

GENERIC ELECTIVES (GE-12): BASIC ECONOMETRICS

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Basic Econometrics (GE12)	4	3	0	1	Class 12	Knowledge of Inferential and descriptive Statistics

Learning Objectives

The course intends to explain to the student:

- (i) the classical linear regression model, OLS, its assumptions, testing and functional forms
- (ii) the k-variable linear regression model, testing coefficients and ANOVA, and Restricted Least Squares
- (iii) treatment of regressions involving qualitative regressors
- (iv) the implications, detection and remedies in case of violation of classical assumptions

Learning outcomes

By studying this course, students will be able to:

- Explain Key econometric concepts.
- Formulate simple econometric models
- Interpret the regression results obtained from software packages.
- Identify the errors in regression models and rectify the same.
- Analyse the suitability of the data for solving the problem at hand

SYLLABUS OF GE-12

UNIT - I: The Classical Linear Regression Model (12 hours)

Types of Data: Time Series, Cross Section and Panel Data. Concept of Population Regression Function and Sample Regression Function, Assumptions of the model, Derivation of Coefficients of Regression in a two-variable model, Estimation of the SRF using OLS, Analysis of variance and R squared.

Expectation and standard errors of the regression coefficients and the error term. Gauss Markov Theorem. Interval estimation and tests on population regression coefficients, variance of population disturbance term and forecasts. Testing the significance of the model as a whole. Testing the normality assumption.

Extensions of the Two Variable Linear Regression Model: Regressions through the origin, Scaling of Variables and Regression on Standardized Variables. Functional forms of Linear Regression Models: The double log, semi-log, reciprocal, log- reciprocal models with applications.

Unit 2: Multiple Regression Model (15 hours)

Coefficients of regression in a multi variable model and their properties. Interval estimation, tests on population regression coefficients and model significance. Correlations, Goodness of fit and the Adjusted R square. Hypothesis testing for significance of the contribution of a variable, structural stability, restricted least squares.

Unit 3: Dummy Variable Regression Models (6 hours)

Intercept, Slope Dummy variables. Interaction between qualitative variables. Interaction between quantitative and qualitative variables. Use of dummy variables in testing for structural change and for seasonal indices.

Unit 4: Relaxing the Assumptions (12 hours)

Introduction to multicollinearity, heteroscedasticity, autocorrelation and specification errors. The nature of the problem, its detection and corrective measures.

Practical Component (30 hours) : Practicals to be based on an econometric software (e.g. Gretl/SPSS/Stata/Eviews/PSPP). The student is expected to implement using the software all the regressions and tests noted in the syllabus.

Essential/recommended readings

1. Gujarati, D. and Sangeetha, N. (2007) Basic Econometrics. Fourth Edition, Tata McGraw-Hill, New Delhi
2. Dougherty, Christopher. (2011). "[Introduction to Econometrics](#)," Oxford University Press,
3. Wooldridge, J. M. (2006). Introductory econometrics: A modern approach. Mason, OH: Thomson/South-Western.
4. Manual of the relevant software

Suggestive readings

1. Asteriou, D., & Hall, S.G. (2011). Applied econometrics. Palgrave Macmillan.
2. Brooks, Chris (2008). Introductory Econometrics for Finance (2nd edition). Cambridge University Press

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.