Faculty of Arts and Science Course Syllabus
Department of Statistical Sciences
Mathematical Statistics II —— STA453H1-S-LEC0101
Winter 2021

Instructor:	Tharshanna Nadarajah
Email:	`tharshanna.nadarajah@utoronto.ca`
Class Day/Time:	Wednesday 9-10 AM EST
Office hours:	Drop-in hours (from Jan. 18th)
Teaching Assistants:	Names and office times will be posted later in our website.

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/197397`

- This is a fully online course. Live class sessions and quizzes will be held via Quercus. Students are responsible for ensuring that they have reliable internet.

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

Continuation of STA452H1: statistical theory and its applications at an advanced mathematical level. Topics include classical estimation, theory with methods based on the likelihood function and the likelihood statistics. Testing hypothesis and the evaluation of conference from both a bayesian and frequentist point of view.

Course Prerequisites

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

Course Objectives/Learning Outcomes

By the end of this course, all students should have a solid foundation in mathematical statistics, continuing from STA452H1. Students who have completed this course will be expected to:

- Understand asymptotic theory, concluding with the Central Limit Theorem.

- Understand a complete inference (estimation and testing) based on maximum likelihood theory, including the EM algorithm.

- Perform optimal estimation procedures and tests of statistical hypotheses.

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 For Undergraduates	Date
Quizzes	20%	9 quizzes, approximately weekly
Assignments	20%	4 assignments, approximately biweekly
Test 1	15%	Feb 10th at 9.00 am EST
Test 2	15%	Mar. 31st at 9.00 am EST
Final Exam	30%	TBA

Students must complete the final exam, at least one test, at least assignment 3 or 4 and six (6) quizzes in order to pass this course.

Weekly Assignments and Quizzes:

There will be 9 "weekly" quizzes, that will be occurring during the last 30 minutes of the lecture time Wednesdays. Quizzes will begin on Wednesday, Jan. 20th and continue until the last lecture period.

- We will take the best 8 quiz marks and drop the worst quiz 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 one that will be dropped, will be given zero.

- There will also be 4 Assignments on Quercus course page that will collectively contribute 20% to your mark. There are no make-up assignments.

- Late assignments will be accepted but subject to a 20% penalty per day late. Late submissions will not be allowed beyond 48 hours of the due date.

- Assignments and quizzes can be found under Quercus Assignments in the navigation bar or through the link provided in that weekly module and will only be available during the designated time. Assignments and quizzes must be done individually.

5   Course Policies

1. 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 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.

2. TAs will hold office hours through Bb Collaborate on the Quercus course page. The office hour schedule will be posted on Quercus. It is recommended that you visit during office hours whenever you have a question about the material. It is more important than ever in an online 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!

3. E-mail is appropriate for emergencies or private matters. Use your ***utoronto.ca** account. You will not get a response if you email from other email addresses. Write a proper email, including the course number STA453 in the subject line. The email should contain the addressee, your official name and UTORid for identification purposes. Please do not Email your instructor asking questions like "how to do problem 2 in assignment 1?", "when is Test 1?", "how to submit the assignment?". E-mails with questions like these will be ignored and should be posted on the Quercus discussion board. Otherwise, students should expect a reply within two business days.

4. You must not copy mathematical derivations, computer output and input, or written descriptions from anyone or anywhere else, without reporting the source within your work. This includes copying from solutions provided to previous semesters of this course. Please read the UofT Policy on Cheating and Plagiarism, and don't plagiarize. If I confirmed any accused of cheating, the students involved would receive a 0% mark.

5. You should join the Zoom meeting to write your quizzes and tests for this course at the scheduled class time. You must have a working webcam. The link will be available under weekly Quercus modules.

6. Please be cautious if you are trying to upload your answers for your quiz/test/assignment at the last minute, you might miss the deadline. There will be a penalty for those who submit up to 30 minutes late and quizzes/tests/final submitted more than 30 minutes late will not be accepted.

Penalty	# of minutes late
5%	1-5
10%	6-10
20%	11-15
30%	16-20
40%	21-25
50%	> 26-30
100%	> 30

7. This course follows the University of Toronto's Policies on missed assessments and requires students to complete the Absence Declaration on ACORN if an assessment is missed due to illness. In addition to completing this absence declaration form, you must report your absence to the instructor by email within 48 hours of the assessment due date to request

accommodation. Other reasons for missing an assessment will require prior approval by your instructor. If approval is not granted in advance for non-medical reasons then 0% will be recorded for the missed assignment/quiz/test. Note: If you submit an assessment, it will be assumed that you deemed yourself fit enough to do so and your grade will stand as calculated. No accommodation will be made based on reports of medical, physical, or emotional distress after the fact.

8. Any requests to have marked assignment/quiz/test re-evaluated must be made in writing by email to `regradesta453@gmail.com` within 48 hours after the grades are released. The request must contain a justification for consideration. Be sure to include your official name and student number for identification purposes. The teaching team should process regrading requests within two weeks of the requested date. Please note that the teaching team reserves the right to review a part of the whole of your assignment. Hence, your marks may go down, up or remain the same.

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 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`.

8 Schedule:

Week	Assessment	Due Dates
Jan. 11-15		
Jan. 18-22	Class Quiz 1	Jan. 20th at 9.00 am EST
Jan. 25-29	Class Quiz 2	Jan. 27th at 9.00 am EST
	Assignment 1	Jan. 26th at 5:00 pm EST
Feb. 1-5	Class Quiz 3	Feb. 3rd at 9:00 am EST
Feb. 8-12	Test 1	Feb. 10th at 9.00 am EST
Feb. 15-19	Winter Reading Week	No Classes
Feb. 22-26	Class Quiz 4	Feb. 24th at 9.00 am EST
Mar. 1-5	Class Quiz 5	Mar. 3rd at 9.00 am EST
	Assignment 2	Mar. 2nd at 5:00 pm EST
Mar. 8-12	Class Quiz 6	Mar. 10th at 9.00 am EST
Mar. 15-19	Class Quiz 7	Mar. 17th at 9.00 am EST
	Assignment 3	Mar. 16th at 5:00 pm EST
Mar. 22-26	Class Quiz 8	Mar. 24th at 9:00 am EST
Mar. 29-Apr. 2	Test 2	Mar. 31st at 9.00 am EST
Apr. 5-9	Class Quiz 9	Apr. 7th at 9:00 am EST
	Assignment 4	Apr. 6th at 5:00 pm 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.