STA 261H1 S - PROBABILITY AND STATISTICS II
Section L0101, Winter 2016 (January 11 to April 29)

Lectures: Mondays 3:10-5pm and Wednesdays 3:10-4pm in **NF 003**

Instructor: Dr. Shivon Sue-Chee (**E-mail:** shivon.sue.chee@utoronto.ca)
                Office hours: Mondays and Wednesdays 1:10-2pm in **SS 6026**

Course website: Available through https://portal.utoronto.ca (UT Blackboard)

Tutorial Info: Students are assigned to a tutorial section according to last name.
                Sections meet on Wednesdays 4-5pm at specific locations (To be announced (TBA))
                with their respective Teaching Assistant (TA).

Course description

A sequel to STA257H1, providing a rigorous introduction to the logical foundations of statistical inference and the practical methodology engendered. Topics include: statistical models, parameters, samples and estimates; the general concept of statistical confidence with applications to the discrete case and the construction of confidence intervals and more general regions in both the univariate and vector-valued cases; hypothesis testing; the likelihood function and its applications; time permitting: the basics of data analysis, unbiasedness, sufficiency, linear models and regression.

Pre-requisite
STA257H1

Co-requisite
MAT235Y1 or MAT237Y1 or MAT257Y1 (MAT237Y1 or MAT257Y1 is **strongly recommended**), MAT223H1 or MAT240H1

Exclusion: ECO227Y1 or STA248H1 or STA255H1

Required Textbook
Mathematical Statistics and Data Analysis, 3rd edition by John Rice (Brooks / Cole)
Answers to selected problems are included in the text's Appendix.

Evaluation

	Weight	Date	Time	Location
Weekly tutorial quizzes	20%	Jan. 20-Apr 6	(10-20 mins)	In tutorials
Term Test	30%	Wednesday, Feb. 24	3:10-5:00pm	TBA
Final Exam	50%	Between Apr. 12-29	(3 hrs)	TBA[@]

[@]See Faculty of Arts and Science Final examination timetable posting on February 12.

Tutorial exercises and quizzes
Tutorials begin on January 20. Tutorials meet weekly, every Wednesday 4-5pm until April 6. Tutorial sections will be posted in the course website prior to January 20. Tutorials are primarily designed to discuss weekly assigned textbook exercises (posted at the course website). Additionally, short tutorial quizzes

sibility Services as soon as possible at accessibility.services@utoronto.ca or http://www.accessibility.utoronto.ca.

Academic Integrity
You are responsible for knowing the content of the University of Toronto's Code of Behaviour on Academic Matters at http://www.artsci.utoronto.ca/osai/students. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me.

Your responsibility
The classroom sessions for this class are designed to actively engage you in the course material. I hope you'll find them interesting, challenging, and fun, and an excellent opportunity to truly learn the material. In order for these sessions to be effective, coming prepared, by learning about the week's concepts through the textbook, is essential.

Tentative Lecture Schedule

Week of	Topics	Text Chp.	Wednesday Tutorials
Jan. 11	Course introduction Review	1-6	
Jan. 18	Sampling distributions, method of moments, consistency, bootstrap	8.1-8.4	Tutorial 1
Jan. 25	Maximum likelihood estimation, log likelihood	8.5.1	Tutorial 2 Quiz 1
Feb. 1	Newton-Raphson, confidence intervals, efficiency	8.5.2-.3, 8.7	Tutorial 3 Quiz 2 Quiz 1 returned
Feb. 8	Sufficiency, exponential family, Rao-Blackwell theorem	8.8	Tutorial 4 Quiz 3 Quiz 2 returned
Feb. 15	**READING WEEK, No classes**		No tutorial
Feb. 22	Hypothesis testing	9.1-.3	
Feb. 24	**TERM TEST based on Jan. 11 to Feb. 22 materials**		
Feb. 29	Likelihood ratio test and Generalized likelihood ratio tests	9.4	Tutorial 5 Quiz 3 returned
Mar. 7	Likelihood ratio tests for multinomial, Pearson's chi-square test, probability plots	9.5-.6, 9.8	Tutorial 6 Quiz 4 Test returned
Mar. 14	Fisher's exact test, Chi-squared tests	13.1-.4	Tutorial 7 Quiz 5 Quiz 4 returned
Mar. 21	Matched-pair designs, McNemar's test, odds ratio	13.5-.8	Tutorial 8 Quiz 6 Quiz 5 returned
Apr. 4	Least squares regression, simple linear regression	14.1-.3	Tutorial 9 Quiz 6 returned
Apr. 12-29	**FINAL EXAM (cumulative)**		

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