Students requiring accommodations as a result of disability must contact the Centre for Students with Disabilities 778-782-3112 or csdo@sfu.ca

Instructor: Dr. Boxin Tang

Prerequisite:

STAT 330

Textbook:

Recommended: Statistical Inference 2nd Edition by Casella and Berger, publisher Duxbury/Thompson Learning, c.2002

Calendar Description:

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**

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. Linear estimation theory.
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 approximations to distributions of estimators: Normal approximations, bootstrap
7. Testing and interval estimation in large samples: LRTs, Wald and Score tests.

Grading Scheme:

Assignments: 20%
Midterm: 30%
Final: 50%
Grading is subject to change.

Students should be aware that they have certain rights to confidentiality concerning the return of course papers and the posting of marks. Please pay careful attention to the options discussed in class at the beginning of the semester. Students are reminded that Academic Honesty is a cornerstone of the acquisition of knowledge. Scholarly integrity is required of all members of the University. Students are encouraged to review policies pertaining to academic integrity available on Student Services webpage at http://students.sfu.ca/academicintegrity.html

Students looking for a Tutor should send an email to stat@sfu.ca with "Tutor Request" in the subject line. Please only include information that you would like forwarded to our tutors mailing list.