

S. P. Mandali's
Ramnarain Ruia Autonomous College
(Affiliated to University of Mumbai)



Syllabus for

Program: F.Y.B.Sc.

Program Code: RUSSTA

(As per the guidelines of National Education Policy 2020-
Academic year 2024-25)

(Choice based Credit System)

Course Code- Vocational and Skill Enhancement Course:
RUSVSCSTA.E111
Course Title: Introduction to R Programming
Academic year 2024-25

COURSE OUTCOMES:

COURSE OUTCOME	DESCRIPTION
	A student completing this course will be able to:
CO 1	Use the basic mathematical operators in R for different data types.
CO 2	Apply different data management techniques and data visualisation

DETAILED SYLLABUS

Course Code	Unit	Course/ Unit Title	No. of Hours
RUSVSCSTA.E111	Unit I	Fundamentals of R: <ul style="list-style-type: none"> • Introduction to R, features of R, installation of R, Starting and ending R session, getting help in R, Value assigning to variables, • Basic Operations: +, -, *, ÷, ^, sqrt, Numerical functions: log 10, log, sort, max, unique, range, length, var, prod, sum, summary, dim, sort, five num etc. • Data Types: Vector, list, matrices, array and data frame, Variable Type: logical, numeric, integer, complex, character and factor Data • Processing: Data import and export, setting working directory, checking structure of Data: Str(), Class(), Changing type of variable (for eg. as. factor, as numeric) • Manipulations:- Selecting random N rows, removing, duplicate row(s), dropping a variable(s), Renaming variable(s), sub setting data, creating a new variable(s), appending of row(s) and column(s) • Data Visualization : Simple bar diagram, subdivided bar diagram, multiple bar diagram pie diagram, Box plot for one and more variables, histogram 	15 hours

Work Load of Practical

Course	PRACTICALS	Credits	Hours / Week
RUSVSCSTAP.E111	Practical based on RUSVSCSTA.E111	1	2

Distribution of Practical on VSC (1 Credit)

1. Basic Operations in R
2. Data type list
3. Data type Matrix
4. Data type Dataframe
5. Data Manipulations
6. Histogram
7. Frequency distribution
8. Simple Bar Diagrams
9. Multiple Bar Diagrams
10. Sub-divided Bar Diagrams)
11. Box Plot
12. Pie Diagram

References:

References:

1. Statistical methods using R software by Vishwas Pawgi and Saroj Ranade by Nirali Prakashan
2. Statistics using R by Sudha G purohit, Sharad D Gore, Shailaja R Deshmuskh, Narosa Publishing House Delhi

Modality of Assessment: Vocational and Skill Enhancement Course

(1 Credit Theory Course)

A) Internal Assessment- 10 Marks

Sr. No	Evaluation type	Marks
1	Class Test/ Project / Assignment / Open book test	10
	TOTAL	10

B) External Examination (Semester End)- 15 Marks

Semester End Theory Examination:

1. Duration – The duration for these examinations shall be of **30 min.**
2. Theory question paper pattern:

Paper Pattern:



Question	Options	Marks	Questions Based on
1	3 out of 5	15	Unit I
	TOTAL	15	

C) Practical Examination Pattern:

Practical Examination **50 Marks.**

Journal and attendance **5 Marks**

At the end of the semester, examination of **2 hours** duration and **50 marks** shall be held for the **course**.

1. Practical paper will consist of **two questions**.
2. Every **question** will consist of **four sub-questions** based on the Unit
3. Learners to attempt **one question**.

PRACTICAL JOURNAL (5 marks)

The students are required to present a duly certified journal for appearing at the practical examination, failing which they will **not be allowed to appear for the examination. The journals will be certified if the student attends 75% practicals.**

In case of loss of Journal and/or Report, a Lost Certificate should be obtained from Head/ Co-ordinator / In charge of the department; failing which the student will not be allowed to appear for the practical examination.
