

STATISTICAL THEORY (3)

Class Number: 4121 Delivery Method: In Person

Mo 10:30 AM- 12:20 PM

AQ 2104, Burnaby

We 10:30 AM- 11:20 AM

AQ 4120, Burnaby

Dec 9, 2016

12:00 PM- 3:00 PM

AQ 5016, Burnaby

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STAT 330.

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Distribution theory, methods for constructing tests, estimators, and confidence intervals with special attention to likelihood methods. Properties of the procedures including large sample theory. Quantitative.

Additional note regarding the pre-requisite:

STAT 330 and its core concepts such as joint, marginal and conditional distributions; means, variances, covariances and correlations; distributions of functions of discrete bivariate random variables; and common families of distributions.

Outline:

Assuming the prerequisite background in chapters 1-4 of the text, the course will cover:

1. Review of distributions of functions of continuous bivariate random vectors (sections 2.1, 4.3 of text).
2. Estimation in finite samples: simple likelihood estimators; judging quality of estimators via MSE and unbiasedness and the use of sufficient statistics and the Rao-Blackwell theorem in this regard.
3. Testing in finite samples: Constructing likelihood ratio tests (LRTs); optimality of LRTs for point null and alternative hypotheses and the Neyman-Pearson lemma
4. Interval estimation in finite samples: Inverting test statistics; pivotal quantities
5. Convergence concepts for estimators: Central limit theorem; Weak Law of Large Numbers (convergence in probability); Slutsky's theorem; Delta method for obtaining asymptotic distributions of functions of estimators
6. Large sample theory

