STA 2212H/ 453H1 S - MATHEMATICAL STATISTICS II

Winter 2016 (Jan 11 - Apr 29)

Lectures: Mon, Wed, Fri 10:10-11am in **SS 1070**

Instructor: Dr. Shivon Sue-Chee (**E-mail**: shivon.sue.chee@utoronto.ca)
Office hours: Fri 11:10-12pm in **SS 6026**

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

Course description
Continuation of STA2112H/ 452H1: 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, interval estimation and testing hypothesis, linear and generalized linear models, goodness-of-fit for discrete and continuous data, bayesian theory.

Prerequisite: STA452H1

Textbooks and References

- Brenner, D. FROM THE PRIVATE NOTEBOOK: Illustrated adventures in very (very) mathematical probability and statistics, 2008-2015
- Fraser, D.A.S: PROBABILITY & STATISTICS: Theory and Applications (1976/2002/8)
- Knight, K.: MATHEMATICAL STATISTICS (2000)
- Lehman, E. L.: TESTING STATISTICAL HYPOTHESES (1957/86) and THEORY of POINT ESTIMATION (1986)
- Silvey, D.F.: STATISTICAL INFERENCE (1976)

Evaluation

	Weight	Date	Location
Assignments (3)	60%	TBA	
Term Test	40%	Wed, Mar. 30	In class

Tentative Outline

- the general statistical model: confidence and likelihood
  - estimation theory: consistency, unbiasedness and minimum variance
  - sufficiency and rao-blackwell theorem ,
  - exponential models
  - location-scale models
- the general linear model: correlation, regression and conditional expectation
- hypothesis testing:
  - testing means, variances: differences and ratios
  - neyman-pearson theory and the likelihood ratio tests
- bayesian theory