Statistical Data Analysis using R- Programming Lab

Course Code	21BA2LI	**Year**	I	**Semester**	II
Course Category	Core	**Branch**	Business Administration	**Course Type**	Practical(Lab)
Credits	2	**L-T-P**	0-0-4	**Prerequisites**	Basic knowledge in Computer and Statistics
Continuous Internal Evaluation	25	**Semester End Evaluation**	50	**Total Marks**	75

Course Outcomes		
Upon successful completion of the course, the student will be able to:		
CO1	Apply R programming and understand different data sets	**L3**
CO2	Apply R Programme and construct graphs and charts	**L3**
CO3	Analyze the data and know descriptive statistics by using R Programming	**L4**
CO4	Apply R Programming to test the hypothesis of the study	**L3**
CO5	Predict the data and take decisions through R programming.	**L6**

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2-Medium, 1-Low)													
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PSO1**	**PSO2**
CO1	3	-	3	3	3	-	-	-	-	-	-	3	-
CO2	3	-	3	3	3	-	-	-	-	-	-	3	-
CO3	3	3	3	3	3	-	-	-	-	-	-	3	-
CO4	3	3	3	3	3	-	-	-	-	-	-	3	-
CO5	3	3	3	3	3	-	-	-	-	-	-	3	-

SYLLABUS		
Unit No.	**Contents**	**Mapped CO**
I	**Introduction to R programming**: What is R? - Installing R and R Studio – R Studio Overview - Working in the Console - Arithmetic Operators - Logical Operations - Using Functions - Getting Help in R and Quitting R Studio- Installing and loading packages. **Data structures, variables, and data types in R**: Creating Variables - Numeric, Character and Logical Data - Vectors - Data Frames - Factors -Sorting Numeric, Character, and Factor Vectors - Special Values.	**CO1**
II	**Data Visualization using R**: Scatter Plots - Box Plots - Scatter Plots and Box-and-Whisker Plots Together -Customize plot axes, labels, add legends, and add colours.	**CO1 CO2**
III	**Descriptive statistics in R**: Measures of central tendency - Measures of variability - Skewness and kurtosis - Summary functions, describe functions, and descriptive statistics by group.	**CO1 CO3**
IV	**Testing of Hypothesis using R:** T-test, Paired Test, correlation, Chi Square test, Analysis of Variance and Correlation	**CO1 CO4**

V	**Predictive Analytics:** linear Regression model, **Non-Linear Least Square,** multiple regression analysis, Logistic Regression, Panel Regression Analysis, ARCH Model, GARCH models, VIF model.	**CO1 CO5**

Learning Resources
Text Books:
1. Crawley, M. J. (2006), "Statistics - An introduction using R", John Wiley, London 32. 2. Purohit, S.G.; Gore, S.D. and Deshmukh, S.R. (2015), "Statistics using R", second edition. Narosa Publishing House, New Delhi. 3. Shahababa B. (2011) , "Biostatistics with R", Springer, New York. 4. Braun & Murdoch (2007), "A first course in statistical programming with R", Cambridge University Press, New Delhi.
e- Resources & other digital material:
1. https://cran.r-project.org/doc/contrib/Owen-TheRGuide.pdf 2. https://sphweb.bumc.bu.edu/otlt/MPH-Modules/BS/R/R-Manual/R-Manual2.html 3. https://smac-group.github.io/ds/ 4. https://www.geeksforgeeks.org/predictive-analysis-in-r-programming/#:~:text=Predictive%20analysis%20in%20R%20Language,are%20used%20in%20predictive%20analysis