science 3657A Intermediate Probability Fall 2021

1. Course Information

Course Information

Statistical Science 3657A Intermediate Probability - Fall 2021

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP). For more information, see Section 6 of this document.

Lecture Hours: Monday, Wednesday, Friday 11:30am-12:30pm, Social Sciences Centre Rm 3022

Tutorial Hours: Wednesday 5:30pm-6:30pm, Social Sciences Centre Rm 2024

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 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

Instructor: Junquan Xiao

E-mail: jxiao48@uwo.ca

Office: WSC 214A

Office Hours: Mon. 1:30pm-2:30pm, changes can be negotiated

Teaching Assistant's office hours: TBA

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please indicate the course number (SS3657) in the subject line.

3. Course Syllabus

Course Description

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.

Course Objectives

This course provides a thorough treatment of the concepts of probability, properties of random variables, conditional expectation and transformations of variables, among other topics. The successful student will become adept at carrying out the techniques and in understanding why they are needed.

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.

4. Course Materials

Textbook: J. A. Rice, *Mathematical Statistics and Data Analysis*, third edition.

This text is a mandatory resource, for many practice and assignment questions. The first 6 chapters of the book will be covered.

Additional material will be posted on the course OWL site (<http://owl.uwo.ca>). 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.

All course material will be posted to OWL: <http://owl.uwo.ca>.

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

Assignments

There will be five assignments, each worth 4%. Tentative dates:

| Assignment | Posted on | Due on |
|------------|--------------|-------------|
| 1 | September 24 | October 1 |
| 2 | October 8 | October 15 |
| 3 | October 22 | October 29 |
| 4 | November 12 | November 19 |

- Late assignments without illness self-reports or other accommodation will be subject to a late penalty of 20% per day or portion thereof, and assignments that are submitted 5 or more days late will not be graded.
- Late assignments with illness self-reports or other accommodation should be submitted within 24 hours of the end of the accommodation period, after which they will be subject to a late penalty of 20% per day or portion thereof, and assignments that are submitted 5 or more days late will not be graded.

Midterm Tests

There will be two one-hour term tests (each worth 17.5%), held during the tutorial time, starting at 5:30pm. Tentative dates:

- **Test 1: October 13**
- **Test 2: November 17**

Locations for the two tests will be announced later. The last lecture covered on Test 1 is Wednesday, October 6. The last lecture covered on Test 2 is Wednesday, November 10. Both Test 1 and Test 2 are closed-book exams.

There will be NO make-up test to either Test 1 or Test 2. If you miss either test (with documentation from the Academic Counselling office or self-reporting), the weight of the test(s) will be moved to the final exam.

Final Exam

The final exam (worth 45%) will be a three-hour cumulative closed-book examination. It will be scheduled by the Registrar's office. (Examination period: December 10 to 21, 2021)

The **overall course grade** will be calculated as listed below:

- Five Assignments 20%
- Two Midterm Tests 35%
- Final Exam 45%

6. CIA University Accreditation Program

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP) for the 2021-22 academic year. Achievement of the established exemption grade in this course may qualify a student from exemptions from writing certain preliminary exams.

Please see the following link for full details:

<http://www.cia-ica.ca/membership/university-accreditation-program---home>

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** and the associated **Policy on Conduct and Ethics for Candidates in the CIA Education System**.

This course with a minimum mark of 80%, along with Statistics 2857A (minimum mark of 75%), can give you an exemption for Exam P.

7. Student Absences

Academic Consideration for Student Absences

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- (i) Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
 - an absence must be no more than 48 hours
 - the assessments must be worth no more than 30% of the student's final grade
 - no more than two SRAs may be submitted during the Fall/Winter term
- (ii) For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
- (iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that students are required to **contact their instructors** within 24 hours of the end of the period covered.

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

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

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

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

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>.

Absences from Final Examinations

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).

8. 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 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,

9. 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,

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.

Only non-programmable calculators will be allowed during 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:

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

10. 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>.