Professor: G. J. Babu, 417C Thomas Building
   Phone: 863-2837
   Email: babu@psu.edu
   Office Hours: Appointment by email (or just stop by)

Textbook:


Useful reference books:

*Real analysis and probability* by R. B. Ash.
*Real analysis and probability* by R. M. Dudley.
*Convergence of Stochastic Processes* by D. Pollard.

Course description:

This course is an advanced theory of probability. Course starts with a brief review of measure theory.

Probability spaces, Pi-lambda theorem (Sections 2, 3, 4). General Measures, Measurable functions, Distribution Functions, Integrals, Product Measures (Sections 10, 11, 13, 14, 15, 16, 18). Random variables, distributions, expected values, sums of independent random variables (Sections 20, 21, 22). Weak convergence, Characteristic functions, Central limit Theorem, Cramer-Wold device (Topics from sections 25, 26, 27, 29). Radon-Nikodym Theorem, Conditional probability (sections 32, 33, 34). Special topics including martingale theory (section 35).

Grading:

There will be one midterm (March 4, 25% of the grade), a comprehensive final exam (50% of the grade), and homework (25% of the grade). The exams will be closed-book. You may bring a 8.5x11in sheet of notes.

All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. See [http://www.science.psu.edu/academic/Integrity/Policy.html](http://www.science.psu.edu/academic/Integrity/Policy.html) concerning academic integrity for details.

The Eberly College of Science Code of Mutual Respect and Cooperation embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.