**Bayesian Statistics**

*Boris Sokolov, Assistant Professor*

Bayesian data analysis is a rapidly developing field of statistics, whichhas many useful applications in various areas of political science, sociology, and international relations. The goal of this course is to provide a brief and “mostly harmless” (that is, as informal as possible) introduction to the theory and application of Bayesian statistical methods. The course begins with the basic concepts of Bayesian statistics (e.g., Bayes’s rule. priors, likelihood, and posterior distribution). Then we consider various approaches to the estimation and assessment of Bayesian models (with most attention to the MCMC-based methods) in the context of generalized linear models. Finally, we discuss applications of the Bayesian approach to specific tasks arising in political research, including such topics as multilevel/hierarchical analysis and Bayesian model averaging.

Students are assumed to have basic knowledge of statistics and be familiar with several conventional statistical methods, most importantly regression analysis. Knowledge of advanced topics, such as multilevel regression analysis and maximum-likelihood estimation, is helpful, but not critical. In addition, for practical exercises we willuse R programming environment, so a basic knowledge of R is desirable. However, it is not a necessary prerequisite, and a short introduction to R will be given in the beginning of the course.