UNIVERSITY OF TORONTO

Faculty of Arts and Science Course Syllabus
Department of Statistical Sciences
Mathematical Statistics I —– STA452H1
Fall 2020

Instructor:	Tharshanna Nadarajah
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Class Day/Time:	Wednesday 9-10AM EST on Bb Collaborate
Office hours:	Mon. and Tues. 10-11AM EST on Bb Collaborate

1 Course Content

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

- https://q.utoronto.ca/courses/190428

Course materials provided on Quercus are for the use of students currently enrolled in this course only. Sharing (e.g., posting, providing, selling) course materials with anyone outside of the course is considered unauthorized use.

Lectures:

- We will use a mix of synchronous learning and asynchronous learning.
- Lecture slides, along with pre-recorded voice overs, will be uploaded weekly.
- We will use the scheduled lecture times (Wednesdays 9-10 am EST) for live question-answer(QA) sessions followed by a 30 minutes quiz.

2 Course Description

Statistical theory and its applications at an advanced mathematical level. Topics include: Probability and distribution theory as it specifically pertains to the statistical analysis of data; linear models and the geometry of data; least squares and the connection to conditional expectation; the basic concept of inference and the likelihood function.

Course Prerequisites

MAT 223H1/MAT 240H1
MAT 235Y1/MAT 237Y1/MAT 257Y1
STA 257H1
STA 347H1/STA 355H1

Course Objectives/Learning Outcomes

Upon completing this course, students will be able to

- Understand the probability models for univariate and multivariate variables.
- Identify many of the most widely used probability models.
- Understand statistical theory for much of the inference found in a standard statistical methods course.
- Demonstrate knowledge of asymptotic theory and Central Limit Theorem.
- Understand a complete inference (estimation and testing) based on maximum likelihood theory.

3 Course Materials

Textbook:

Introduction to Mathematical Statistics, 8th Edition
by Robert V. Hogg, Joseph W. McKean & Allen T. Craig.
ISBN 13: 978-0-13-468699-8
ISBN 10: 0-13-468699-3

4 Course Assessment

Component	Weight	Date
Participation	5	
Quizzes	20	10 quizzes, approximately weekly
Assignments	20	9 assignments, approximately weekly
Test 1	15	Oct. 7th at 9.00 am
Test 2	15	Nov. 18th at 9.00 am
Final Exam	25	TBA

Discussion Board Participation Marks:

Participation will be assessed through Quercus Online Discussion Forums. In each discussion forum, you are expected to post a question from the associated lesson, and to reply to questions/responses of one your classmates. In general, marks will only be awarded for posts on course content. Your final participation mark will be calculated as follows:

Points	No of posts
0%	no posts
1%	4 posts
2%	8 posts
3%	12 posts
4%	16 posts
5%	20 posts

Weekly Quizzes:

There will be 10 "weekly" quizzes, that will be occurring during the last 30 minutes of the lecture time Wednesdays. Quizzes will begin on Wednesday Sept. 16 and continue until the last lecture period.

- We will take the best 8 quiz marks and drop the worst quiz 2 in the calculation of your overall quiz mark.
- Missed quiz: Because only the best 8 quiz marks will be counted, 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 marks. Therefore, you may miss one quiz without penalty.
- There are no make-up quizzes. Quizzes, beyond the 2 that will be dropped, will be given zero.
- There will also be 9 Assignments on Quercus course page that will collectively contribute 20% to your mark. There are 9 assignments overall; there are no make-up assignment, but only the best 8 of 9 assignments will count toward your mark.

- Assignments and quizzes can be found under Quercus Assignments in the navigation bar, or through the link provided in that week's module, and will only be available during the designated time. Assignments and quizzes must be done individually.
- "Weekly" assignments will be posted on Wednesdays and the due will be on Tuesdays at 5.00pm EST, based on the previous week materials.

5 Course Policies

- 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. Instructor and TAs will monitor the board and will help answer questions but students are encouraged to answer posts and help their fellow classmates.
- Instructors and TAs will hold office hours through Bb Collaborate in the Quercus course page. The office hour schedule will be posted on Quercus. It is recommended that you visit office hours whenever you have a question about the material. It is more important than ever in an online accelerated class to have material clarified as quickly as possible. Please post your questions at least three hours before the due date. Don't wait until the last minute to ask your questions!
- E-mail should only be used for emergencies or personal matters. Please do not email your instructor asking questions like "how to do problem 2 in assignment 1?", "when is the Test 1?", "how to submit the assignment?". Emails with questions like these will be ignored. Otherwise, students should expect a reply within 24 hours. Questions like these should be posted on the Quercus discussion board.
- Make sure that you upload all of your assignment/quiz/test work on Quercus course page.
- There will be no make-up assignments/quizzes/tests. If you miss a assignment/Quiz/test due to illness, accident, or family affliction, you should notify me as soon as possible, and provide a written request to be excused as well as supporting documentation. If you miss a assignment/quiz/tests and the absence is not excused, zero marks will be awarded.

6 Academic Integrity

Academic integrity Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the University of Toronto degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves. Familiarize yourself with the University of Toronto's Code of Behaviour on Academic Matters available at `https://www.academicintegrity.utoronto.ca/perils-and-pitfalls`

Students are not allowed to share quiz or test questions with anyone (not even with other students taking this course). Sharing questions and submitting works completed by someone else is a huge academic offence. Please stay away from this type of behaviors.

7 Schedule:

Week	Assessment	Due Dates
Sept. 10-15	No Quiz Assignment 1	 Sept. 15th at 5:00pm EST
Sept. 16-22	Class Quiz 1 Assignment 2	Sept. 16th at 9.00 am EST Sept. 22nd at 5:00pm EST
Sept. 23-29	Class Quiz 2 Assignment 3	Sept. 23rd at 9.00 am EST Sept. 29th at 5:00pm EST
Sept. 30-Oct. 6	Class Quiz 3 Assignment 4	Sept. 30th at 9.00 am EST Oct. 6th at 5:00pm EST
Oct. 7-13	Test 1	Oct. 7th at 9:00 am EST
Oct. 14-20	Class Quiz 4 Assignment 5	Oct. 14th at 9.00 am EST Oct. 20th at 5:00pm EST
Oct. 21-27	Class Quiz 5 Assignment 6	Oct. 21st at 9.00 am EST Oct. 27th at 5:00pm EST
Oct. 28-Nov. 3	Class Quiz 6 Assignment 7	Oct. 28th at 9.00 am EST Nov. 3rd at 5:00pm EST
Nov. 4-6	Class Quiz 7 No Assignment	Nov. 4th at 9.00 am EST
Nov. 9-13	Fall Reading Week	No classes
Nov. 16-20	Test 2	Nov. 18th at 9:00am EST
Nov. 23-27	Class Quiz 8 Assignment 8	Nov. 25th at 10.00 am EST Nov. 24th at 5:00pm EST
Nov. 30-Dec 4	Class Quiz 9 Assignment 9	Dec. 2nd at 10.00 am EST Dec. 1st at 5:00pm EST
Dec 7-9	Class Quiz 10 No Assignment	Dec. 9th at 10.00 am EST

All information in the course outline are approximate and subject to change. All the announcements about the changes will be made via Quercus which students are expected to check regularly.