

SYLLABUS FOR STATISTICS 100A - LECTURE 3
FALL QUARTER 2009

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Office hours: T 16:00-18:00, W 17:00-19:00, F 14:00 - 16:00

Lecture	Day	Class Time	Location
LEC 3	WF	12:00 - 12:50	BOELTER 9436
	M	12:00 - 12:50	FRANZ 2258A

Discussion	Day	Discussion Time	Location
DIS 3A	R	12:00 - 12:50	PAB 2748

Textbook (optional): Sheldon Ross, *A First Course in Probability*, Eighth Edition, Pearson, 2009.

COURSE TOPICS

1. Combinatorial analysis (Chapter 1).
 - Basic principle of counting.
 - Permutations.
 - Combinations.
 - Multiple coefficients.
2. Probability (Chapter 2, Chapter 3).
 - Axioms of probability.
 - Sample space and events.
 - Conditional probability and independence.
 - Law of total probability.
 - Bayes' rule.
3. Discrete random variables (Chapter 4).
 - Expected value.
 - Variance.
 - Bernoulli and Binomial random variables.
 - Poisson random variable.
 - Geometric random variable.
 - Geometric random variable.
 - Negative binomial random variable.
 - Hypergeometric random variable.

4. Continuous random variables (Chapter 5).
 - Expected value.
 - Variance.
 - Uniform random variable.
 - Normal random variable.
 - Gamma, Beta, Cauchy, Weibull distributions.
 - Distribution of a function of a random variable.
5. Jointly distributed random variables (Chapter 6).
 - Joint distributions functions.
 - Independent random variables.
 - Sums of independent random variables.
 - Bivariate normal distribution.
 - Order statistics.
6. Properties of estimation (Chapter 7).
 - Expectation of sums of random variables.
 - Covariance, variance of sums of random variables.
 - Correlation.
 - Moment generating functions.
7. Limit theorems (Chapter 8).
 - Chebyshev's inequality and the weak law of large numbers.
 - The Central Limit Theorem.
 - The strong law of large numbers.
8. Simulation (Chapter 10).
 - Simulating continuous random variables.
 - Simulating discrete random variables.

COURSE GRADES:

There will be three (3) exams (cumulative), homework, and labs that will be assigned every week. Please write your name and staple your homework and labs. Late homework or labs will not be accepted and make-up exams will not be given. Being in class on time and fully participating is important for your understanding of the material and therefore for your success in the course. The tentative dates for the exams are shown below.

The course grade will be based on the calculation

$$Final\ score = 0.20 \times Homework/Labs + 0.20 \times Exam1 + 0.20 \times Exam2 + 0.40 \times Exam3$$

Important dates:

First day of classes: 24 September.

Holidays: 11 November (Veterans Day), 26-27 November (Thanksgiving).

Last class: 04 December.

Exams:

Exam 1: Week 4.

Exam 2: Week 7.

Exam 3: Week 10.

Good Luck !!!