ECO 465: Econometrics (Summer 2019)

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COURSE DESCRIPTION

Econometrics is a technique constantly used in business, finance, economics, government, consulting and many other fields. While econometrics is closely related to statistics, in reality it is more than just "statistics using economic data". For example, an econometric model of consumption is very different from a statistical or regression model of consumption because of the underlying behavior of economic agents. Other specific issues that underlie economic data are trends, seasonality and cycles.

This course will cover some core topics in econometrics including (bivariate and multivariate) linear regression models, nonlinear regression, hypothesis testing, and special issues in regression models such as multicollinearity, heteroscedasticity and autocorrelation. Other important topics to be covered are dummy variable model and time permitting an introduction to time series econometrics.

All theoretical concepts will be demonstrated with applied examples based on economic data of various kinds. Although this course will primarily use Stata 13 (or higher) for estimation, students are free to use any software such as Eviews or R.

COURSE OBJECTIVES

A primary objective of this course is to provide a mathematical understanding of linear regression models, widely used in academic and non-academic institutions (private sector, government, and NGOs). Students will also develop a sense of understanding of developing empirical models to test of both microeconomic and macroeconomic theories.

COURSE LEARNING OUTCOMES

By the end of the course, students shall:

- Understand the concept and derivation of Gauss-Markov theorem.
- Be able to distinguish between theoretical and empirical model.
- Be able to distinguish the "cause" and "effect" in economic relationships.
- Understand different types of data such as cross-section, time series and panel data.
- Know how to explore websites of different data providers for various data need.
- Be able to estimate linear and nonlinear regression models and economically interpret the results.
- Understand the various steps involve in writing an applied term paper in economics.

TEXTBOOKS

- **MAIN TEXTBOOK: BASIC ECONOMETRICS** by Damodar Gujarati and Dawn Porter, Fifth edition, McGraw-Hill, 2009.
- **SUPPLEMENTARY TEXTBOOK: INTRODUCTION TO ECONOMETRICS** by James Stock and Mark Watson, Third Edition, Addison-Wesley, 2011.

TOPICS

Chapter	Topics
Chapter 1	The Nature of Regression Analysis
Chapter 2	Two-Variable Regression Analysis: Basics
Chapter 3	Two-Variable Regression Analysis: Estimation • Gauss-Markov theorem (BLUE) • Monte Carlo experiments
Chapters 4	The Normality Assumption (Section 4.2)
Chapters 5	Two-Variable Regression Analysis: Hypothesis Testing (pp. 107-126)
Chapter 6	Extensions of the Two-Variable Linear Regression Model (pp. 147-166)
Chapter 7	Multiple Regression Analysis (Sections 7.1 and 7.8)
Chapter 10	Multicollinearity (nature, testing, and remedies)
Chapter 11	Heteroskedasticity (nature, testing, and remedies)
Chapter 12	Autocorrelation (nature, testing, and remedies)
Chapter 8 (Stock and Watson)	Nonlinear Regression Functions
Chapter 9	Dummy (Binary) Variable Regression
Chapter 14 (Stock and Watson)	Introduction to Time Series Regression and Forecasting

EVALUATION

Assignments	20%
Quizzes	10%
Lab Test	10%
Midterm	30%
Final	30%

MAKE-UP EXAM POLICY: Can't receive an "A" grade if you write a make-up test. Can't write both midterm and final as make-up exams. No make-up for a missing quiz (unannounced).

CODE OF CONDUCT: Sloppiness including absenteeism, late submission of assignment, and lack of communication during class will undermine your academic performance in the class.