VASAVI COLLEGE OF ENGINEERING
(Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

Department of Information Technology
INTRODUCTION TO STATISTICAL PROGRAMMING
(Open Elective-IV)

SYLLABUS OF B.E V- SEMESTER
(for other Branches)

L : T : P (Hrs./week): 3:0:0	SEE Marks :60	Course Code :**OE520IT**
Credits :3	CIE Marks: 40	Duration of SEE :3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES *On completion of the course, students will be able to*	
The course will enable the students to apply the R programming language in the analysis of Statistical data.	1	Write simple programs in R language to manipulate and visualize the data.
	2	Write complex program using different constructs of R language to solve simple problems.
	3	Use R programming language in the simulation of different types of random variables.
	4	Write programs using R language in the analysis and computation of different matrix operations.
	5	Use R programming language in the simulating multivariate random numbers, Markov chain, and Monte carlo integration

Unit I: Introduction to R Language
Basic features of R, Built-in functions, logical vectors and relational operators, Data input and output, programming statistical graphs- High-level plots, low level graphic functions.

Unit II: Programming with R
Flow control, Managing complexity through functions, Miscellaneous programming tips, Debugging and maintenance, Efficient programming.

Unit III: Simulation
Montecarlo simulation, Generation of pseudo random numbers, Simulation of other random variables-Bernouli, Binomial, Poisson, Exponential and Normal random variables.

Unit IV: Computational Linear Algebra
Vectors and matrices in R, Matrix multiplication and inversion, Eigen values and Eigen vectors

Unit V: Advances Simulation methods
Multivariate random number generation, Markov Chain Simulation, Monte Carlo Integration, other Advanced Simulation methods

Learning Resources:
1. A first Course in Statistical Programming with R, W. John Braun, Duncan J. Murdoch, Cambridge University Press, 2007.
2. https://cran.r-project.org/manuals.htm