



Subject Code: 01CT0106

Subject Name: Introduction to R and R Studio

B. Tech. Year – I (Semester II)

Objective:

R Programming will help graduates to be competent in Data Manipulation with R programming, Data visualization, advance analytics topics like regressions, data mining using RStudio. You will work on real life projects and assignments to master data analytics.

Credits Earned: 01 Credits

Course Outcomes: After completion of this course, student will be able to:

1. Learn Data Science concepts of R and functioning of R-Calculator
2. Understand various functions like Stack, Merge and Strsplit
3. Learn to create Pie charts, plots and vectors
4. Assign value to variables, generate repeat and factor levels
5. Performing sorting, analyze variance and the cluster
6. ODBC Tables reading, linear and logistic regression
7. Understand database connectivity
8. Understand the applications of machine learning and various prediction models using R.

Pre-requisite of course: NA

Teaching and Examination Scheme:

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial / Practical Marks		Total Marks
				E	I		V	T	
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term Work	
0	0	2	1	00	00	00	25	25	50



Contents:

Unit	Topics	Contact Hours
1	Introduction to R and R Studio Evolution of R, Features of R, R environment set up, installation of R Studio, Introduction to R Studio	2
2	Basics of R language Basic Syntax of R, R command Prompt, R script file, comments, R-data types, vectors, Lists, Matrices, Arrays, Factors, Data Frames, Variables	2
3	Operators in R Arithmetic Operators, Logical Operators, Relational Operators, Assignment Operators, Miscellaneous Operators	2
4	R-Decision and Control Loop Statements if condition, if else condition, switch condition, repeat loop, while loop, for loop, break statement, Next statement	2
5	Flavors in R Functions in R, R-Strings, String Manipulations, R-vectors, R-Lists, R-Matrices, R-arrays, R-factors, R-data frames, R-Packages, R-Data Reshaping, R-Excel Files	4
6	Data Representation using R R-Pie Chart, R-Bar Chart, R-Histograms R-Line Graphs, R-Scatterplots	3
7	Statistical Analysis using R Mean, median and Mode, Linear Regression, Multiple Regression, Logistic Regression, Normal Distribution, Binomial Distribution, Poisson Distribution, Analysis of Covariance, Time Series Analysis, R-Decision Tree, R-Random Forest	9
Total Hours		24

Suggested Text books / Reference books:

1. R Cookbook, Paul Teetor, Pub: Penram International.
2. The Art of R Programming: A Tour of Statistical Software Design, Norman Matloff
3. R for Data Science, Garrett Golemund and Hadley Wickham
4. Hands-On Programming with R: Write Your Own Functions and Simulations, Garrett Golemund



Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	15%	20%	20%	15%	20%

Supplementary Resources:

1. <https://www.r-project.org/about.html>
2. <https://www.tutorialspoint.com/r/index.htm>
3. <https://www.computerworld.com/article/2497143/business-intelligence/business-intelligence-beginner-s-guide-to-r-introduction.html>
4. <https://www.udemy.com/r-basics/learn/v4/overview>
5. <https://intellipaat.com/r-programming-certification-training/#course-content>