Basics of R programming (Offered to other UG Programs)

COURSE CODE   : U24CS2E01

COURSE CREDIT: 02

1 credit - 15 lectures
1 lecture is 60 minutes
Course Objectives:
- To Understand the data reading and manipulation using R, for data analysis.
- Knowledge on various control structures and design of user-defined functions, load, install and build various packages of R.

Course Outcomes:
- The ability to develop an R script and execute it.
- Visualize and summarize the data, design application with database connectivity for data analysis.

Unit	Syllabus	No. of lectures
1.	**Introduction:** R interpreter, Introduction to major R data structures like vectors, matrices, arrays, list and data frames, Control Structures, vectorized if and multiple selection, functions. **Installing, loading and using packages:** Read/write data from/in files, extracting data from web-sites, Clean data, Transform data by sorting, adding/removing new/existing columns, centering, scaling and normalizing the data values, converting types of values, using string in-built functions.	15
2.	**Statistical analysis of data:** for summarizing and understanding data, Visualizing data using scatter plot, line plot, bar chart, histogram and box plot.	15

Reference:
1. Cotton, R., Learning R: a step by step function guide to data analysis. 1st edition. O'reilly Media Inc,

Additional References:
1.   Gardener, M.(2017). Beginning R: The statistical programming language, WILEY Lawrence, M., &Verzani, J. (2016).

2. Programming Graphical User Interfaces in R. CRC press. (ebook)