50% of your course grade will depend upon successful, on time completion of the Final Exam project. The project can be done as a team of no more than 2 student members and each member of the team will receive grades in equal proportion in this final project. The Final Exam project consists of three tasks:

(i) **Project Proposal (one page)**: One page (1.5-spaced) project proposal is due by the above stated due date. The proposal should include at least the following items:

(a) Title of the proposed project;
(b) Name(s) of the team member(s); and
(c) Description of proposed project: Spell out briefly the data source, the main goal of the study, and your basic intended Bayesian statistical methodology.

Pick a topic and associated Bayesian statistical methodology that interests you (preferably on a topic that you learned in this course and/or related to your own research work) and then execute and analyze the results of a study using Bayesian Markov Chain Monte Carlo (MCMC) methodologies intended to increase your understanding of the subject.

(ii) **Seminar Style Project Presentation (15 minutes)**: If the team consists of more than one member, each member is required to present a seminar style talk (say 7.5 minutes each). The time and place of the seminar style presentations will be announced once the proposals are approved. The seminars are expected to be held in classroom either on the last week of class or the following week or both (depending on the number of teams formed).
(iii) Final Project Report (15 pages): The Final Exam Project Report should result in a thorough but concise, professional quality technical report of not more than 15 (fifteen) 1.5-spaced pages (not including listings of raw data, computer output and R/WinBUGS code). Projects are to be turned in as a single PDF attachment with following filename formatting: Lastname-ST790-FinalExamReport.pdf by the deadline stated above. Codes (preferably written in R) should also be submitted as a single plain text attachment with filename Lastname-ST790-FinalExamCodes.txt

Sign the Honor Pledge: I have neither given nor received unauthorized aid on this assignment on your cover page, before you submit the project.

After experimenting make a thorough but concise report of your entire investigation. Include at least:

1. An Executive Summary (goals and major findings)

2. A Description of Data

3. Appropriate Bayesian Statistical Analyses of the Data (use graphics as well as numerical summaries)

4. A Statement of the Subject Matter Implications of Your Study, and

5. A Discussion of Further Questions Raised by Your Study (that might be investigated in a subsequent experiment).
Additional information

Simply attaching a ream of computer printout is not what is meant by including an appropriate statistical analysis. The main body of the report should include only the end products of any statistical calculations (but example calculations should be included in an appendix so your reader can see how your end products were produced). If you are going to include complete computer printouts, they should be painstakingly annotated and included only as appendices (small parts of printouts may be integrated in the text where appropriate). Any appendices should be referred to explicitly in the text (don’t leave the reader guessing why appendix material is included). Write the report as if a busy manager were going to read it.

This project need not be expensive nor require a huge time investment in data collection. But it does need to show careful planning, good logic and the Bayesian analysis and associated methodologies discussed in the course. Some part of your instructor’s reaction to your project will also inevitably reflect the originality of your topic, so choose it with some care.

Team average scores for these projects will be assigned according to the following schedule:

- Executive Summary and Table of Contents 5%
- Description of Data 10%
- Presentation/Visualization of Raw Data 10%
- Bayesian Statistical Analysis 20%
- Subject Matter Implications and Question for Further Study 10%
- Professional Appearance of Report 5%
- Seminar Presentation 40%

Data sources:
R Datasets:
Bayesian R packages:
http://cran.r-project.org/web/views/Bayesian.html