



Business 41100: Applied Regression Analysis (9/6/2013)

Professor: Jing Cynthia Wu (cynthia.wu@chicagobooth.edu)

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Course Times and Locations:

Lectures

41100-03: Mon 8:30AM-11:30AM (Final Week: 8:00AM-11:00AM), Harper Center

41100-04: Mon 1:30PM-4:30PM (Final Week: 3:00PM-6:00PM), Harper Center

41100-81: Tue 6:00 PM-9:00PM (Final Week: 6:30PM-9:30PM), Gleacher Center

Review Sessions: Review sessions help you with MATLAB, homework and exam problems.

Wednesdays 12:00 PM-1:00 PM, Harper Center C10 (*exceptions: 11/13 C09, 11/20 C03*)

Wednesdays 5:00 PM-6:00 PM, Gleacher Center

Course Description:

Business 41100 is a course about regression, a powerful and widely used data analysis technique. Students will learn how to use regression to analyze a variety of complex real world problems. Topics covered include: simple linear regression, multiple regression, prediction, residual diagnostics, introduction to time series analysis, and binary regression. Heavy emphasis will be placed on the analysis of actual datasets.

Topic 1: Linear Prediction and Least Squares

Topic 2: The Linear Regression Model

Topic 3: Estimation and Basic Inference for Linear Regression

Topic 4: Statistical Inference

Topic 5: Diagnostics and Transformations

Topic 6: More on Multiple Linear Regression

Topic 7: An Introduction to Time Series

Topic 8: Model Choice

Topic 9: Binary Response Data

Computing

One goal of this course is to equip students with MATLAB skills. MATLAB is heavily used in advanced finance classes, and is extremely popular in industries and academia. I will demonstrate analysis with MATLAB in class and provide code to accompany lectures, and TA will answer your questions in review sessions.

I strongly encourage you to install the MATLAB as soon as possible and get familiar with simple operations. You can get a student version from the MATLAB webpage.

Chalk:

We will use Chalk (<http://chalk.uchicago.edu>). You will need your CNET ID and password to log in. The course website will appear as BUSE 41100 in your Chalk Course List. It is the same for all sections. I will send email announcements through chalk, so please make sure your contact information is correctly recorded on Chalk.

Prerequisites:

Business 41000 or equivalent is a prerequisite. This includes a command of the basics of probability and the following concepts: random variables (and functions thereof), normal and t -distributions, hypothesis testing, confidence intervals, and sampling distributions. Students will also be assumed to be familiar with exponential and logarithmic functions and summation notation. Some prior exposure to linear regression is preferred.

Text/Notes

There is no course pack or required textbook for the class. All lecture notes and course materials will be available on the course website.

Evaluation:

Grade = 10% homework + 30% midterm + 30% project&presentation + 30% final

Group work: Students are encouraged to form groups (max size 4) for homework, project and presentation, and only one write-up per group needs to be turned in. *Note, midterm and final will be done individually.*

Homework: There will be 6 homework assignments collected each week according to the schedule below. Only the best 5 of 6 assignments will be counted towards your grade. Homework assignments need to be submitted at the beginning of the class, and late homework assignments will not be accepted.

Project: The project will be assigned after midterm. We schedule the project presentations in week 10 and the final week. Attendance to *all* presentations in your section is *mandatory*.

Midterm: The midterm exam will be given in your 5th class. This is a closed-book individual exam, but you may bring one letter size (both sides) “cheat sheet”. Calculators are allowed. Make sure you bring your own.

Final: The individual take-home final exam will be due on your final week. Email queries about the exam will be restricted to clarification questions only (cc TA).

Reschedule: No request for rescheduling will be entertained on or after the date of an exam. Only extreme personal problems are a reason for rescheduling.

Regrade: All requests for re-grading must be submitted in writing within one week of the exam’s return; the entire exam will be subject to re-grading. Exams written in pencil or any erasable pen will not be re-graded.

Homework and exams schedule: all the submissions are in hard copy unless otherwise specified

Week 1:

Week 2: HW1 due

Week 3: HW2 due

Week 4: HW3 due

Week 5: Midterm

Week 6:

Week 7: HW4 due + (email) one-page summary of project due.

Week 8: HW5 due

Week 9: HW6 due

Week 10: Project presentation

Final week: Project presentation + final due + project write-up due + (email) data and code.

After final week: (email) slides

Honor code: Students must adhere to *Booth Honor Code* standards and sign, “*I pledge my honor that I have not violated the Honor Code during this examination or assignment*”, on all work. Electronic signature is acceptable.

Office hour: I will hold office hours by appointment. I will also allocate Tuesday mornings and Thursday afternoons to answering email questions about the course. If your question is urgent, please indicate this in the subject line and I will try to respond sooner.