ECON 488
Introduction to Econometrics

Course Website

This course will utilize a blackboard page through csuci.edu

Contact Information

Course Hours:
        Lecture – Tuesdays, 9am – 11:50am
        Lab – Wednesdays, 10am – 11:50am
Email: bryan.tomlin@csuci.edu
Please allow 48 hours for responses to emails. If I don't get back to you, there is a chance your message was caught in a spam filter, so please contact me in person to let me know.

Course Description

The material presented in this course is intended to serve as an introduction to econometrics – the economic model driven approach to applied statistical analysis. In this course you will learn how to apply the most common tools of the econometrician in order to answer objective questions of economic relevance using real-world data. You will also learn the assumptions underlying the use of these various methods, and the corresponding limitations of these techniques.

Program Learning Goals: These are the skills we try to help you build in all MVS courses
1. Critical Thinking
2. Oral Communication
3. Written Communication
4. Collaboration
5. Conduct (Ethics)
6. Competency in Discipline

Course Learning Outcomes: Upon completion of this course, you will be able to
1. Understand the core concepts of probability theory that underlie applied statistical analysis (1, 3, 6)
2. Describe and apply the scientific method to economic behavior (1, 3, 6)
3. Conduct your own, independent analysis of a dataset using the latest statistical software (1, 3, 6)
4. Present the findings of your own econometric analysis in the form of both a research paper and an oral presentation to your classmates (1, 2, 3, 6)
5. Evaluate the analysis performed by other researchers, and highlight potential shortcomings with the underlying statistical model, as well as identify potential data sources that could possibly be used to supplement and improve the model (1, 3, 4, 6)

Prerequisites

MATH/PSY 202 or MATH 329 or MATH 352, ECON 310 or ECON 329, and MATH 140 or MATH 150

Texts

Required: Stock and Watson; "Introduction to Econometrics," *Third Edition*, 2011

Homework

Recommended practice problems will be provided, and you are strongly encouraged to answer all of the recommended practice questions, both on your own, and again in groups (teaching your classmates how to approach and answer a problem is quite possibly the best way to learn this material). These questions will reflect the type of material which will be presented to you on the exams, and as such, you grade is likely to benefit greatly from your completion of these practice problems.

Grading and Examinations

Quiz 1 (7.5%) – Tuesday, September 19th.

Midterm (25%) – Tuesday, October 17th.

Research Project, data presentation (0%) – Tuesday, October 10th.

Quiz 2 (7.5%) – Tuesday, November 14th.

Research project, written assignment (25%) – Due Tuesday, December 5th.

Research project, presentation (5%) – Tuesday, December 5th or Wednesday, December 6th.

Final Exam (25%) –Finals week – See final exam schedule for date/time

Understanding checks (5% total) – Over the course of the semester I'll assign a yet to be determined number of unannounced tests of your understanding of key material.

Re-grading policy

If I made a mistake summing the points on your exam, please bring it to my attention immediately. Most answers are objective and therefore leave little room for re-grading with the exception of the aforementioned adding errors on my part. Extra credit options will <u>not</u> be made available to students on a case-by-case basis as this would result in differential grading policies by students.

Missed Exam/Quiz Policy

Make-up exams will be held for students who have legitimate and appropriate reasons for having missed an examination. If you have any questions about when an exam will be held, don't be afraid to ask me, I won't think less of you. All exam dates are listed on page 1 of this syllabus.

Academic Honesty

Academic honesty is of the utmost importance, and any academic misconduct will be subject to the strictest enforcement possible.
See http://www.csuci.edu/studentlife/judicial-affairs/academic-dishonesty.htm for more information.

<div align="center">**Course Schedule**</div>

The below schedule is simply an approximation for the timing with which the material in this course will be presented. Note: "Lesson" as used below, is *not* equivalent to "class meeting" or "week." For example, "Lesson 3" is not necessarily going to take place during the third meeting of this class or during the third week of class.

Introduction
Lesson 0 – Course introduction. Motivating examples.

Review of Probability and Statistics
Lesson 1 – Review of probability: random variables, probability distributions and their properties

Lesson 2 – Review of statistics: sampling, estimation, hypothesis testing, and comparisons of means.

Regression Analysis
Lesson 3 – The linear regression model with a single independent variable: underlying assumptions, coefficient estimates, measures of fit, hypothesis testing, and confidence intervals.

Lesson 4 – The linear regression model with multiple independent variables: underlying assumptions, coefficient estimates, measures of fit, hypothesis testing, confidence intervals, omitted variable bias, multicollinearity.

Lesson 5 – Multiple regression with nonlinear specifications: polynomial regressions, logarithmic regressions, interactions between independent variables.

Additional Tools of Regression Analysis
Lesson 6 – Panel regression: Before-and-after regression analysis.

Lesson 7 – Panel regression – Fixed effects regression analysis.

Lesson 8 – Regression techniques involving a binary dependent variable: Linear Probability Model, Probit Regression, Logit Regression.

Lesson 9 – Instrumental variables regression: two-stage-least-squares, instrumental relevance and exogeneity.

Lesson 10 – Discussion of merits and shortcomings of quasi-experimental analysis. Quasi-experimental analysis techniques: difference-in-difference estimation, regression discontinuity estimation.

Lesson 11 – Time series techniques. Forecasting.