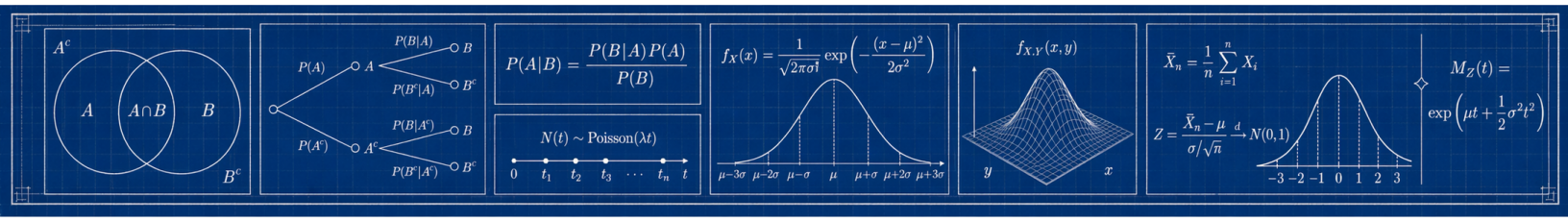
Western Science

Department of Statistical and Actuarial Sciences



Probability & Statistics I (SS2857A) Course Outline

1 Course Information

Course Name: Probability & Statistics I

Course Number: SS2857A

Term: Summer 2026

Delivery: Distance Studies

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.

Prerequisite Checking

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.

List of Antirequisites

Statistical Sciences 2037A/B, the former Statistical Sciences 2141A/B.

Lecture schedule

Section	Instructor	Location	Class Number
001	Pavel Shuldiner	Online (asynchronous)	1320

Lectures are delivered asynchronously through Brightspace.

2 Instructor Information

Instructor	Email	Location	Office Hours
Pavel Shuldiner	pshuldin@uwo.ca	Teams	TBD

TA office hours will be posted on Brightspace when available.

Attendance of office hours is strongly encouraged - they are an excellent opportunity to clarify concepts, work through problems, and engage directly with the teaching team.

2.1 Piazza & Communication

We will use **Piazza** for all class discussions. The system is highly catered to getting you help fast and efficiently from classmates, TAs, and the instructor. Please allow **up to 2 business days** for a response from the teaching team; questions posted over the weekend or on holidays will be addressed on the next business day.

Etiquette & Guidelines

Public posts	Ask questions about course content, logistics, or assignment concepts here so everyone can benefit from the answers.
Private posts	Use only for personal or sensitive matters. This is **not** the platform to request academic considerations; submit those through the Student Absence Portal.
Search first	Check if your question has already been answered to avoid duplicates and speed up response times.
Assignments	Discuss general strategies, but do not post complete solutions or direct answers.
Respectful conduct	Maintain professionalism and respect in all interactions with peers and teaching staff.
Anonymity	Post anonymously to classmates if desired; instructors will always see your identity.

Students must use @uwo.ca email addresses. Reserve email **only** for issues of a highly personal nature that cannot be addressed through Piazza, and please include "SS2857" in the subject line.

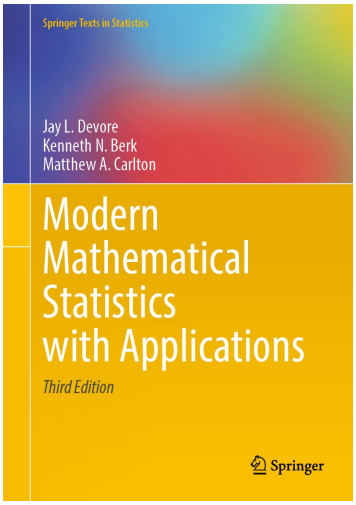
3 Course Syllabus & Schedule

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.

