

Probability

University of Toronto
Department of Statistical Sciences
STA347H1F Fall 2021

Instructor: Mohammad Kaviul Anam Khan

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Office Hours: MT 5PM-6PM EDT on Zoom

	LEC 2501/5101:	LEC 5201:
Class Day/Time:	M 6-9 PM EDT	T 6-9 PM EDT

** This is an online course. Please note that since lectures and/or evaluations will be taking place during the above lecture times, you must be available during those times. No accommodations will be made for assessments missed during these times.*

*** As this is an online course and all assessments must be submitted through Quercus, it is the STUDENT'S responsibility to ensure they have a reliable internet connection.*

COURSE OVERVIEW

Course Description: An overview of probability from a non-measure theoretic point of view. Random variables/vectors; independence, conditional expectation/probability and consequences. Various types of convergence leading to proofs of the major theorems in basic probability. An introduction to simple stochastic processes such as Poisson and branching processes.

Pre-requisites: Pre-requisites are **strictly enforced by the department, not by the instructor**. If you do not have the equivalent pre-requisites, you will be un-enrolled from the course. The pre-requisites are STA247H1(70%)/STA255H1(70%)/STA237H1(70%)/STA257H1/ECO227Y1/STAB52H3/STA256H5/MAT223H1/MAT240H1/MATA22H3/MATA23H3/MAT223H5/MAT240H5; MAT235Y1/MAT237Y1/ MAT257Y1/(MATB41H3, MATB42H3)/(MAT232H5, MAT236H5)/(MAT233H5, MAT236H5) (Note: STA257H1, MAT223H1/MAT240H1, MAT237Y1/MAT257Y1 are very strongly recommended)

COURSE MATERIALS

Course Content: All lecture slides and materials will be posted on the Quercus course page for each lecture section. Further, any important announcements will also be posted in Quercus. Please make sure to check it regularly so you don't miss anything.

Textbook: We will be mostly following lecture notes posted in Quercus. However, there will be problems assigned at the end of each week from some recommended books. The books are:

1. Ross, S. (2007). *Introduction to probability models*. [Ch. 1-5]
2. Evans, M. and Rosenthal, J. (2002). *Probability and statistics*. [Ch. 1-4, 11] ([Link](#))

3. Rosenthal, J. (2006). *A first look at rigorous probability theory*. [Ch. 2.1-2.2, 3.1-3.4, 4.1-4.2, 10.1-11.2]
4. Durrett, R. (2013). *Probability: Theory and Examples* [Ch. 1.2-1.3, 1.6, 2.1-2.4, 3.1-3.4, 5.1-5.2] ([Link](#))

COURSE COMPONENTS

Lectures: Lectures will be held live on Zoom. During lectures, we will cover important course materials, as well as cover a number of examples illustrating the uses of these methods. Each lecture builds on the material from previous weeks, so it is recommended that you attend lectures regularly/keep on top of the material.

Office Hours: Instructors and TAs will hold office hours through Zoom. The office hour schedule will be posted on Quercus after the first week. It is recommended that you visit office hours whenever you have a question about the material. The online class will focus more on describing the concepts, theories and methods. To solve the assigned examples after each class you need to visit the office hours with potential questions. It is more important than ever in an online class to have material clarified as quickly as possible. Don't wait until the last minute to ask your questions.

Quercus Discussion Board: We will be using the Quercus Discussion Board as an online discussion forum. **All questions about course material should be posted here** or asked during TA/instructor office hours. The instructor and TAs will monitor the board and will help answer questions but students are encouraged to answer posts and help their fellow classmates.

GRADING SCHEME

Assessment	Date Due/Occurring	Grading Weight
Discussion Board Participation	Ongoing	10%
“Bi-Weekly” Online Quizzes (best 4 out of 5)	Weeks 3, 4, 8, 10, 12	20%
Term test # 1	October 18/19 at 6-7:30PM EDT	20%
Term test # 2	November 22/23 at 6-7:30PM EDT	20%
Final Exam	Dec 10-21	30%

Please note that the last day to drop the course without penalty is November 8, 2021

EVALUATION BREAKDOWN

Discussion Board Participation: Participation is mandatory and will be done through the use of the Quercus discussion board. The discussion board will be used in two different ways:

- **Ungraded discussion:** there will be a dedicated discussion board where students can post questions regarding course content. The instructor and TAs will monitor this and answer questions posted by students. But it is encouraged that students try to answer students posted from other students. Participation on this discussion board is not mandatory.

- **Graded participation discussion:** Each week we will post a discussion topic based on content presented in the week's lectures. All students are encouraged to participate in these discussions for their participation grade. Topics will be open-ended (there is no one right answer) and TAs and instructors will also be involved in these discussions. These will begin the week of September 27th and participation is mandatory. A rubric will be posted explaining how this will be graded.

