ECONGA-1101.003
Applied Statistics and Econometrics I
Fall 2021
Monday 6:20-8:20 PM

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Course Objective:

This course is the first in a two-semester sequence of courses designed to teach applied statistics and econometric techniques for quantitative research and analysis. The course will begin with a review of various topics in statistics that are needed to understand econometric theory, including random variables, mathematical expectations, estimation and inference. After the review of statistics, we will study the simple regression model, multivariate regression analysis, hypothesis testing, specification analysis and the generalized regression model.

Grading

Research Project & Paper 30%
Homework 10%
Mid-term 30%
Final Exam. 30%.

The project is an applied econometric research project that involves collecting an appropriate data set, conducting an econometric analysis, and writing the results in the form of a short research paper. It will be due the last week of class. You are required to form a group of 3, 4 or 5 students. Details relating to the project will be provided to students in class.

Course Material

The required textbook for the course is:

- "Econometric Analysis", 8th edition, by William H. Greene, Prentice Hall (2018) (G-8th ed.).

A supplementary textbook for the course is:

- Elements of Econometrics by Jan Kmenta, Second Edition (KM- 2nd ed.), The University of Michigan Press, second edition, copy right by Macmillan Publishing Company

An optional textbook that you may find useful is:

- "A Guide to Econometrics", 5th edition, by Peter Kennedy, Blackwell (2003) (K-5th ed.)

Computer Requirement

The statistical package R (or STATA) will be used primarily throughout the course. You are encouraged to become familiar with any of these packages. However, use of R Package is preferable and Lab session also will use R programs.

Course Outline

Week	Date	Topic	Readings/Chapters**
1	Sept 13	Introduction & Review of Matrix Algebra, Review: Statistics & Sampling	Notes, Appendix (KM- 2nd ed.) & Appendix A (G-8th ed.) Notes, Chap-4 (G-8th-ed)
2	Sept 20	Probability and Probability Distributions	Notes, Chap-2 (KM-2nd ed.) & Appendix B (G-8th ed.)
3	Sept 27	The Linear Regression Model and Least Square Estimator – Part_1	Notes, Chap-7 (KM-2nd ed.) and Chap-2, 3 & 4 (G-8th ed.)
	Sept 27	**Complete Group Formation for Research Project**	
4	Oct 4	The Linear Regression Model and Least Square Estimator – Part_2	Notes, Chap- 4 (G-8th ed.)
5	Oct 12 Tuesday - Legislative Day (Oct 11 No Class . Instead class will be on Oct 12 at the same time & same room)	Hypothesis Testing	Chap-5 (G-8th ed.)
	Oct 12	**Submit Project Proposal**	
MIDTERM EXAM	**Oct 18**		
6	Oct 25	Functional Forms	Chap-6 (G-8th ed.)
7	Nov 1	Endogeneity & Instrumental Variables	Chap-8 (G-8th ed.)
	Nov 1	**Submit Model Description of Project**	
8	Nov 8	Maximum Likelihood Estimation	Notes, Chap-6_Sec-6.2 (KM-2nd ed.) Chap-14 (G-8th ed.)
9	Nov 15	Non-Linear Regression	Chap-11_Sec 11.3 (KM-2nd ed.) and Chap-7 (G-8th ed.)
10	Nov 22	The Generalized Regression Model and Heteroskedasticity	Chap-9 (G-8th ed.)
	Thanksgiving Recess: November 26 and 27		
11	Nov 29	Panel Data Analysis & Model **Research Project Presentation (Lab Session only)**	Chap 11 (G-8th ed.)
12	**Dec 6**	**Research Project Presentation (Expanding to Lab session)**	
FINAL EXAM	**Dec 13**		
Friday	**Dec 17**	**Final research paper is due by 11 PM & should be submitted via Assignment location in NYU Class (as well as via email to me).**	

** Both the textbook sections mentioned above and class notes are required to study the topics included in above table.