Traditional New Approach For R Language

Dr. S. Thulasee Krishna *Ph.D.*
(*Professor, Department of CSE*)
Chadalawada Ramanamma Engineering College (Autonomous),
Chittoor, (AP), INDIA

Dr. S. Sreekanth *Ph.D.*
(*Professor, Department of CSE*)
SITAMS, Chittoor, (AP), INDIA

Dr. H. Shaheen *Ph.D.*
(*Professor, Department of CSE*)
St. Peters Engineering College, Hyderabad, (TL), INDIA

Mrs. G. Gowthami *B.Sc.*
(*Technical Surveyor, Department of Computer Section*)
Sai Consultants Survey Engineering Pvt. Ltd.
Kadapa, (AP), INDIA

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PREFACE

This book entitled "**Traditional New Approach for R Programming**" has been written in accordance with the syllabus prescribed by the 'JNTUA R2017' for the Second Year, B.Tech students of Engineering colleges affiliated to JNTUH.

This book comprises of five chapters which covers Jawaharlal Nehru Technological University ,Anantapur syllabus. The main emphasis of the book is to explain in a simple manner, the logical concepts that will enable even the beginners to understand them without difficulty.

Systematic care has been taken to support the topics with necessary illustrations and relevant diagrams to make learning much easier. It is believed that this book shall serve all the requirements of Second Year Engineering students.

It covers all the important questions that have appeared in the previous years of Jawaharlal Nehru Technological University ,Anantapur Examinations.

Your suggestions are most welcome.

✍ *Author(s)*

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✍ *Author(s)*

STATISTICS & R PROGRAMMING

Objectives: The course should enable the students to :

- Use R for statistical programming, computation, graphics, and modeling,
- Write functions and use R in an efficient way,
- To determine the quality control and its real life applications.

Outcomes: At the end of this course, students will be able to:

- Learn fundamentals of R Programming.
- Access online resources for R and import new function packages into the R workspace
- Import, review, manipulate and summarize data-sets in R
- Explore data-sets to create testable hypotheses and identify appropriate statistical tests

UNIT-I

Introduction to R Programming: Introduction, How to run R, R Sessions and Functions, Basic Math, Variables, Data Types, Vectors, Advanced Data Structures, Data Frames, Lists, Matrices, Arrays, Classes.

UNIT-II

R Programming Structures and Loops : R Programming Structures, Control Statements, Loops, - Looping Over Non vector 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, No Pointers in R, Recursion, A Quick sort Implementation.

UNIT-III

Math Simulation in R Programming: 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, Linear Algebra Operation on Vectors and Matrices, Extended Example: Vector cross Product- Extended Example: Finding Stationary Distribution of Markov Chains, Set Operation, Input /output, Accessing the Keyboard and Monitor, Reading and writer Files, R-strings.

UNIT-IV

Graphics : Graphics, Creating Graphs, The Workhorse of R Base Graphics, the plot() Function – Customizing Graphs, Saving Graphs to Files. R - CSV Files, Excel File, Binary Files, XML Files, Databases, Pie Charts, Bar Charts, Box plots, Histograms, Line Graphs, Scatterplots, Mean, Median & Mode, Linear Regression, Multiple Regression, Logistic Regression.

UNIT-V

Probability Functions Through R Programming: Probability Distributions, Normal Distribution- Binomial Distribution- Poisson Distributions Other Distribution, Basic Statistics, Correlation and Covariance, T-Tests,-ANOVA.

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