Semester IV
B.A. (Honours) Economics
C 10: INTRODUCTORY ECONOMETRICS (6 Credits)
Full marks: 100 (Mid Term-20 + End Term-80)

Course Description

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple and multiple regression models. The course also covers the consequences of and tests for misspecification of regression models.

Units		No of Lecture Hours	No of Tutorial Hours	Marks
1.	**Nature and Scope of Econometrics and Basic Statistical Pre-requisites** Nature and Scope of Econometrics: What is Econometrics?; Economic and Econometric Models; The Aims and Methodology of Econometrics. Statistical Concepts: Population vs Sample; Statistic and parameters; Estimate and estimators; estimation of parameters – point estimation vs interval estimation; properties of estimators. Probability Distributions: The Normal distribution; Chi-squared, t- and F-distributions. Testing of hypotheses: defining statistical hypotheses; distributions of test statistics; testing hypotheses related to population parameters; Type I and Type II errors; power of a test; tests for comparing parameters from two samples.	15	3	10
2	**Simple Linear Regression Model:**Two variable case;Regression vs Correlation; Linearity vs Non-linearity; Stochastic specification: The significance of the error term; Estimation: The Principle of ordinary least squares;Assumptions under CLRM; BLUE Properties of estimators: The Gauss Markov theorem; goodness of fit – R-squared; tests of hypotheses; scaling and units of measurement; confidence intervals; forecasting. k variable linear regression model: Estimation of parameters; Qualitative (dummy) independent variables – Dummy variable trap.	25	3	25
3	**Violations of Classical Assumptions: Consequences, Detection and Remedies**Heteroscedasticity: Problem and consequences; tests, detection and alternative methods of estimation. Autocorrelation: Sources, consequences, tests of autocorrelation, remedial measures.	15	3	15
4	**Multicollinearity:**Nature of the problem; Sources, Perfect multicollinearity vs Imperfect multicollinearity, its consequences; Detection and remedies of multicollinearity;	10	3	15
5	**Specification Analysis** Omission of relevant variables; inclusion of irrelevant variables; tests of specification errors; Errors in variables.	10	3	15

		75	15	80
Total		**75**	**15**	**80**

Reading List:

1. Jay L. Devore, *Probability and Statistics for Engineers,* Cengage Learning, 2010.
2. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
3. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications,* Prentice Hall, 2011.
4. D. N. Gujarati and D.C. Porter, *Essentials of Econometrics,* McGraw Hill, 4th edition, International Edition, 2009.
5. Christopher Dougherty, *Introduction to Econometrics*, Oxford University Press, 3rd edition, Indian edition, 2007.
6. Jan Kmenta, *Elements of Econometrics*, Indian Reprint, Khosla Publishing House, 2nd edition, 2008.
7. Maddala, G.S.: *Introduction to Econometrics*, Wiley India, 3rd Edition 2010.