Syllabus for **Econometrics**
Rutgers University
Department of Economics
220:322:01
Spring 2021

Contact Information

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Course Information

This course will be taught remotely and synchronously.
Lecture Time: Tusday and Thursday 2:50 PM - 4:10 PM
Office hours: Friday 12:30 PM to 2:30 PM or by appointment.
Accessing Information: The Zoom or Webex links and Passwords are going to be listed in the Sakai Announcement section.

Prerequisites

It is expected that all students will have taken principles of economics courses covering both microeconomics and macroeconomics (e.g. 220:102 and 220:103 or 220:200), Calculus I (640:135 or 640:151) and an introductory statistics class (e.g. 960:211 or 960:285). It will be assumed that all students have a good command of the material taught in these courses. It is strongly suggested that you review this material at the beginning of this course. **Students majoring in Economics need to pass this course with a C or higher.**

Textbook

James Stock and Mark Watson: Introduction to Econometrics, 4th Edition.

Course Overview

Econometrics is a set of research tools used to estimate and test economic relationships. The methods taught in this introductory course can also be employed in the business disciplines of accounting, finance, marketing and management and in many social science disciplines. The aim of this course is to provide you with the skills helpful in filling the gap between being "a student of economics" and being "a practicing economist." By taking this introduction to econometrics you will gain an overview of what econometrics is about, and develop some "intuition" about how things work. The emphasis of this course will be on understanding the tools of econometrics and applying them in practice.

Learning Goals

Students who successfully complete Econ 322 should be comfortable with basic statistics and probability. They should be able to use a statistical/econometric computer package to estimate an econometric model and be able to report the results of their work in a non-technical and literate manner. In particular a student who successfully completes Econ 322 will be able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance. They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.

Assessment and Grading Policy

- Assignment: 20%
- Midterm Exam1: 25%
- Midterm Exam2: 25%
- Final Exam: 30%

Grade	Range of Scores
A	>=85
B+	80 - 84
B	75 - 79
C+	70 - 74
C	65 - 69
D	60 - 64
F	< 60

Course Software

We will use R throughout the whole course for model demo and empirical assignment. No preliminary knowledge is required, you will learn how to use R and Python to conduct the empirical data analysis in the end. Tutorial and sample code are going to be provided.

Academic integrity

Familiarize yourself with the university's policy on academic integrity: http://academicintegrity.rutgers.edu/academic-integrity-policy/ I will not hesitate to enforce the policy at any sign of a violation of it.

Overview of Lectures

- ❖ Introduction to Econometrics (Chapter 1)
- ❖ Review of Probability and Statistics (Chapter 2&3)
- ❖ Linear Regression Analysis (Chapter 4, 5, 6, 7, 8, 9)

Midterm Exam 1 (March 11th, Thursday, 2:50 PM-4:10 PM)

- ❖ Further Topic in Linear Regression
  - Joint Statistical Inference (Chapter 7, 8, 18)
  - Heteroskedasticity (Chapter 7, 8, 19)
  - Panel Data (Chapter 10)
  - Probit and Logit model (Chapter 11) (***tentative***)
  - Instrumental Variable (Chapter 12)
  - Ridge Regression (Chapter 14.3) and Lasso (Chapter 14.4)

Midterm Exam 2 (April 15th, Thursday, 2:50 PM-4:10 PM)

- ❖ Time Series Analysis (***tentative***)
  - ARMA (Chapter 15)
  - VAR (Chapter 17)
  - Cointegration (Chapter 17)
- ❖ Further Topic in Time Series Analysis (***tentative***)
  - Dynamic Factor Model (Chapter 17) and PCA (Chapter 14.5)
  - Dynamic Causal Effect (Chapter 16)

Final Exam (TBA)

Note: Please mark the exam date. There will be **no makeup exams**. If a truly extreme situation arises, you must contact me in advance. I must agree the reason was extreme enough to miss the exam and verification of your situation will be required. Otherwise, you will receive a grade of 0 for any exam missed.

Final Comments

1. It is expected that all students will attend lectures, be up to date with their readings and be prepared to participate fully in class. Please ask questions in class or in office hours if you have any problems or misunderstandings. Do not wait until just before an exam to ask questions.

2. Students are expected to attend all classes. If you expect to miss one or two classes because of illness or a family emergency, please use the University absence reporting website https://sims.rutgers.edu/ssra/ to indicate the date and reason for your absence. An email is automatically sent to me.

3. The best way to learn is by doing. The problem sets are designed to get you to practice the material introduced in the lectures. I encourage you to form study groups and work together. However, you should write up the answers yourself. Remember to always acknowledge people that helped you in preparing your assignment.

4. Please be respectful to your fellow classmates during class. Cell phones and other electronic devices not used to access course materials must be turned off before each class begins.