Tentative Course Schedule (Summer 2026)

Week	Chapter(s)	Topic	Assessments
Week 1 May 11–15	2.1–2.3	**Probability** sample spaces, events, probability axioms, counting techniques	A0 due Sat May 16 (8:00 PM) Course onboarding: Gradescope setup, prerequisite refresher, academic integrity
Week 2 May 19–22	2.4–2.5, 3.1	**Conditional probability & random variables** conditional probability, Bayes' theorem, independence; introduction to discrete random variables	A1 due Sat May 23 (8:00 PM) Covers §§2.1–2.5: probability, conditional probability, Bayes, independence
Sun May 24		*ProctorTrack setup testing Optional*	*Opportunity to test your ProctorTrack setup before the midterm. encouraged.*
Week 3 May 26–29	3.2–3.7, 4.1	**Discrete random variables** PMFs, CDFs, expectation, variance, MGFs; binomial, geometric, negative binomial, hypergeometric, Poisson; introduction to continuous random variables	Midterm Sun May 31 2:00–4:00 PM, online Covers §§2.1–2.5, 3.1
Week 4 Jun 1–5	4.2–4.4, 4.6–4.7	**Continuous random variables** PDFs, CDFs; normal, exponential, gamma, chi-squared distributions; transformations of random variables	A2 due Sat Jun 6 (8:00 PM) Covers §§3.1–4.3: discrete RVs, named distributions, continuous RVs, normal & exponential
Week 5 Jun 8–12	5.1–5.3	**Joint distributions** marginal and conditional distributions, independence, covariance, correlation	(No assessments)
Week 6 Jun 15–19	6.1–6.3	**Sampling distributions & CLT** distribution of the sample mean, Central Limit Theorem	A3 due Fri Jun 19 (8:00 PM) Covers §§4.4–6.3: continuous distributions, transformations, joint distributions, CLT, linear combinations

4 Course Materials



Textbook: *Modern Mathematical Statistics with Applications*, 3rd Ed., by Jay L. Devore, Kenneth N. Berk, and Matthew A. Carlton (Springer, 2021).
The textbook is available **free** electronically through Western Libraries via Springer Link. A physical copy can be purchased from the bookstore. The textbook is not required but is recommended; problems from the text will be assigned as exercises for practice. Chapters 2, 3, 4, 5 and 6 will be covered.

Technical Requirements: A stable and reliable internet connection, a working webcam, and a microphone are required for the midterm and final exam. Minimum technical requirements for ProctorTrack are listed on the Western Registrar's ProctorTrack page. A scientific (non-programmable) calculator is permitted on assessments; graphing calculators are not allowed.

Brightspace: All course materials will be distributed through Brightspace. Students are responsible for monitoring Brightspace regularly for new content and announcements.

Course Website: Course materials are additionally available in a more organized and navigable format at pavelshuldiner.com/ss2857.

5 Methods of Evaluation

Course Evaluation

Component	Weight	Deadline
Assignments (best 3 of 4)	5%	Sat May 16, Sat May 23, Sat Jun 6, Fri Jun 19 Every assignment is due at 8:00 PM EDT
Midterm Coverage: 2.1, 2.2, 2.3, 2.4, 2.5, 3.1	35%	Sunday, May 31 2:00–4:00 PM (via ProctorTrack online)
Final Exam (cumulative)	60%	Saturday, Jun 27 12:00–3:00 PM (via ProctorTrack online)

Permitted Exam Aids: The only permitted aids on the midterm and final exam are a scientific (non-programmable) calculator and an instructor-provided formula sheet. Graphing calculators and all other materials or devices are not permitted.

5.1 Midterm & Final Exam

Both the midterm and final exam are administered and returned through Gradescope under remote proctoring via ProctorTrack. Students unfamiliar with Gradescope should review the submission guides linked in the Assignment section below before the first proctored assessment.

Mock ProctorTrack Session: A mock ProctorTrack session will be held on Sunday, May 24, one week before the midterm. It is designed to replicate the full exam experience (identity verification, proctoring setup, and submission) in a low-stakes setting. Participation is strongly encouraged so that any technical issues can be identified and resolved before the real exam.

ProctorTrack Technical Support: Any issues with starting ProctorTrack or with the proctoring software during an exam must be directed to ProctorTrack Support, which is available around the clock. **The course instructor and TAs are not able to provide technical support for ProctorTrack.** Please do not contact the teaching team for ProctorTrack troubleshooting during or immediately before an exam; contact ProctorTrack support directly.

5.2 Assignment Structure & Collaboration

Submission: All assignments are submitted via Gradescope and will be posted at least 5 days before the due date. Submissions must be uploaded as a single **PDF** file. Work may be handwritten or typed; students are not required to include the original question text. Students unfamiliar with Gradescope should consult the official guides for submitting a PDF and matching pages to questions before their first submission.

Collaboration Policy: You may discuss assignment problems with peers at a conceptual level (e.g., clarifying what a question is asking, discussing general approaches). However, **all written work and solutions must be completed and submitted individually**. Each student must produce their own original solutions.

