# Syllabus for Stat515 (Spring 2009)
# Stochastic Processes and Monte Carlo Methods

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Office Hours: Tue: 1-3pm.

**Class Times**: MWF 2:30-3:20 in 216 Thomas.

**Textbook**: *Introduction to Probability Models*, Sheldon Ross, **Ninth** Edition, Academic Press, plus notes for the simulation part of the course. Suggested textbook for Monte Carlo: *Monte Carlo statistical methods*, Robert, Christian P. and Casella, George (2004).

**Targeted Coverage**:

- Review of conditional probability and expectations (Chapter 3)
- Markov chains (Chapter 4)
- Poisson processes (Chapter 5)
- Continuous time Markov chains (Chapter 6)
- Classical Monte Carlo: rejection, importance sampling
- Markov chain Monte Carlo: Gibbs, Metropolis-Hastings algorithms

**Course Requirements:**

- Weekly homework (30%). You may discuss them but they must be written up independently.
- Midterm exam in early March (25%).
- Final exam: in class (30%) + take home (15%) (total: 45%)

**Course Website**: http://www.stat.psu.edu/~mharan/515/515.html

**Academic Integrity:** All Penn State and Eberly College of Science policies regarding academic integrity apply to this course. Please see http://www.science.psu.edu/academic/Integrity/index.html.

**Policy on Late Homework:**
Unless you inform me ahead of time (*at least 1 day in advance*), you will lose 50% of the grade for late homework turned in within 24 hours of the due date. You will receive no credit for homework turned in after that.

**Important**: Check the website for all announcements regularly.

**Computing:**
All *Statistics graduate students* are required to use the statistical computing language `R` through most of the latter half of the course. If you are not a Statistics graduate student, you are still encouraged to write programs in `R` since it is widely used. You are free to use any other language you like but please note that I may not be able to help you with your computing if the language is unfamiliar to me.

**LaTeX:**
All *Statistics graduate students* are required to use `LaTeX` to write up their computing assignments in the latter half of the course. All other students are expected to hand in typed computing assignments even if they choose not to use `LaTeX`.