Program: B.Com Economics				Semester: IV	
Course: R for Economics II				Course Code:	
Teaching Scheme				Evaluation Scheme	
Lecture (Hours per week)	**Practical (Hours per week)**	**Tutorial (Hours per week)**	**Credit**	**Continuous Assessment (CA) (Marks -)**	**Semester End Examinations (SEE) (Marks - in Question Paper)**
2 LABS	**-**	**-**	**2**		

Learning Objectives:

1. Understand and apply R programming for data manipulation, visualization, and econometric modeling
2. Apply various econometric techniques to derive meaningful insights
3. Gain proficiency in statistical inference, hypothesis testing, and interpreting

Course Outcomes:

After completion of the course, learners would be able to:

CO1: Apply data manipulation and analysis on economic data

CO2: Employ usage of regression models and analysis techniques on raw economic data to draw relevant conclusions

CO3: Apply difference-in-difference methods to analyze the impact of policy changes on economic outcomes and present analysis

Pedagogy:

Hands-on practical, Computer laboratory-based learning

Outline of Syllabus: (per session plan)

Module	Description	No of Hours
1	Data Manipulation and Visualization	10
2	Introduction to Econometric Modelling	10
3	Statistical Inference	10
Total		**30**
Practicals		**-**

Unit	Topic	No. of Hours
Module 1	**Data Manipulation and Visualization** Matrix Operations Matrix introduction and basic matrix operations, Matrix inversion and determinant calculation, Eigenvectors and eigenvalues Cleaning the Data Tidying the data, Sample selection, Modifying the data and Exploratory Data Analysis Descriptive Statistics and Charts Creating tables, Custom tables, Scatter plot, Bar chart and boxplot, Histogram and density charts	
Module 2	**Introduction to Econometric Modelling** Linear Regression Simple linear regression, Multiple linear regression, Partially linear models, Factors, interactions, and weights, Systems of linear equations Generalized Linear Models Logistic regression, Poisson regression Panel Data Analysis Panel Data, Panel Data with Two Periods, Fixed effects and random effects models, Panel data regression	
Module 3	**Statistical Inference** Hypothesis Testing with R TTest (One sample, two sample, and paired test), ZTest (One sample and two sample), Confidence intervals Difference-in-Differences Inspecting the common trends, Estimating the Difference-in-Differences model	

Reference Books:

[1] Christoph Hanck, Martin Arnold, Alexander Gerber, and Martin Schmelzer, "Introduction to Econometrics with R", 2024

[2] Christian Kleiber, Achim Zeileis, "Applied Econometrics with R", Springer, 2008

[3] Hands H. Sievertsen, "Applied Economics with R", University of Bristol, 2022

[4] Vikram Dayal, "Quantitative Economics with R", Springer, 2020

[5] Kieran Marray, "Introduction to R for Econometrics"

[6] Matthew Brown, "R for Applied Economics: A Beginner's Guide", 2023