DEPARTMENT OF COMPUTER SCIENCE				*CLASS: II B.Sc. Computer Science*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
III	Add-on course		Statistics with R Programming	2	2	50	50	100

Nature of Course				
Knowledge and skill	✓		Employability oriented	
Skill oriented			Entrepreneurship oriented	

COURSE OBJECTIVES :

- To impart computer programming knowledge using Rprogramming language with objectoriented programming technique.
- To teach how to apply the R programming from a statistical perspective.

Units	**TOPICS**	**Total Hours: 30**
Unit -1	Introduction-How to run R- R Sessions- and Functions- Basic Math- Variables- Data Types- Vectors- Conclusion- Advanced Data Structures- Data Frames- Lists- Matrices- Arrays- Classes.	6 hrs
Unit-2	R Programming Structures- Control Statements- Loops- – Looping Over Nonvector Sets-- If-Else- Arithmetic- and Boolean Operators and values- Default Values for Argument- Return Values- Deciding Whether to explicitly call return- Returning Complex Objects- Functions are Objective- Recursion- A Quicksort Implementation-Extended Extended Example: A Binary Search Tree.	6 hrs
Unit-3	Doing Math and Simulation in R- Math Function- Extended Example Calculating Probability- Cumulative Sums and Products-Minima and Maxima- Calculus- Functions Fir Statistical Distribution- Sorting	6 hrs
Unit-4	Linear Algebra Operation on Vectors and Matrices- Extended Example: Vector cross Product- Extended Example: Finding Stationary Distribution of Markov Chains- Set Operation- Input /out put- Accessing the Keyboard and Monitor- Reading and writer File	6 hrs
Unit-5	Graphics- Creating Graphs- The Workhorse of R Base Graphics- the plot() Function – Customizing Graphs- Saving Graphs to Files.	6 hrs

TEXT BOOKS:

1) The Art of R Programming- A K Verma- Cengage Learning.
2) R for Everyone- Lander- Pearson
3) The Art of R Programming- Norman Matloff- No starch Press.

REFERENCE BOOKS:

1) R Cookbook- Paul Teetor- Oreilly.
2) R in Action- Rob Kabacoff- Manning

COURSE OUTCOMES:

On the completion of the course the students will be able to

COs	COURSE OUTCOME	Knowledge Level (basis of Bloom's Taxonomy)
CO-1	Understand the logic and basic functions and sessions of R programming	Up to K2
CO-2	Develop programs to demonstrate the creation of complex objects, Recursion and binary search algorithm.	Up to K3
CO-3	Construct programs to process specific application programs using functions of R programming using statistical distribution	Up to K3
CO-4	Compose programs to generate vector cross products and distribution of Markov chains.	Up to K4
CO-5	Develop programs to generate graphs and customising graphs.	Up to K3

MAPPING OF COs WITH PSOs:

Course Outcomes	PSO 1 (Knowledge Base)	PSO 2 (Problem Analysis & Investigation)	PSO 3 (Communication Skills & Design)	PSO 4 (Individual and Team Work)	PSO 5 (Professionalism Ethics and equity)	PSO 6 (Life Long Learning)
CO-1	2	2	2	1	1	1
CO-2	2	2	2	1	1	2
CO-3	2	2	2	1	1	2
CO-4	2	2	2	1	1	2
CO-5	2	1	2	3	2	1

3- Advanced Application 2- Intermediate 1- Introductory

Course Designer(s):

1.Prof.R.Umasankari

2.Dr.T.Sree Ram kumr