STATISTICS 6060
EARLY START IN STATISTICS
Summer Term 3 Semester Hour Course

**Prerequisite:** Graduate standing in statistics

**Class Distribution:** Six 55 minute lectures per week (for 7 weeks)

**Text:** No required text

**Conversion Note:** Converted from a 5 credit hour quarter course Stat 602

**TENTATIVE COURSE DESCRIPTION**

Selected mathematical topics, including geometric series, binomial expansion, induction, integration by parts, L'Hospital's rule, and Taylor series, with applications to probability distributions, random variables, transformations of random variables, sampling distributions, and convergence properties of random variables.

**Topics to be covered in the course will be chosen from:**

1. Basic probability rules
2. Conditional probability; Bayes rule
3. Random variable
4. Probability distribution of a random variable--discrete and continuous
5. Cumulative distribution function
6. Geometric series
7. Binomial expansion
8. Bernoulli variable
9. Random sample from a probability distribution
10. Gamma function
11. Probability distributions: Gaussian; gamma; Poisson; binomial; hypergeometric
12. Integration by parts
13. L'Hospital's rule
14. Properties of random variables--general expectations--mean, variance, moment generating function; Chebychev's inequality
15. Taylor series
16. Sampling distributions--examples
17. Minimum of a random sample
18. Maximum of a random sample
19. Distributions of functions of random variables--change of variable, moment generating function technique, distribution function technique
20. Induction
21. Sequences and series of numbers; convergence properties
22. Asymptotics; convergence properties for random variables

*updated 27 may 2010*