STAT563: Applied Regression Analysis Fall 2009

Instructor:	Javier Cabrera, Office: 471 Hill, Email: xavier.cabrera@gmail.com
Lecture/Venue:	Thursday 6:40-9:30/ SEC 209 BUS
Office Hours:	Wed 4:30-6:10
Text Book:	Applied Linear Regression Models, 4th Ed., by Kutner, Nachtsheim, and Neter. McGraw-Hill, 2004.
Web Page:	www.rci.rutgers.edu/~cabrera/563/

Course Objectives: This course covers the methodology and applications for simple and multiple linear regression analysis. Special emphasis will be given to the applications of multiple linear regression methodology to the real world. Topics of interest are model selection, regression diagnostics, binary/categorical response, computational issues and testing statistical hypotheses.

Additional references:

- Very useful PDF document from CRAN: "Practical Regression and Anova using R." Julian J. Faraway. http://cran.r-project.org/doc/contrib/Faraway-PRA.pdf
- The "classic" where most statisticians learned about regression: Draper N, Smith H. Applied Regression Analysis, 3rd Edition. Wiley & Sons, 1998.
- I will also refer to published articles.

Homework & class participation: There will be five homework assignments accounting for 25% of final grade. The lowest homework score will be dropped and the remaining four homework assignments each will account for 5% of the grade. All students must work independently on the homework sets. All homework must be turned in by the beginning of class on the due date. No late homework will be accepted. Your class participation will be used to add a maximum of 5% to the grade.

Final Project: There will be one individual final project involving analysis of a data set with a continuous or binary response variable and multiple predictors. Prepare a report following the format provided in the report instructions. The data sets will be uploaded to the course web site shortly. The project will account for 40% of the final grade.

Exams: There will be one in class midterm exam accounting for 35% of the final grade. Part I closed book, Part II open book.

Tentative class schedule

Sept. 3	Review. Simple linear regression and correlation (Chapter 1)
Sept. 10	Inference in simple linear regression and correlation (Chapter 2)
Sept. 17	Diagnostics and remedial measures (Chapter 3)
Sept. 24	Diagnostics and remedial measures cont.(Chapter 3)
Oct. 1	Simultaneous inference and other topics (Chapter 4)
Oct. 8	Matrix representation of simple linear regression (Chapter 5)
Oct. 15	Multiple linear regression (Chapter 6)
Oct. 22	Statistical inference in multiple regression (Chapter 7)
Oct. 29	Midterm Test
Nov. 5	Regression models for quantitative and qualitative predictors (Chapter 8)
Nov. 12	Logistic regression. (Chap 14) **(project reports due Dec 12)**
Nov. 19	Model building (Chapter 9)
Nov. 26	No class: Thanksgiving week
Dec. 3	Diagnostics for model building (Chapter 10)
Dec. 10	Regularization: Ridge regression, LASSO. Robust regression. Start final projects.

Homework assignments (show all work)

HW 1: Due Sept 17:
HW 2: Due Oct 7:
HW 3: Due Oct 29:
HW 4: Due Nov 12:
HW 5: Due Dec 3: