

# STAT 2857A: Probability and Statistics I

## Course Outline

### 1. Course Information

#### Course Information

##### Lectures

**Tue – Wed – Fri 09:00-11:00AM (via zoom)**

**10:30-11:00AM Fri on days with a test (via zoom)**

Zoom link is provided in OWL course site.

##### Tutorial

**Thursday 9:00-11:00AM**

Zoom link is provided in OWL course site.

#### List of Prerequisites

0.5 course from Calculus 1000A/B, Calculus 1500A/B, or Applied Mathematics 1412A/B, each with a minimum mark of 60%, plus 0.5 course from Calculus 1301A/B (minimum mark 85%), Calculus 1501A/B (minimum mark 60%), or Applied Mathematics 1414A/B (minimum mark 60%). The former Applied Mathematics 1413 with a minimum mark of 60% may also be used to meet this 1.0 course prerequisite.

Unless you have either the requisites for this course or written special permission from your Dean to enroll, you may be removed from this course. 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** Dr. Rogemar S. Mamon    E-mail: [rmamon@stats.uwo.ca](mailto:rmamon@stats.uwo.ca)

#### Teaching Assistants

Yasin Khadem Charvadeh

E-mail: [ykhademc@uwo.ca](mailto:ykhademc@uwo.ca)

Office hours: To be posted in the OWL course site

Jet (Yuhao) Zhou

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Office hours: To be posted in the OWL course site

**Contact:** The best way to ask about the course material is to post a question on the [Forums in OWL](#). The advantage of the forums over e-mail is that the forums will be monitored by the TAs, so the response time will be faster, and the posts are visible to all students. Students often have the same questions and everyone benefits when the answers are available to the entire class. If you send one of the TAs a question about the course material by e-mail then we will copy it over to the forum. Note that you can insert mathematical expressions into your posts using LaTeX notation. Enclosing an expression both before and after by “ $$$$ ” will create a displayed equation (i.e., an equation that sits on its own line). Enclosing an expression by “ $\left($ ” before and “ $\right)$ ” after will create an inline equation (i.e., an equation that is embedded

within a sentence). You can find an introduction to LaTeX mathematical notation on [Overleaf](#) and in the pages linked from the bottom of that site.

An attempt to respond to e-mail messages addressed to the instructor will be made within 36 hours (not including Saturday, Sunday, or holidays). Emails to instructor must deal with subject matter other than the set of exercises, which are the responsibilities of the TAs.

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

#### Course description

*Probability axioms, conditional probability, Bayes' theorem. Random variables motivated by real data and examples. Parametric univariate models as data reduction and description strategies. Multivariate distributions, expectation and variance. Likelihood function will be defined and exploited as a means of estimating parameters in certain simple situations.*

You will learn the mathematics of probability with a focus on real-world examples. This course will enable you to understand the foundation of statistical methods and their applications as well as to prepare you for the succeeding course (SS2858).

#### Important Dates

<b>Classes Start</b>	<b>Last Day to drop a 6-week half-course without penalty</b>	<b>Classes End</b>	<b>Exam Period</b>
16 May 2022	06 June 2022	24 June 2022	28 June 2022 (unless re-scheduled by the Registrar's Office)

### 4. Course Materials

#### Textbook

Devore, JL and Berk, KN (2012) Modern Mathematical Statistics with Applications. 2nd Edition. Springer. An electronic copy of this book in PDF or EPUB format is accessible through the Western Libraries via the link [Springer Link](#).

We shall cover most of Chapters 1 through 6 in the text. Please check the OWL course site (<http://owl.uwo.ca>) for news and updates regularly. Course information will be disseminated via OWL.

### 5. Methods of Evaluation

Your course mark will be on the following:

3 tests	36%
Final exam	64%

#### Schedule

Textbook sections covered by each test or exam are provided in the following list. These are tentative and subject to change, and any changes will be posted in the OWL site and announced at least one week prior to the assessment. All exams are closed book, and tests will be conducted during the tutorials.

Test #1: **Fri, 27 May 2022 (9:00-10:15AM)**

Sections Covered: 1.1, 1.2, 1.3, 1.4, 2.1

Sections Covered: 2.2, 2.3, 2.4

Test #2: **Fri, 10 June 2022** (9:00-10:15AM)

Sections Covered: 2.5, 3.1

Sections Covered: 3.2, 3.3, 3.4, 3.5, 3.6

Test #3: **Fri, 24 June 2022** (9:00-10:15AM)

Sections Covered: 3.7, 4.1, 4.2, 4.3, 4.4

Sections Covered: 4.6, 4.7

Sections 5.1, 5.2 & 5.3 and Sections 6.1, 6.2, 6.3 & 6.4 will be covered in the final exam.

**Final Exam – 28 June 2022 (9:00AM-12:00PM)**

Sections Covered:

- 1.1, 1.2, 1.3, 1.4,
- 2.1, 2.2, 2.3, 2.4, 2.5,
- 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7
- 4.1, 4.2, 4.3, 4.4, 4.6, 4.7,
- 5.1, 5.2, 5.3
- 6.1, 6.2, 6.3, 6.4

#### **Accommodated evaluations**

***If you miss a test due to an excused absence (see also Section 6) then the weight of that assessment will be moved to the final exam. If the absence is not excused, then you will receive a grade of zero with no option to submit late or alternate work.***

#### **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. 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 in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline.

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 SRA 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](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](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).

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 the Academic Calendar for details (under [Special Examinations](#)).

## **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 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),

## **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.

Non-programmable calculators are permitted during quizzes and exams. Other electronic devices are not allowed.

**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).

Tests and examinations in this course will be conducted using a remote proctoring service. 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**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

## 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/>.

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>) could help you improve your learning skills (e.g., improving time management, multiple-choice exam preparation/writing, textbook reading, etc). Individual support is offered year round through individual counselling.

A list of options on how to obtain help for students who are in emotional/mental distress, see Mental Health@Western (<http://www.health.uwo.ca/mentalhealth>). Additional student-run support services are offered by the USC, <http://westernusc.ca/services>.

## 9. 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 for an exemption from writing a certain preliminary exam.

Attaining a minimum mark of 75% in this course together with a minimum mark of 80% in Statistics 3657A will give an exemption from writing Exam P. For full details of the accreditation program, see <http://www.cia-ica.ca/membership/university-accreditation-program---home>