

**STAT 249**  
Probability I  
*Winter 2021*

- Instructor:** Dr. I. Cojocaru  
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- Preface:** **Due to exceptional circumstances, this course will be taught and all assessments will be done completely ONLINE. The exams will be held online through the Moodle platform.**
- Lectures:** There will be video lectures via Zoom during the scheduled course hours and the slides will be subsequently posted on Moodle.
- Office Hours:** TBA. The office hours will be held over Zoom and one can also send questions via email. Note that the system does not allow one to reply to a letter sent from Moodle. So emails should be sent from one's own mailer, not Moodle.
- Text:** *Mathematical Statistics with Applications*, 7th Edition, by D. D. Wackerly, W. Mendenhall III and R. L. Scheaffer, Duxbury Press, 2008.  
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 such as **Sharp EL 531** or the **Casio FX 300MS** are permitted for the class test and final examination.  
For the list of approved calculators see:  
<http://www.concordia.ca/artsci/math-stats/services.html#calculators>.

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

**Midterm Test:** Only **one midterm** test will be held during the **7th or 8th week** (to be specified by the professor).

**NOTE:** It is the Department's policy that tests missed for any reason, **including illness**, cannot be made up. If you miss the midterm test **because of illness (medical note required)** the final exam will count for 80% of your final grade, and the assignments will count for the remaining 20%.

**Final Exam:** The final exam will cover all the material taught within the entire term. The final exam will be given online during the two-hour period assigned by Concordia's Exams Office.

**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 following components:

<b>Assignments</b>	<b>20%</b>
<b>Mid-term Test</b>	<b>30%</b>
<b>Final Exam</b>	<b>50%</b>

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.

- Notes:**
- (1) Please note that there is no "100% Final Exam" option in this course.**
  - (2) A Mid-term test missed for any reason, cannot be made up. If you miss a mid-term test because of illness (to be confirmed with a valid medical note), the final exam can count for 80% of your final grade.**
  - (3) In order to obtain a good grade, the student MUST show that they have a THOROUGH understanding of the subject and can fully explain their reasoning process in the context of problem solutions.**

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	Counting Methods, Conditional Probability, Independence of Events
3	Section: 2.8, 2.9, 2.10	Laws of Probability, Computing Probability (Event Composition Method), The Total Law of Probability and Bayes Rule
4	Section: 2.11, 3.1, 3.2	Numerical Events and Random Variables, Discrete Random Variable, Probability Distribution of a Discrete Random Variable
5	Section: 3.3, 3.4	Expected Value of a Random Variable or a Function of a Random Variable, The Binomial Probability Distribution
6	Section: 3.5, 3.6	The Geometric Probability Distribution, The Negative Binomial Probability Distribution
7	Section: 3.7, 3.8, 3.9	The Hypergeometric Probability Distribution, The Poisson Probability Distribution, Moments and Moment-Generating Functions
8	Section: 3.10, 3.11, 4.2	Probability-Generating Functions, Tchebysheff's Theorem, The Probability Distribution for a Continuous Random Variable
9	Section: 4.3, 4.4	Expected Values for Continuous Random Variables, The Uniform Probability Distribution
10	Section: 4.5, 4.6	The Normal Probability Distribution, The Gamma Probability Distribution
11	Section: 4.7, 4.9, 4.10	The Beta Probability Distribution, Other Expected Values, Tchebysheff's Theorem
12	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
13	Section: 5.4, 5.5 <b>Review</b>	Independent Random Variables, The Expected Value of a Function of Random Variables

#### 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: [concordia.ca/students/academic-integrity](http://concordia.ca/students/academic-integrity)." [*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.