Syllabus – STOR 757
Fall 2015 (August 18 – December 2)
TuTh 11:00am – 12:15pm
Hanes 130

Instructor: Jan Hannig   **Phone:** (919) 962-7511

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Office Hours: M 1pm-2pm   **Course home page on**

 and by appointment   http://www.unc.edu/~hannig/STOR757

Required Text: Robert CP, The Bayesian Choice, 2nd edition, Springer

Optional Text:
- Bernardo JM and Smith AFM, Bayesian Theory, Wiley
- Gilks WR, Richarson S and Spiegelhalter DJ, Markov Chain Monte Carlo in Practice, Chapman & Hall/CRC
- Albert J, Bayesian Computation with R, Springer
- Lee PM (2012) Bayesian Statistics: An Introduction, Fourth Edition, Wiley

Course Objective:
Introduction of both basic and modern aspects of Bayesian methodology.

Covered Topics:
Basic ideas: Bayes theorem, prior selection, hiearchical models. In-proper priors.
Numerical and sampling techniques: Gibbs sampler, importance sampling resampling,
Monte Carlo integration, Metropolis- Hastings sampling and adaptive sampling methods.
Inferential methods: Bayesian model selection, Bayesian model averaging.

Assessment: Your grade will be based on homework (30%), two short class
presentations (30%) and a project report (40%).

Important dates:

Final Exam: There will be no final exam. The final project is due December 10.

Homework: Homework sets will be assigned weekly.

Class Presentations: September 22 and November 24

Room upgrades: We will meet in Peabody 220 starting on 9/28 for
approximately two weeks!

Project:
You will be asked to select a modern paper (no older than 5 years) concerning Bayesian statistics and replicate the results in the paper (simulations, theory, etc). You will also be asked to extend the paper in some way, e.g. theoretical extension or additional simulation study. The final report will be typed using LaTeX using the ims-template.tex format. The report should include an appropriate title, introduction, verification, conclusions sections. The final report will be no longer than 10 pages (excluding references). All references must be in refereed journals or books and must be cited appropriately in the body of the text. The final document is due by December 10.

Presentations:
You will be asked to give two seminars: one (September 22) is a short presentation introducing the selected paper for listing what should be replicated. The other (November 24) presents the replication results and extensions of the paper. Each student will be requited to come to office hours at least once prior to the first seminar to discuss the selection of the paper.

Note: The instructor reserves the right to make any changes he considers academically advisable. It is your responsibility to attend classes and keep track of the proceedings.