

Stat 582: Introduction to Methods and Theory of Probability

Semester: Fall 2005

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Text: "Probability and Statistics" by M. DeGroot and M. Schervish, 3rd Ed. (2001), Addison/Wesley. ISBN: 0201524880

Topics covered (if time permits): Set theory, sample spaces, events, probability, combinatorial methods, conditional probability, independent events, the Bayes formula, Markov chains, random variables and distributions (discrete, continuous, mixed, multivariate), conditional distributions, functions of random variables, expectations (mean, variance, covariance, correlation, moments, conditional expectations), moment-generating functions, inequalities (Chebyshev, Cauchy-Schwarz, Jensen), limit theorems (laws of large numbers, central limit theorem), large sample approximations (Poisson and normal to binomial, normal to Poisson, normal to the t distribution, etc.), special distributions (Bernoulli, binomial, multinomial, geometric, negative binomial, hypergeometric, Poisson, exponential, gamma, beta, t , normal and multivariate normal, chi-square, and F distribution).

Final grade: 40% Quizzes, 30% Exam I, 30% Exam II