



[Jeff Gill](#)

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Center for Applied Statistics 560: Visiting Scholar Statistical Research Seminar

Wednesday, 2:00-4:00 PM in Seigle 16. Special meeting times: September 8th and 9th, 5:00-7:00 PM, and December 1-3 (times to be announced).

1. Course Description: This course brings distinguished academic statisticians to Washington University as part of an organized research seminar. Lacking a Statistics Department or Ph.D. program in statistics, the campus community can substantially benefit from internationally recognized scholars in the field who are willing to spend substantial time at the University. Selected statisticians will come to campus twice during the course. First, they will spend two days at the beginning of the semester to introduce a research topic in statistics and to assign a reading list of 8-12 technical papers, including some of their own authorship. Second, they will return to campus towards the end of semester for four days for: two 2-hour seminars, a scholarly talk in the Center for Applied Statistics, and individual meeting time with seminar participants and other members of the university community. Inbetween these two visits, a faculty member in the Center for Applied Statistics will lecture and lead a discussion on each of these assigned papers as part of the weekly seminar meeting. The objective is provide deep understanding of a complex technical topic through the use of experts in the field.

Fall topic: George Casella (University of Florida, Statistics), "Markov Chain Monte Carlo: From the Beginning to the Present."

2. Prerequisite Details: The only official prerequisite for this course is a course on linear models. This may be satisfied with Math 439, Political Science 581, Epidemiology/biostat L24-439, Economics 413, or an approved equivalent course. Generally these courses follow from, and require, introductory statistics courses as prerequisites. The course will also assume a working knowledge of calculus and linear algebra at the level of *Essential Mathematics for Political and Social Research*. Jeff Gill, 2006, Cambridge University Press. Since students come to the course with varying levels of experience with statistical packages like **R**, some may need a bit of effort to learn basic programming skills. If you suspect that you are in this group, it will pay to spend some time with a basic text such as *An R and S-Plus Companion to Applied Regression*. John Fox, 2002, Sage.
3. Course Grade: The final grade will be based on two components: weekly attendance and participation (40%), and a research paper on the topic for this particular semester (60%). Readings should be completed *before class*.
4. Office Hours: Wednesday 9-11, and by appointment. (email [Sue Tuhro](#) to schedule)
5. Important Dates: No class on: September 10, November 5, November 26 (Thanksgiving), December 10. Paper presentation days:
 - September 8, **George Casella** (5-7PM in the Political Science Conference Room), "A History of Markov Chain Monte Carlo--Subjective

Recollections from Incomplete Data."

- September 9, **George Casella** (5-7PM in the Political Science Conference Room), "Connecting Metropolis et al. to Modern Markov Chain Monte Carlo."
 - September 17, Monte Carlo Basics (Metropolis et al. 1953, Metropolis and Ulam 1949, Eckhardt 1987 Convener: **Kate Jensen**).
 - September 24, Reversibility of Metropolis, Detailed Balance, Convergence (Chib and Greenberg 1995, Convener: **Ruibin Xi**, Hastings 1970, Peskun 1973, Convener: **Tim Mitchell**).
 - October 1, The EM Algorithm (Dempster, Laird, and Rubin 1977, Convener: **Alan Kaplan**), Data Augmentation (Tanner and Wong 1987, Convener: **Michael Malecki**).
 - October 8, Successive Substitution Sampling (Gelfand and Smith 1990, Convener: **Xiao Huang**), Introduction to the Convergence of the Gibbs Sampler (Casella and George 1992, Convener: **Kate Jensen**).
 - October 15, Convergence, CLT, Harmonic Functions, Harris Recurrence (Tierney 1994, Convener: **Xun Pang**).
 - October 22, Covariance Structures (Liu, Wong, and Kong 1994, 1995, Convener: **Andrew Womack**).
 - October 29, Application of the Gibbs Sampler (Albert and Chib 1993, Convener: **Sid Chib**), Effect of Improper Priors (Hobert and Casella 1996, Convener: **Chris Anderson**).
 - November 12, CLT (Jones and Hobert 2004, Convener: **Jeff Gill**), Parameter Expansion (Liu and Wu 1999, Convener: **Michael Malecki**).
 - November 19, Annealing Extensions (Geyer and Thompson 1995, Neal 1996, Convener: **Qing Li**).
 - December 1, **George Casella** (5-7PM in the Political Science Conference Room), "Connecting the Theory and Practice of MCMC, Part 1"
 - December 2, **George Casella** (5-7PM in the Political Science Conference Room), "Connecting the Theory and Practice of MCMC, Part 2."
6. Incompletes: Due to the scheduled nature of the course, no incompletes will be given.
 7. Teaching Fellow: Andrew Womack. Office Hours by appointment.
 8. Required Reading : Assigned at the first class meetings. All papers will be available at jstor.org or distributed by the instructor.