“Bi-Weekly” Online Quizzes: There will be 5 “Bi-weekly” online quizzes, that will be occurring during the last 30 minutes of the lecture time of each section. Quizzes will begin on **September 27 and 28 respectively for LEC5101 and LEC5201** and continue until the Week 12 (will be discussed in detail later). **Students need to complete the quizzes individually and independently. this means *no* looking up answers online, or discussing questions or answers with anyone else inside or outside the course.**

- We will take the best 4 quiz marks and drop the worst one in the calculation of your overall quiz mark.
- The quizzes will include some proofs and applied probability problems. The students need to write up the answers and then upload a pdf or png file in Quercus. More instructions will be provided during the second week of the lecture.
- Quizzes can be found under Quercus Quizzes in the navigation bar, or through the link provided in that week's module, and will only be available during the designated quiz time. Quizzes must be done individually.
- **Missed quiz:** Because only the best 4 quiz marks will be counted along with the fact , we will not be making any accommodations for missed quizzes. These will receive a mark of 0, but will be dropped as part of the worst quiz mark. Therefore, you may miss one quizzes without penalty.
- **There are no make-up quizzes.** Quizzes, beyond the 1 that will be dropped, will be given zero.

Term Tests: There will be two term tests during the term each will weigh 20% of the total marks. Please check the grading scheme for the dates. **Students need to complete the tests individually and independently. this means *no* looking up answers online, or discussing questions or answers with anyone else inside or outside the course.**

Final Exam: The details about the final exam will be provided during the last week lectures. For the final exam we will be following standard University of Toronto Schedule. **Students need to complete the exam individually and independently. this means *no* looking up answers online, or discussing questions or answers with anyone else inside or outside the course.**

In order to pass this course, students must pass the final exam (i.e., achieve at least 50% in the final exam), one of the term tests (50%) and have attempted at least 3 of the quizzes.. If any of these requirements are not met, passing the course is not possible.

MISSED ASSESSMENT POLICY

Students are responsible for completing all of the assessments detailed in the previous section. However, in special cases extension can be requested to the instructor at least 24 hours within the submission deadline. If a student is sick and needs to request an extension or accommodation on the term tests, they must send an email to their instructor. In order for the request to be considered, the email:

- must be received at least 24 hours after the assessment is due or before the assessment is due.
- must include the course code in the subject line
- must include your full name and student number
- must specify for which assessment the extension/accommodation is being requested
- must include the following sentences:
 - “I affirm that I am experiencing an illness or personal emergency and I understand that to falsely claim so is an offence under the Code of Behaviour on Academic Matters.”
 - “I understand that the weight of this assessment (term test or final exam) will be moved to the weekly quizzes and to the final exam”

COMMUNICATION

Please do not email the instructor with questions related to the content of the course. These types of questions are much easier to answer through the discussion board or during office hours. Emails that do not contain sensitive or personal information will be directed to post the questions on the discussion board. If you need to email the instructor for personal reasons, please use your official University of Toronto email address, include STA347 in the subject and also include your full name and UTORid in the body of the email (in case we need to look anything up).

INTELLECTUAL PROPERTY

Course materials provided on Quercus, such as lecture slides, assignments, tests and solutions are the intellectual property of your instructor and are for the use of students currently enrolled in this course only. **Providing course materials to any person or company outside of the course is unauthorized use.** This includes providing materials to predatory tutoring companies.

ACADEMIC INTEGRITY

The University treats cases of plagiarism and cheating very seriously. It is the students' responsibility for knowing the content of the University of Toronto's Code of Behaviour on Academic Matters. All suspected cases of academic dishonesty will be investigated following procedures outlined in the above document. 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 (see <http://academicintegrity.utoronto.ca/>). Here are a few guidelines regarding academic integrity:

- You may consult class notes/lecture slides during quizzes and tests, however sharing or discussing questions or answers with anyone else (in or outside this course) is an academic offence.

- Students must complete all assessments individually. Working together is not allowed.
- Paying anyone else to complete your assessments for you is academic misconduct.
- Sharing your answers/work/code for STA347 assessments with any other student is academic misconduct.
- Looking up solutions to test/quiz/assessments problems online or in textbooks and copying any part of what you find is an academic offense.
- All work that you submit must be your own! You must not copy mathematical derivations, computer output and input, or written answers from anyone or anywhere else. Unacknowledged copying or unauthorized collaboration will lead to severe disciplinary action, beginning with an automatic grade of zero for all involved and escalating from there. Please read the University of Toronto Policy on Cheating and Plagiarism, and don't plagiarize.

ACCESSIBILITY NEEDS

The University of Toronto offers academic accommodations for students with disabilities. If you require accommodations, or have any accessibility concerns about the course, the classroom, or course materials, please contact Accessibility Services as soon as possible: accessibility.services@utoronto.ca or <http://accessibility.utoronto.ca>.