DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES
UNIVERSITY OF TORONTO MISSISSAUGA

STA107H5S LEC9102
An Introduction to Probability and Modelling
Course Outline - Winter 2022

Class Location & Time	Mon, 01:00 PM - 03:00 PM Wed, 02:00 PM - 03:00 PM
Instructor	Katherine Davies
Office Location	Zoom
Office Hours	Wed 12:30-1:30pm, Tues 2:00-3:00pm, Thurs 9:30-10:30am
E-mail Address	k.davies@utoronto.ca
Course Web Site	https://q.utoronto.ca

Course Description

Introduction to the theory of probability, with emphasis on the construction of discrete probability models for applications. After this course, students are expected to understand the concept of randomness and aspects of its mathematical representation. Topics include random variables, Venn diagrams, discrete probability distributions, expectation and variance, independence, conditional probability, applications such as queues.

Corequisite: (MAT132H5 and MAT134H5) or (MAT135H5 and MAT136H5) or MAT134Y5 or MAT135Y5 or MAT137Y5 or MAT157Y5 or MAT233H5
Exclusion: STA256H5 or STA257H5 or ECO227Y5 (SCI)
Distribution Requirement: SCI

Students who lack a pre/co-requisite can be removed at any time unless they have received an explicit waiver from the department. The waiver form can be downloaded from here.

Learning Outcomes

1. Students will demonstrate an understanding of fundamental concepts, logic, and issues that form statistical reasoning. Calculations, pattern recognition and rote learning are minimized.
2. Students will discover interconnections between academic disciplines.
3. Students will be able to
a) Understand the concept of probability, recognizing it as a long-run proportion.
b) Understand the axioms of probability and do basic probability calculations.
c) Use counting principles to aid in probability calculations.
d) Recognize random variables as numerical outcomes of random phenomenon and carry out calculations for them, including calculating various expectations.
e) Use various probability tools across different disciplines and applications.
4. Successful students will be prepared for further study in discipline specific statistics courses.

Textbooks and Other Materials

Course Notes: The course notes (slides) are the primary component of the course material and will contain statistical concepts and information on how R software can be used in tandem with these concepts. These notes will be posted on Quercus and for the most part, follow along with the textbook. If there is ever a discrepancy (e.g. in notation, methodology) between the textbook and course notes, please follow the course notes.

Textbook: The required textbook for this course is *Introduction to Probability: Models and Applications* by Balakrishnan, Koutras and Politis (2019).

Practice Problems: Lists of suggested problems (from the textbook) will be posted onQuercus. It is critical for you to learn how to write up solutions, so it is imperative you work on these problems and attend tutorials.

Assessment and Deadlines

Type	Description	Due Date	Weight
Quiz	Best 3 of 4 will count	On-going	30%
Term Test	Midterm	2022-03-07	25%
Final Exam		TBA	45%
		Total	100%

More Details for Assessment and Deadlines

Quizzes: There will be four quizzes, tentatively scheduled for January 26, February 16, March 23 and April 6, to take place on Quercus. It is your responsibility to have a reliable internet connection. Each quiz will become available at 10:00am on the quiz dates and once you begin, you have 50 minutes to complete it. Each quiz is only available until 3:00pm, so you must complete it by that time. The best 3 out of 4 quiz marks will count towards your final grade. Thus, you are allowed to miss only one quiz. Any other missed quiz will get a grade of 0. **There are no other adjustments for missed quizzes. There are no make-up quizzes. There are no exceptions to this policy.**

Midterm Test: There will be one midterm test tentatively scheduled on Monday, March 7. It is tentatively planned to take place on Quercus and Crowdmark. Further details about the format and material of your test will be provided in advance of the test date. Please note that it is your responsibility to have a reliable internet connection. **If you experience an internet disconnection during your test, the missed test policy is not applicable.**

Important Note: Your quizzes and midterm test are open book. You are permitted to use course materials, textbook and a study sheet produced by yourself. For the tests you are also permitted to use R and a scientific calculator. Use of any other materials (including accessing websites) is strictly prohibited. You are advised to be informed about Academic Integrity and to know what constitutes an academic offence. Students failing to abide by these regulations will be subject to sanctions/penalties as laid out in the University's Code of Behaviour on Academic Matters.

Remark Policy: If you feel that there is an issue with the marking of a quiz or your midterm test, you may request it to be re-marked. The course re-mark policy exists to correct mistakes, and any request should clearly identify the error (for example, a question that was nor marked or a total that was incorrectly calculated). Requests to correct such mistakes must be sent by email to your instructor and **not** your TA.

To be considered for a remarking request, your email:

1. must be received within three business days of the date of when the graded test was first available.
2. must include STA107 in the subject line of the email, must include your full name and student ID number and must give a specific, clear, and concise reason for each request, referring to a possible error or omission by the marker. Remarking requests without a specific reason will not be accepted.

Note that your entire test may be remarked when submitting a request.

Penalties for Lateness

If an online assessment involves the use of Crowdmark, late submissions will**not** be accepted, hence resulting in a grade of 0.

Procedures and Rules

Missed Term Work

In order to receive special consideration, you must email the course coordinator and declare your absence on ACORN. For more information, visit the Office of the Registrar website (https://www.utm.utoronto.ca/registrar/utm-absence).

