STAT 461/561 - STATISTICAL INFERENCE II
2011/2012 - TERM 2

Course description: Detailed development of the theory of testing hypotheses and confidence regions, Bayesian models and inference, elements of decision theory and additional topics. Intended for Honours and MSc students.

Pre-requisites: Stat 460-560.
Pre-requisites: MATH 320, STAT 305 is recommended.

Textbook: Casella and Berger, Statistical Inference, 2nd ed.

Instructor: Lang Wu

References:
Cox and Hinkley (1974). Theoretical Statistics. Chapman and Hall.
J. Shao (1998). Mathematical Statistics. Springer-Verlag.
E.L. Lehmann (1983) Theory of Point Estimation. Wiley/Wadsworth.
C.R.Rao(1980). Linear Statistical Inference and its Applications. Wiley.

Tentative topics:

1. Review: statistics and their distributions, point estimation. (One week)

2. Test of hypothesis and confidence intervals, simple and composite hypotheses, statistical significance, p-value, pivotal statistics. (Chapter 5; two weeks)

3. Likelihood ratio test, score test, sample size calculation, likelihood interval, empirical likelihood test and intervals. (Chapter 6; two weeks)

4. Most powerful test, Lehman-Pearson lemma, results on exponential families. (Chapter 8; one week)

5. Inference about normal models. (Chapters 9 and 5; two weeks)

6. Resampling methods: bias reduction, variance estimation, confidence intervals. (two weeks).

7. Bayesian Statistics: prior and posterior distributions, Bayesian procedures and notion. (Chapter 11; two weeks).