Academic Integrity: Submitting work that is not your own (this includes work completed by AI), sharing solutions, or copying from others constitutes a **scholastic offence** and will be treated accordingly.

5.3 Assignment Breakdown

The following is a tentative schedule of assignments, their due dates, and the topics they cover:

Assignment	Coverage & Focus
A0: Orientation Sat, May 16	Course onboarding Gradescope setup and page-matching practice, prerequisite refresher (calculus and set theory), academic integrity acknowledgement, and student interest survey.
A1: Probability Sat, May 23	Chapter 2 (§2.1–2.5) sample spaces, events, probability axioms, counting, conditional probability, Bayes' theorem, independence.
A2: Discrete & Continuous RVs Sat, Jun 6	Chapters 3–4 (§3.1–4.3) PMFs, CDFs, expectation, variance, MGFs; named discrete distributions; continuous random variables: PDFs, CDFs, normal and exponential distributions.
A3: Joint Distributions and CLT Fri, Jun 19	Chapters 4–6 (§4.4–6.3) other continuous distributions, transformations of random variables; joint and marginal distributions, independence, covariance, correlation; sampling distributions, the Central Limit Theorem, and linear combinations of random variables.

5.4 Missed Coursework Policy

Assignments: Your best 3 of 4 assignment scores count toward your final grade (5% total); the lowest score is dropped. A 48-hour "no-penalty" grace period applies to every assignment deadline. Assignments not submitted within the 48-hour grace period will receive a grade of zero.

Due to the dropped-assignment policy and 48-hour grace period, no documentation is required for a single missed assignment. Assignments submitted after the grace period will **not** be accepted, and no further academic consideration will be granted.

Midterm: If you miss the midterm, you must submit formal supporting documentation to have the weight moved to the final exam. Missed midterms without approved documentation will receive a grade of zero.

Final Exam: If you miss the final exam, you must submit formal supporting documentation to be eligible for a makeup exam.

5.5 Regrade Requests

Grades are typically returned within one week of the deadline. Assignment and midterm grades may be contested on Gradescope for up to **seven days** after grades have been returned. Requests submitted outside this window will not be reviewed.

Before submitting a request, students must review the posted solutions in full. A valid regrade request must:

- identify the specific question(s) being contested;
- cite the precise discrepancy between the grade assigned and the posted marking scheme; and
- provide a clear, evidence-based explanation of why the submitted work merits a different mark under that scheme.

Requests rooted in personal dissatisfaction, a general sense of unfairness, or disagreement with the marking scheme itself will not be considered. If the submitted work has been assessed in accordance with the posted scheme, the grade is correct and will not be changed on those grounds.

Students should be aware that a regrade review evaluates the submission in its entirety; accordingly, a request may result in a score that is higher, lower, or unchanged.

6 Additional Statements

6.1 Online Course Expectations

This course is offered in a fully **asynchronous online** format. All lecture content will be recorded and distributed through Brightspace.

Remote proctoring: The midterm and final exam will be conducted **online** using a remote proctoring service (ProctorTrack). By taking this course, you are consenting to the use of this software and are required to accept its End User License Agreement. Any personal information collected by this software will be kept confidential. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website.

Students are responsible for ensuring they have a computer with a working webcam, microphone, and a stable internet connection for proctored assessments. If any violations of academic integrity are observed during online assessments, they will be treated as a scholastic offence.

6.2 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.

6.3 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 on the university website.

6.4 General Academic Policies

Additional information is available on the Registrar Services website. Use of @uwo.ca email: In accordance with policy, 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.

6.5 Requests for Relief (formerly known as appeals)

Policy on Request for Relief from Academic Decision can be found here.

Procedures on Request for Relief from Academic Decision (Undergraduate) can be found here.

6.6 Scholastic Offences

Scholastic offences are taken seriously and students are directed to read the appropriate policy. Procedures on Scholastic Offences (Undergraduate) can be found here.

6.7 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.

Unless explicitly stated otherwise in advance by the instructor, the 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.

6.8 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, unless otherwise **explicitly** specified, 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.

6.9 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.

Students who are in emotional/mental distress should refer to Mental Health @ Western for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts. 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.

Learning-skills counsellors at Learning Development and Success 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.

Additional student-run support services are offered by the USC.