Econometrics 1

Course # ECON 2003

Credits 6

Pre-requisites and Co-requisites: Calculus, Linear Algebra, Introductory Statistics.

Course Description

Econometrics I is an introductory course designed to equip students with essential tools and techniques to analyze real-world economic and social phenomena. The course strikes a balance between theoretical foundations and practical applications, preparing students to conduct research and solve applied problems using econometric methods. Students explore the process of formulating research questions, selecting appropriate proxy variables, and identifying suitable econometric models for analysis. The course covers both linear regression models and discrete choice models, which are widely used in economics and management studies. Emphasis is placed on applying these methods to analyze and interpret quantitative data, including practical training in the programming language R. By the end of the course, students will be capable of estimating economic parameters, testing hypotheses, forecasting economic variables, and conducting empirical research. The skills acquired are directly applicable to coursework, theses, and academic research, providing a solid foundation for further studies and practical applications in econometrics.

Course Learning Outcomes

Upon the completion of the course, students will be able to:

- Explain the mechanics and key assumptions of basic econometric models, including classical regression analysis.
- Derive the ordinary least squares (OLS) estimator for a linear regression model and prove its properties, such as being unbiased, BLUE, and consistent.
- Formulate research questions and represent them as econometric models suitable for empirical analysis.
- Identify violations of classical regression assumptions, apply diagnostic techniques, and implement corrective measures to ensure sound empirical results.
- Collect, process, and analyze quantitative data, utilizing statistical software (R language) to conduct estimation, testing, and visualization.
- Interpret the results of econometric analyses, including empirical estimations, and evaluate the limitations and applicability of the methods used.
- Diagnose key model statistics, test classical econometric assumptions, and adjust models based on findings to improve reliability and validity.

Course Assessment and Grading

Items	**Weight**
Class participation	5%
Group assignment	10%
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Test 1	20%
Test 2	20%
Group project	25%