SSC 358 -- Applied Regression Analysis -- Fall 2011

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Syllabus

Course Information

This course focuses on the application of regression models. We will start with a quick review of basic statistical concepts and follow up with a careful treatment of regression analysis. Students will learn how to use regression to analyze a variety of complex real world problems. Numerous empirical examples from finance, marketing, economics, politics, sports, etc are used to illustrate applications of the material covered. Emphasis will be placed on analysis of actual datasets. The statistical software R will be used. Topics covered include: (i) simple linear regression; (ii) multiple regression; (iii) prediction; (iv) residual diagnostics and time series forecasting; (v) decision trees; (vii) Monte Carlo simulation.

Students are supposed to have had at least one statistics course and good knowledge of basic probability concepts.

Course Website

`http://www2.mccombs.utexas.edu/faculty/carlos.carvalho/teaching/`

Evaluation

Homeworks (10%)
Midterm 1(30%) -- September 29th
Midterm 2(30%) -- November 10th
Take-Home Project (30%) -- Due on December 1st 2011.

Homework assignments will be bi-weekly (approximately). Students are encouraged to form groups to do homework and only one write-up per group needs to be turned in. The maximum group size is 4. Late homework assignments will not be accepted. Hard copies of homework assignments should be submitted in class and should have a ***clear and professional*** presentation. Homeworks will be graded on a pass/fail basis.

Midterm1 will be in class on Thursday September 29. This is a closed book exam.

Midterm 2 will be in class on Thursday November 10. This is a closed book exam.

The **Take-Home Final Project** is individual and will be due on Thursday December 1st

Class Schedule

Class 1:	Introduction
Class 2:	Introduction to R
Class 3:	Random Variables, Probability Distributions, The Normal Distribution
Class 4:	Estimation of Means and Variances
Class 5:	Sampling Distributions
Class 6:	Relating X to Y; Intro to Simple Linear Regression
Class 7:	Least Squares and its Properties
Class 8:	The SLR Model
Class 9:	Inference on the SLR Model (1)
Class 10:	Inference on the SLR Model (2)
Class 11:	**Midterm 1**
Class 12:	Multiple Linear Regression(1)
Class 13:	Multiple Linear Regression (2)
Class 14:	Multiple Linear Regression (3)
Class 15:	Residual Diagnostics/Transformations
Class 16:	Interactions and Dummy Variables
Class 17:	Model Selection
Class 18:	Time Series
Class 19:	Logistic Regression (1)
Class 20:	Logistic Regression (2)
Class 21:	Conditional Probability (1)
Class 22:	Conditional Probability (2)
Class 23:	**Midterm 2**
Class 24:	Non-Linear Methods (1)
Class 25:	Non-Linear Methods (2)
Class 26:	Monte Carlo Simulation (1)
Class 27:	Monte Carlo Simulation (2)
Class 28:	Monte Carlo Simulation (3)

Office Hours

Tuesday and Thursdays -- 4pm to 6pm.

This course carries the Quantitative Reasoning flag. Quantitative Reasoning courses are designed to equip you with skills that are necessary for understanding the types of quantitative arguments you will regularly encounter in your adult and professional life. You should therefore expect a substantial portion of your grade to come from your use of quantitative skills to analyze real-world problems.

Texts/Notes

There is no course pack or required textbook for the class. All lecture notes and course materials will be available in the class website. Some students find having a supplemental text useful for studying. I recommend the following as **optional** textbooks: "*Data Analysis and Decision Making with Microsoft Excel"* by Albright, Wiston and Zappe; *"Statistics for Business"* by Stine and Foster; *"Business Statistics"*, by Sharpe, De Veaux and Velleman.

Request for Regrade

Clerical errors will be corrected without hassle. Other regrade requests must be submitted in writing within one week (7 days) of the exam's return. Keep in mind that the entire exam will be subject to regrading.

Contact Information

I am happy to meet with anyone that wants to schedule an appointment. The best way to contact me is through email. Also, feel free to call my office if you have any questions. My office number is (512) 471-5823.

Class Handouts

You are responsible for bringing the relevant section of the lecture notes to every lecture. All course materials are available on the web.

Academic Dishonesty

I have no tolerance for acts of academic dishonesty. Such acts damage the reputation of the school and the degree and demean the honest efforts of the majority of students. The minimum penalty for an act of academic dishonesty will be a zero for that assignment or exam.

The responsibilities for both students and faculty with regard to the Honor System are described on http://mba.mccombs.utexas.edu/students/academics/honor/index.asp and on the final pages of this syllabus. As the instructor for this course, I agree to observe all the faculty responsibilities described therein. During Orientation, you signed the Honor Code Pledge. In doing so, you agreed to observe all of the student responsibilities of the Honor Code. If the application of the Honor System to this class and its assignments is unclear in any way, it is your responsibility to ask me for clarification.

- **As specific guidance for this course**, you may not use the homework answers of students in previous classes in any way to assist you in completing the homework questions this year. It is a violation of the honor code in this class to use such assistance.

