Rationale: Empirical work often requires estimation of parameters of equations which requires knowledge of econometrics. Detection of regime changes or structural breaks in the data will also be possible with the help of econometrics.

Prerequisite: Statistics

Course Objectives: The main objective of the course is to demonstrate how ordinary least square s (OLS) method is applied to estimate equation parameters. Students will also learn about the consequences of the violations of the OLS assumptions, the problems of the OLS estimation, and the remedial measures with the help of alternative estimation methods.

Intended Learning Outcomes: After successful completion of the course, students will be able to:

1. differentiate between statistical and deterministic models;
2. differentiate between sample and population regression functions;
3. state the properties of a good estimator;
4. apply dummy variable approach to identify structural breaks in the data; and
5. handle simultaneity problem with indirect least square method

Course Content:

1. **Review of Statistical Concepts:** Sampling distributions; Estimation and hypothesis testing; Normal Test; X^2 Test and F-Test; Interrelationship between various tests; Tests for a Single Parameter; Tests for a set of parameters.

2. **Introduction to Econometrics**: What is Econometrics? Deterministic and stochastic models; Reasons for including the disturbance term; Estimates and estimators; Interpreting a Regression Equation.

3. **The Classical Linear Regression Model**: Bivariate & multivariate Models – Assumptions; The OLS estimators; Derivation of OLS estimators in a linear regression model; Properties of OLS estimator; Unbiasedness, efficiency, linearity – the BLUE properties of the OLS estimators; Normality Assumption; Estimating population parameters of a regression Model; Tests of population parameters.

4. Violations of the Classical Assumptions: Heteroscedasticity – meaning, identification, detection, consequences and remedies; Autocorrelation – meaning, identification, detection, consequences and remedies; Multicollinearity – meaning, identification, detection, consequences and remedies.

5. Estimation with Dummy Variables: Dummy dependent variable, dummy independent variables.

6. Distributed Lag Models

7. Properties of a Good Model

8. Introduction to Simultaneous Equation Models

9. Distributed Lag Models

K. Introduction to Simultaneous Equations Model

Basic Text

Gujarati, D. N. (2002). *Basic Econometrics* (4th ed.). McGraw Hill.

Books Recommended

1.   Computer program: SPSS, E-views.
2.   Johnston, J., & Dinardo, J. (1997). *Econometric Methods* (4th ed.). McGraw Hill.
3.   Kennedy, P. (2013). *A Guide to Econometrics*. Malden (Mass.): Blackwell Publishing.
4.   Maddala, G. S. (2001). *Introduction to Econometrics* (3rd ed.). Wiley.
5.   Wooldridge, J. M. (2016). *Introductory Econometrics: A Modern Approach* (6th ed.). Cengage Learning.