

Course Title	INTRODUCTION TO ECONOMETRICS
Course Code	ECO 325
Pre-Requisite	STAT-103: Introduction Statistics
Degree Program (BS / MS / PhD)	BS

Course Objectives

1. To estimate and test economic relationships.
2. To provide the skills helpful in filling the gap between being “a student of economics” and being “a practicing economist.”

Learning Outcomes

1. Students who successfully complete Econometrics should be comfortable with basic statistics and probability.
2. 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.
3. In particular, a student who successfully completes this course will be able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance.
4. 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.

Contents

Week	Topic
1	The Nature of Regression Analysis ☐ Historical vs. Modern Interpretation of Regression ☐ Regression vs. Correlation; Regression vs. Causation ☐ The Nature and Types of Data for Economic Analysis
2	Single Equation Regression Models ☐ The Concept of Population Regression Function (PRF)

	☐ The Significance of the Stochastic Disturbance Term ☐ The Sample Regression Function ☐ Ordinary Least Squares (OLS) as a minimization problem; Theoretical Construct
3	☐ The Assumption underlying the Method of Least Squares ☐ Properties of the Least-Squares Estimates ☐ The Gauss-Markov Theorem ☐ The Coefficient of Determination
4	Hypothesis Testing and OLS ☐ The Confidence Interval Approach ☐ The Analysis of Variance (ANOVA) ☐ Reporting the Results of Regression Analysis ☐ Evaluating the Results of Regression Analysis ☐ Normality Tests ☐ Other Tests of Model Adequacy
5	☐ The Test of Significance Approach ☐ Testing the Significance of the Regression Coefficients- The t-test ☐ Testing the Significance of ρ : The Chi-square test
6	Extensions of the Two-variable Regression Model ☐ Regression through the Origin ☐ Functional Forms of the Regression Model ☐ How to Measure Elasticity ☐ The Log-Linear Models; Semi-Log Models; & Reciprocal Models ☐ Choice of Functional Form
7	Multiple Regressions

	☐ A Model with Two Explanatory Variables ☐ The Ordinary Least Square Method ☐ Interpretation of the Regression Coefficients
8	☐ The Multiple Coefficient of Determination & Correlation ☐ Introduction to Specification Bias ☐ The Adjusted R ²
9	Mid-term
10	☐ Testing Hypothesis about a Single Population Parameters: The t-test ☐ Testing the Overall Significance of the Sample Regression ☐ The F-test; Relationship between R ² & F ☐ The Incremental Contribution of an Explanatory Variable
11	☐ Testing Equality of Regression Coefficients ☐ Restricted Least Squares: Testing Linear Equality Restrictions ☐ The t-test Approach & The F-test Approach
12	☐ Testing for Structural or Parameter Stability of Regression Model: The Chow Test ☐ Testing the Functional Form of Regression
13	Relaxing the Assumptions of the Classical Model ☐ Multicollinearity (Causes, effects, remedies, tests)
14	Heteroskedasticity (Causes, effects, remedies, tests)
15	Autocorrelation (Causes, effects, remedies, tests)
16	Model Specification and Diagnostic Tests ☐ Model Selection Criteria ☐ Types of Specification Errors

	□ Consequences of Model Misspecification
17	Buffer Week
18	Final Examination

Readings List (including Books, Journals, Papers Articles, & Websites whatever is applicable)

- a. Gujarati, D. N. & Porter, D.C. (2017). Basic Econometrics. The McGraw-Hill Companies.
- b. Gujarati, D. N. (2021), Essentials of Econometrics. 5th Edition.
- c. Gruszczyński, M. (2020). Financial Microeconometrics: A Research Methodology in Corporate Finance and Accounting.
- d. James H. Stock and Mark W. Watson, Introduction to Econometrics 3rd Edition, Prentice Hall 2017,