Students with Disabilities

Upon request, the University of Texas at Austin provides appropriate academic accommodations for qualified students with disabilities. Services for Students with Disabilities (SSD) is housed in the Office of the Dean of Students, located on the fourth floor of the Student Services Building. Information on how to register, downloadable forms, including guidelines for documentation, accommodation request letters, and releases of information are available online at http://deanofstudents.utexas.edu/ssd/index.php. Please do not hesitate to contact SSD at (512) 471-6259, VP: (512) 232-2937 or via e-mail if you have any questions.

Honor Code Purpose

Academic honor, trust and integrity are fundamental to The University of Texas at Austin McCombs School of Business community. They contribute directly to the quality of your education and reach far beyond the campus to your overall standing within the business community. The University of Texas at Austin McCombs School of Business Honor System promotes academic honor, trust and integrity throughout the Graduate School of Business. The Honor System relies upon The University of Texas Student Standards of Conduct (Chapter 11 of the Institutional Rules on Student Service and Activities) for enforcement, but promotes ideals that are higher than merely enforceable standards. Every student is responsible for understanding and abiding by the provisions of the Honor System and the University of Texas Student Standards of Conduct. The University expects all students to obey the law, show respect for other members of the university community, perform contractual obligations, maintain absolute integrity and the highest standard of individual honor in scholastic work, and observe the highest standards of conduct. Ignorance of the Honor System or The University of Texas Student Standards of Conduct is not an acceptable excuse for violations under any circumstances.

The effectiveness of the Honor System results solely from the wholehearted and uncompromising support of each member of the Graduate School of Business community. Each member must abide by the Honor System and must be intolerant of any violations. The system is only as effective as you make it.

Faculty Involvement in the Honor System

The University of Texas at Austin McCombs School of Business Faculty's commitment to the Honor System is critical to its success. It is imperative that faculty make their expectations clear to all students. They must also respond to accusations of cheating or other misconduct by students in a timely, discrete and fair manner. We urge faculty members to promote awareness of the importance of integrity through in-class discussions and assignments throughout the semester.

Expectations under the Honor System

Standards

If a student is uncertain about the standards of conduct in a particular setting, he or she should ask the relevant faculty member for clarification to ensure his or her conduct falls within the expected scope of honor, trust and integrity as promoted by the Honor System. This applies to all tests, papers and group and individual work. Questions about appropriate behavior during the job search should be addressed to a professional member of the Career Services Office. Below are some of the specific examples of violations of the Honor System.

Lying

Lying is any deliberate attempt to deceive another by stating an untruth, or by any direct form of communication to include the telling of a partial truth. Lying includes the use or omission of any information with the intent to deceive or mislead. Examples of lying

include, but are not limited to, providing a false excuse for why a test was missed or presenting false information to a recruiter.

Stealing

Stealing is wrongfully taking, obtaining, withholding, defacing or destroying any person's money, personal property, article or service, under any circumstances. Examples of stealing include, but are not limited to, removing course material from the library or hiding it from others, removing material from another person's mail folder, securing for one's self unattended items such as calculators, books, book bags or other personal property. Another form of stealing is the duplication of copyrighted material beyond the reasonable bounds of "fair use." Defacing (e.g., "marking up" or highlighting) library books is also considered stealing, because, through a willful act, the value of another's property is decreased. (See the appendix for a detailed explanation of "fair use.")

Cheating

Cheating is wrongfully and unfairly acting out of self-interest for personal gain by seeking or accepting an unauthorized advantage over one's peers. Examples include, but are not limited to, obtaining questions or answers to tests or quizzes, and getting assistance on case write-ups or other projects beyond what is authorized by the assigning instructor. It is also cheating to accept the benefit(s) of another person's theft(s) even if not actively sought. For instance, if one continues to be attentive to an overhead conversation about a test or case write-up even if initial exposure to such information was accidental and beyond the control of the student in question, one is also cheating. If a student overhears a conversation or any information that any faculty member might reasonably wish to withhold from the student, the student should inform the faculty member(s) of the information and circumstance under which it was overheard.

Actions Required for Responding to Suspected and Known Violations

As stated, everyone must abide by the Honor System and be intolerant of violations. If you suspect a violation has occurred, you should first speak to the suspected violator in an attempt to determine if an infraction has taken place. If, after doing so, you still believe that a violation has occurred, you must tell the suspected violator that he or she must report himself or herself to the course professor or Associate Dean of the Graduate School of Business. If the individual fails to report himself or herself within 48 hours, it then becomes your obligation to report the infraction to the course professor or the Associate Dean of the Graduate School of Business. Remember that although you are not required by regulation to take any action, our Honor System is only as effective as you make it. If you remain silent when you suspect or know of a violation, you are approving of such dishonorable conduct as the community standard. You are thereby precipitating a repetition of such violations.

The Honor Pledge

The University of Texas at Austin McCombs School of Business requires each enrolled student to adopt the Honor System. The Honor Pledge best describes the conduct promoted by the Honor System. It is as follows:

"I affirm that I belong to the honorable community of The University of Texas at Austin Graduate School of Business. I will not lie, cheat or steal, nor will I tolerate those who do."

"I pledge my full support to the Honor System. I agree to be bound at all times by the Honor System and understand that any violation may result in my dismissal from the Graduate School of Business."