ST 778, Fall 2007
Measure Theory and Advanced Probability I
http://www.stat.ncsu.edu/people/fuentes/st778

Material for Final exam

- Sigma-fields, fields, π systems.
- Borel sets
- Limit sup and lim inf of sequences (for sets and for random variables)
- Independence and the Borel-Cantelli lemmas (review criteria for convergence of series of real numbers).
- Measurable sets, measurable functions, borel functions.
- Strong law of large numbers
- Convergence almost surely
- Convergence in probability
- Measures (and probabilities), uniqueness and extension theorem
- Definition of almost everywhere
- Lebesgue measure (in one of higher dimensions)
- Measure space (probability measure space)
- Random variables (and simple random variables)
- Approximation of a R.V. with a sequence of S.R.V.
- Monotone convergence theorem
- Dominated convergence thorem
- Density (R-N derivative)
- Lebesgue integral and Riemann integral
- Fubini's theorem
- Expected Value and moments (variance)
- Inequalities (Chebyshev's, Markov's, Jensen's), expected value of independent R.V.