

Course Code: 0311-315(Stat-315) Course Title: Econometrics-I
Marks:100 Credits: 03 Number of Class: 39-42

Rationale:

This course provides the methodology and statistical techniques to test empirically the validity of economic hypotheses and to construct models to explain the evolution of the economic environment.

Objectives:

The main objective is to:

- Introduce regression analysis to students so that they are able to understand its applications in different fields in economics.
- Know the nature, scope and sources of econometric data.
- Know the assumption of classical linear regression model
- Understand the econometric modeling and model selection.

Learning Outcomes

After the end of the course, students will be able to:

CLO1	Specify assumptions, formulate and estimate appropriate models, interpret the results and test their statistical significance.
CLO2	Compare and validate different kinds of econometric model.
CLO3	Apply the econometrics techniques learnt during the course and present their results.
CLO4	Evaluate the structural equation models with different types of econometric and time series data.

Mapping between PLOs and CLOs of Statistics program

PLOs CLOs	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8
CLO1	3	3			3	3	3	1
CLO2	3		1		3			
CLO3	3		3	3	2	3	2	1
CLO4	3	2	2	1		2		1

Course Content, Teaching and Assessment Strategy

CLOs	Course Content	Teaching Strategy	Assessment Strategy	No. of Lec.
CLO1	Concept: Meaning, economics and econometrics, types of Econometrics, nature, scope and sources of econometric data. Multicollinearity: Concept of multicollinearity, estimation in presence of multicollinearity, theoretical and different consequences of multicollinearity, Consequences of Micronumerosity, detection of multicollinearity, remedial measures of multicollinearity, Ridge Regression.	Interactive Class, Open Discussion, Participatory Q/A Session, Online resources and Practical	Assignments, Class Tests, Presentation, Attendance and Final Examination.	4
CLO2	Heteroscedasticity: Meaning of heteroscedasticity, Ordinary Least Square(OLS) and Generalized Least Square (GLS) estimation in presence of heteroscedasticity, consequences of using ordinary least squares in presence of heteroscedasticity, detection of heteroscedasticity by both informal and formal methods, Graphical method, Park, Glejser, Spearman's rank correlation, Goldfield-Quandt, and Breusch-Pagan-Godfrey test of heteroscedasticity, Whites general heteroscedasticity test, remedial measures of heteroscedasticity.			6
CLO3	Autocorrelation: Concept of autocorrelation, Specification bias, Cobweb phenomenon, Ordinary Least Squares estimators and best linear unbiased estimators, estimation in presence of autocorrelation, consequences of using ordinary least			6

	squares in presence of autocorrelation, detection of autocorrelation by graphical methods, run test, Durbin-Watson D-test, H-test asymptotic autocorrelation, remedial measures of autocorrelation for both known and unknown ρ , Cochrane-Orcutt Iterative, Durbin's two step and EGLS methods of estimating ρ , OLS versus FGLS and HAC, concept of autoregressive conditional heteroscedasticity (ARCH) model, generalized ARCH (GARCH) model.			
CLO4	Econometric Modeling and Model Selection: Average economic regression, methodology and specification errors, types of specification error, Detecting the presence of unnecessary variables, nature, consequences and remedies of specification errors, test of specification error, errors of measurement in dependent and explanatory variables, Monte-Carlo experiment of specification error, Different model selection criteria, Recursive Least squares: Chow prediction failure test.			8

Mapping of Course Learning Outcomes (CLOs) with the Teaching – Learning & Assessment Strategy

CLOs	Teaching-Learning Strategy	Assessment Strategy
CLO1	Lecture	Quiz and presentation
CLO2	DIY activities	Assignment and Presentation
CLO3	Discussion and slide show	Practice by doing exercise, Summative (Midterm)
CLO4	Audio Visual Lecturing	Summative Measure (Final Exam.)

Text Book

1. Gujarati,D. (2019): *Basic Econometrics* 6thedition, McGraw-Hill, New York.

Reference Books

2. Greene, W.H. (2017): *Econometric Analysis*,8th Ed, Pearson Education
3. Desai, M. (1976): *Applied Econometrics*, Oxford Publication.
4. Kleim& Miller: *An Introduction to Econometrics*.