FG 202: FUNDAMENTALS OF ECONOMETRICS

Course Objective:

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers estimation and diagnostic testing of simple, multiple regression models, panel data models, and dummy variable regression with qualitative response regression models.

Learning Outcomes:

The course will help the student to

- Understanding of basic econometries and its assumptions and impact of violations of classical assumptions
- Interpretation of functional forms of regression model
- Understanding of Panel data regression models, stochastic regressors and the method of instrumental variables
- Understanding of models using dummy variable and Qualitative Response Regression Models.

Unit I **(2 weeks)**

Introduction to Econometrics and an overview of its applications; Simple Regression with Classical Assumptions; Least Square Estimation And BLUE, Properties of estimators, Multiple Regression Model and Hypothesis Testing Related to Parameters – Simple and Joint. Functional forms of regression models.

References:

Gujarati, N. Damodar. Basic Econometrics. New Delhi: McGraw Hill. [Chapter 1-9]

Gujarati, N. Damodar. Econometrics by Examples. New Delhi: McGraw Hill. [Chapter 1-3]

Unit II **(4 weeks)**

Violations of Classical Assumptions: multicollinearity, heteroscedasticity, autocorrelation and model specification errors, their identification, their impact on parameters; tests related to parameters and impact on the reliability and the validity of inferences in case of violations of Assumptions; methods to take care of violations of assumptions, goodness of fit.

References:

Gujarati, N. Damodar. Basic Econometrics. New Delhi: McGraw Hill. [Chapter 10-13]

Gujarati, N. Damodar. Econometrics by Examples. New Delhi: McGraw Hill. [Chapter 4-7]

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Unit III **(3 weeks)**

Panel data regression models - the importance of panel data, Pooled OLS regression of charity function, the fixed effects least squares dummy variable (LSDV) model, Limitations of the fixed effects LSDV model, the fixed effect within group (WG) estimator, the random effects model (REM) or error components model (ECM), fixed effects model vs. random effects model and properties of various estimators. Stochastic regressors and the method of instrumental variables- the problem of endogeneity, the problem with stochastic regressors, reasons for correlation between regressors and the error term and the method of instrumental variables (2SLS).

References:

Gujarati, N. Damodar. Basic Econometrics. New Delhi: McGraw Hill. [Chapter 16]

Gujarati, N. Damodar. Econometrics by Examples. New Delhi: McGraw Hill. [Chapter 17 and 19]

Unit IV **(3 weeks)**

Dummy variables: Intercept dummy variables, slope dummy variables, Interactive dummy variables, Use of Dummy Variables to model qualitative/Binary/Structural changes, Other Functional Forms, Qualitative Response Regression Models or Regression Models with Limited Dependent Variables - Use of Logit, and Probit Models

References:

Gujarati, N. Damodar. Basic Econometrics. New Delhi: McGraw Hill. [Chapter 9 and 15]

Gujarati, N. Damodar. Econometrics by Examples. New Delhi: McGraw Hill. [Chapter 3 and 8]

Recommendation Computer Package to be Used: Use of software like E Views, R and STATA solving real life problems and checking assumptions and taking care of assumptions violations and testing goodness of fit, Panel data regression models. And used in Logit, and Probit Models.

Text Books:

1. Christopher Dougherty. Introductory Econometrics. Oxford University Press.
2. Gujarati, N. Damodar. Basic Econometrics. New Delhi: McGraw Hill.
3. Gujarati, N. Damodar. Econometrics by Examples. New Delhi: McGraw Hill.

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Additional Readings:

1. Pindyck, Robert S. and Daniel L. Rubinfeld Econometric Models and Economic Forecasts. Singapore: McGraw Hill.
2. Ramanathan, Ramu (2002). Introductory Econometrics with Applications (5th ed.). Thomson South Western

Teaching Learning Process:

Class room lecture, Case study discussion, Numerical Problem solving, Class presentation on the assigned topic by students individually or in group, Workshop, Tutorials, Role play

Assessment Method:

Internal evaluation of 25% marks

a. Attendance 5% marks
b. Two internal evaluations by the teacher with 10% marks each out of which one must be a class test and other may be another test or home assignment or presentation. Faculty may take more than two assignments and (or) tests but total will be only 20% marks.

End term University Exam of 75% marks

Key Words:

Dummy variables, random effects model or error components model multicollinearity, heteroscedasticity, autocorrelation,