Department of Mathematics & Statistics
Concordia University

STAT 249
Probability I
Fall 2025

Instructor*: _____

Office/Tel No.: _____

Office Hours: _____

*Students should get the above information from their instructor during class time. The instructor is the person to contact should there be any questions about the course.

Text: *Mathematical Statistics with Applications*, 7th Edition, by D. D. Wackerly, W. Mendenhall III and R. L. Scheaffer, Duxbury Press, 2008.
The digital version of the textbook will be available at:
https://www.co-opbookstore.ca/service/textbooks/
The print version of the textbook will be available at:
https://www.bkstr.com/concordiastore/home
Note: Students should order textbooks as early as possible, especially for printed versions in case books are backordered or there are any shipping delays.

Supplement Text: *Introduction to Probability & Statistics for Engineers and Scientists*, by Sheldon M. Ross, Academic Press.

Calculators: Only calculators approved by the Department (with a sticker attached as proof of approval) are permitted for the class test and final examination. For a list of Approved calculators see https://www.concordia.ca/artsci/math-stats.html

Assignments: Assignments and their due dates will be provided via Moodle; students are required to submit each assignment via Moodle. **Late assignments will not be accepted.**

Mid-term Test: There will be one mid-term test during lecture time in the **7th week**. The exam will be a closed book (provided aids only).

NOTE: It is the Department's policy that tests missed for any reason, **including illness,** cannot be made up. If for any reason you miss the midterm test the final exam will count for 90% of your final grade, and the assignments will count for the remaining 10%.

Final Exam: **An in-person, timed, final exam will be given during the period assigned by Concordia's Exams Office.** The exam will be a closed book (provided aids only). (see Concordia Exam Regulations)

NOTE: Students are responsible for finding out the date and time of the final exams once the schedule is posted by the Examinations Office. Conflicts or problems with the scheduling of the final exam must be reported directly to **the Examinations Office**, **not to your instructor**. It is the Department's policy and the Examinations Office's policy that **students are to be available until the end of the final exam period.** Conflicts due to travel plans will not be accommodated.

Final Grade: The final grade will be based on the higher of (a) and (b):

(a) Assignments (10%), Midterm (30%), Final Exam (60%)
(b) Assignments (10%), Final Exam (90%)

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Expectations:

(1) Please note that there is no "100% Final Exam" option in this course.

(2) In order to obtain a good grade, the students **MUST** show that they have a **THOROUGH** understanding of the subject and can fully explain their reasoning process in the context of problem solutions.

(3) The final exam will cover all the material taught within the entire term.

Week	Sections of the Text	Topics
1	Section: 2.3, 2.4, 2.5	Set Notation, Discrete Probability Model, Computing Probability (Sample Point Method)
2	Section: 2.6, 2.7, 2.8	Counting Methods, Conditional Probability, Independence of Events, Two Laws of Probability
3	Section: 2.9, 2.10, 2.11	Computing Probability (Event Composition Method), The Total Law of Probability and Bayes Rule, Numerical Events and Random Variables
4	Section: 3.1, 3.2, 3.3	Discrete Random Variable, Probability Distribution of a Discrete Random Variable, Expected Value of a Random Variable or a Function of a Random Variable
5	Section: 3.4, 3.5, 3.6	Binomial Probability Distribution, The Geometric Probability Distribution, The Negative Binomial Probability Distribution

6	Section: 3.7, 3.8, 3.9	The Hypergeometric Probability Distribution, The Poisson Probability Distribution, Moments and Moment-Generating Functions
Oct 11-Oct 17 **Mid-Term Break**		
7	Mid Term Test (in class) Section: 3.10	Covering Secs 2.3-3.6 Probability-Generating Functions
8	Sections: 3.11, 4.2	Tchebysheff's Theorem, The Probability Distribution for a Continuous Random Variable
9	Section: 4.3, 4.4, 4.5	Expected Values for Continuous Random Variables, The Uniform Probability Distribution, The Normal Distribution
10	Section: 4.6, 4.7, 4.9, 4.10	The Gamma Probability Distribution, The Beta Probability Distribution, Other Expected Values, Tchebysheff's Theorem
11	Section: 4.11, 5.2, 5.3	Expectations of Discontinuous Functions and Mixed Probability Distributions, Bivariate and Multivariate Probability Distributions, Marginal and Conditional Probability Distributions
12	Section: 5.4,5.5 **Review**	Independent Random Variables, The Expected Value of a Function of Random Variables

Student Services
You may wish to access the many services available to you as a Concordia student. An overview of these resources can be found here: https://www.concordia.ca/students/services.html

Academic Integrity and the Academic Code of Conduct
This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: https://www.concordia.ca/conduct/academic-integrity.html" *[Undergraduate Calendar, Sec 17.10.2]*

Behaviour
All individuals participating in courses are expected to be professional and constructive throughout the course, including in their communications.

Concordia students are subject to the Code of Rights and Responsibilities which applies both when students are physically and virtually engaged in any University activity, including classes, seminars, meetings, etc. Students engaged in university activities must respect this Code when engaging with any members of the Concordia community, including faculty, staff, and students, whether such interactions are verbal or in writing, face to face or online/virtual. Failing to comply with the Code may result in charges and sanctions, as outlined in the Code.

Intellectual Property

Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities. As specified in the Policy on Intellectual Property, the University does not claim any ownership of or interest in any student IP. All university members retain copyright over their work.

Extraordinary circumstances

In the event of extraordinary circumstances and pursuant to the Academic Regulations the University may modify the delivery, content, structure, forum, location and/or evaluation scheme. In the event of such extraordinary circumstances, students will be informed of the change.