

STAT 450 (MAST 672/881B)
Mathematical Statistics
Fall 2015

- Instructor:** Dr. A. Sen, Office: LB 921-23 (SGW), Phone: (514) 848-2424, Ext. 3230
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- Office Hours:** Mondays, Wednesdays 15:00–16:30, and by appointment.
- Prerequisite:** STAT 250; STAT 349 previously or concurrently.
- Text:** *Introduction to Mathematical Statistics*, 6th or 7th Edition, by R.V. Hogg and A.T. Craig, Prentice Hall Inc., N.Y., 1994.
- Reference:** (for problems, examples etc) *Statistical Inference* (2nd Edition), by G. Casella and R. L. Berger, Duxbury.
- Final Grade:** The final grade will be based on the higher of (a) or (b):
a) Homework 10%, term exam (**FRI., 23 OCT. , 2015**) 20% and final exam 70%
b) Final exam 100%
- Note:**
- All assignments should be done **independently**.
 - MAST 672/881Y students will be given additional assignment/exam problems.
- Topics:**
1. Distribution of functions of several random variables (distribution function technique, change of variable technique), sampling distribution of mean and variance of a sample from Normal (μ , σ^2) distribution: *Sec. 2.2, 2.7*.
 2. Distribution of order statistics and sample quantiles: [**6th Edition:** *Sec. 5.2.1-2*, **7th Edition:** *Sec. 4.4.1-2*].
 3. Estimation: unbiasedness, consistency, limiting distributions, maximum likelihood estimation, Cramér-Rao lower bound and efficiency [**6th Edition:** *Sec. 4.1, 6.1, 4.2, 4.3 – 4, 6.4*, **7th Edition:** *Sec. 4.1, 6.1, 5.1 – 5.3, 6.2, 6.6*].
 4. Sufficiency, minimal sufficiency, completeness, UMVUE, Rao-Blackwell and Lehman-Scheffe theorems: *Sec. 7.2 - 7.8*.
 5. Bayesian inference [**6th Edition:** *Sec. 11.2.1 – 2*, **7th Edition:** *Sec. 11.2.1 - 4*].
 6. Hypothesis testing [**6th Edition:** *Sec. 5.5, 6.3 6.5*, **7th Edition:** *Sec. 4.5, 6.3, 6.5*].