Missed Test Policy: If you miss the midterm test due to medical reasons or emergency, or some other reasons deemed legitimate by your instructor, the weight of the missed test will be shifted to the final exam. In order for the weight of the test to be shifted, you must: (1) you inform your instructor within 48 hours of the test, specifying the reason **AND** (2) declare yourself absent on ACORN on the day of the missed test or the day after at the latest. **Failure to follow these instructions will result in a grade of 0 for your missed test, i.e., the weight will not be shifted. There is no make-up test. There is no exception to this policy.**

Missed Final Exam

Students who cannot complete their final examination due to illness or other serious causes must file an online petition **within 72 hours of the missed examination**. Late petitions will **NOT** be considered. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of $70 is required for each examination approved.

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto Mississauga is a strong signal of each student's individual academic achievement. As a result, UTM treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines behaviours that constitute academic dishonesty and the process for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

1. Using someone else's ideas or words without appropriate acknowledgement.
2. Submitting your own work in more than one course, or more than once in the same course, without the permission of the instructor.
3. Making up sources or facts.
4. Obtaining or providing unauthorized assistance on any assignment.

On tests and exams:

1. Using or possessing unauthorized aids.
2. Looking at someone else's answers during an exam or test.
3. Misrepresenting your identity.

In academic work:

1. Falsifying institutional documents or grades.
2. Falsifying or altering any documentation required, including (but not limited to) doctor's notes.

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources.

Final Exam Information

Duration:	3 hours
Aids Permitted:	Non-Programmable Calculators Statistical Table

Additional Information

Mode of Delivery: This course is to be delivered online. It uses a combination of synchronous and asynchronous course design; details will be provided. Any live synchronous components will be recorded and posted afterwords. If you have any concerns about being recorded, please contact your instructor in advance of the lecture. You must register for a UTM Zoom account using your UTORid and password; see https://utoronto.zoom.us/ for further details about UTM Zoom.

Accessibility Needs: The University of Toronto Mississauga is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, or require further information, please contact Accessibility Services as soon as possible. Academic accommodations must be arranged for each term of study. In addition to arranging accommodation every term, students must inform accessibility of accommodations necessary for **each and every assessment**.

Statistical Computing: This course uses the statistical package R. R is free statistical software and it can be downloaded from https://www.r-project.org/. RStudio is another platform for using R and can be downloaded here https://www.rstudio.com/products/rstudio/.

Supplemental Readings: In addition to the required textbook, some other useful resources are:
1. *Introduction to Probability and Statistics* by Mendenhall, Ahmed, Beaver and Beaver

2. *Introduction to the Practice of Statistics* by Moore and McCabe
3. *Cartoon Guide to Statistics* by Gonick and Smith
3. *Stats: Data and Models* by DeVeaux, Velleman and Bock

Tutorials: Tutorials will be held in-person and start the second week of classes (week of January 17). During the tutorials, your teaching assistant will work through various exercises. These exercises may be problems from the textbook and/or getting practice using the software package R. There are no participation marks attached to tutorials but it is highly recommended that you attend.

Announcements and Questions during an Online Assessment: If any announcements need to be made, they will be made on Quercus. If you have a question during the test you can email me and I will respond as quickly as I can.

Crowdmark: Some of your assessments may be marked using the Crowdmark software, an online grading tool. These assessments will be written by you and then scanned and uploaded through a link you will be provided over email. While you may take a photo of your paper, due to the high quality of most camera phones, it is recommended that you use the app Cam Scanner (or something similar) to take the photos of your work. There will be a trial run of the software prior to the first assessment that uses it.

Piazza: Piazza is an online discussion platform. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to myself or your TA (which you are always welcome to do), I encourage you to post your questions on Piazza. Your TA and myself will regularly check in. Please note the course page on Piazza is across all three sections.

Privacy and Use of Course Materials Notifications: This course, including your participation, will be recorded on video and will be available to students in the course for viewing remotely and after any live video session. Course videos and materials belong to your instructor, the University, and/or other source depending on the specific facts of each situation, and are protected by copyright. In this course, you are permitted to download session videos and materials for your own academic use, but you should not copy, share, or use them for any other purpose without the explicit permission of the instructor. For questions about recording and use of videos in which you appear please contact your instructor.

Email Policy: Any emails to your instructor must originate from your University of Toronto email account. The subject line should contain the course number and a relevant subject (indicating what the email is about). Be sure to include your full name and student ID number in the body of the message. You will not get a response if you send your email from other email addresses or do not follow the email policy. Please make sure to check the course syllabus, website and announcements before emailing the teaching team. If we receive questions that can be answered by consulting the course syllabus, website, or announcements, we will direct you to consult these resources.

Own your learning: You are responsible for your own learning. We really want to help you learn, but in the end it's up to **you**! Use office hours early, and use them often. Make an appointment with your instructor. Keep asking questions until you're satisfied. Ask about big concepts or small details - there is no such thing as a stupid question! Always take advantage of extra help - don't wait until it's too late!

Last Date to drop course from Academic Record and GPA is March 13, 2022.