

**STA257 - Course Outline****Instructors:**

David Brenner (evening) ; Philip McDunnough (day)

**Text:** Probability and Statistics : The Science of Uncertainty (W.H. Freeman and Company) Evans and Rosenthal

**Resources:** Office hours (starting 2nd week -September 20 -> ); tutorials (starting 2nd week); Stat Aid Centre = SS2133 ; course BBS .

**Web Page :** <http://www.cquest.utoronto.ca/stats/sta257s/>

**Marking:** 2 one-hour tests (15%each) , 2 assignments (5% each); final exam 60%/100% .No make-up tests.

Term mark equals T1+T2 + assignments . Grade= FE+Term or FE if FE is better.

**Dates of tests:** Day section : 3-4 Wednesday Oct 13 and Nov 17 . Evening : 7-8 Wednesday Oct 13 and Nov 17 .

**Suggested problems:** Posted on this site and/or in class.

**Coverage:**

(A)- Events and random variables, the Bernoulli random variable, Fundamental Laws of Probability and Expectation, Inequalities (Markov, Jensen, etc...), Continuity of P and E, distribution functions, Conditional Probability/Expectation, Independence.

(B)- Discrete and continuous random variables: definitions, probability functions, probability density functions, probability and moment generating functions, characteristic functions, various expectation calculations, examples of the preceding applied to binomial, Poisson, geometric, normal, exponential and other types of random variables, an introduction to the Poisson process.

(C)- Random vectors (multivariate distributions) including the multivariate normal, functions of random vectors, mean vector and variance covariance matrices, the change of variables formula, probability integral transformation.

(D)- Some large-sample results including a central limit theorem and laws of large numbers. Rigorous proofs of these.

**Note:** This corresponds to parts of Chapters 1->4 of the text and some additional material not found in the text. The appendix reviews some of the necessary math background. **The defining material for the course will be the lectures.**

September 13, 2004