

**CBCS Syllabus as per NEP 2020 for F.Y.B.Sc. Statistics
(2023 Pattern)**

Name of the Programme	: B.Sc. (Computer Science)
Programme Code	: USCS
Class	: F.Y.B.Sc. (Computer Science)
Semester	: I
Course Type	: SEC Practical
Course Code	: COS-126-SEC-ST
Course Title	: Introduction to MS Excel and R-Software
No. of Credits	: 2
No. of Teaching Hours	: 60 (12+48)

Course Objectives:

1. To understand the basics of Microsoft Excel and its various applications.
2. To navigate the Excel interface proficiently and grasp the concepts of workbooks, worksheets, and cells.
3. To learn how to enter and edit data effectively in Excel.
4. To gain proficiency in using formulas and functions for calculations and data manipulation.
5. To understand the history, features, and importance of R software.
6. To identify and understand keywords in R.
7. To learn how to create vectors using functions.

Course Outcomes:**Student will be able to**

- CO1.** demonstrate the basic mechanics and navigation of an Excel.
- CO2.** basic techniques of MS-Excel.
- CO3.** basic concept of R-Software.
- CO4.** statistical analysis with simple tools.
- CO5.** diagrammatic and graphical representation techniques.
- CO6.** learn Statistics using R software.
- CO7.** Data transformation, data import/export, combination techniques.

Topics and Learning Points**UNIT 1 - Fundamentals of MS-Excel**

Introduction to Excel:

Overview of Microsoft Excel and its uses, Navigating the Excel interface, understanding workbooks, worksheets, and cells, Entering and editing data in Excel.

1. Basic Formulas and Functions:

Understanding formulas and functions in Excel, using mathematical operators and basic functions, Performing calculations and using cell references, Using built-in functions for common tasks

2. Formatting and Cell Styling:

Formatting cells, rows, and columns, applying number formats and text formatting, using cell styles and themes, Applying conditional formatting for data visualization.

3. Working with Worksheets and Workbooks:

Managing multiple worksheets and workbooks, Renaming, inserting, and deleting worksheets, organizing data with freeze panes and split views, Linking data between worksheets and workbooks.

4. Data Management and Analysis:

Sorting and filtering data, Using data validation for data integrity, creating and managing tables, Introduction to data analysis tools in Excel.

5. Data Visualization with Charts

Creating basic charts (bar, line, pie), Customizing chart elements (titles, axes, legends) Formatting and enhancing charts, Creating combination charts and sparklines

UNIT 2 - Fundamentals of R

1. Introduction to R, History of R, features of R, Need and importance of R software, starting and ending R session, getting help in R, R commands and case sensitivity.

2. Data types: Character, Numeric

a) Character Set: Alphabets, Numeric digits, Special Characters

b) Keywords

3. Vectors and vector arithmetic

a) Creation of vectors using R functions.

b) Arithmetic operations on vectors using operators +, -, *, /, ^.

c) Arithmetic expressions, Relational Operators, Logical Operators

List of Practicals:

Sr. No.	Title of the Experiment
1	Introduction to MS- Excel
2	Representation of raw data in excel worksheets, Pivot data analysis and Computation of summary statistics using MS-Excel.
3	Diagrammatic representation using MS-Excel
4	Graphical representation using MS-Excel.
5	Combinatorial Techniques, Probability distribution and Simulation using MS-Excel
6	Introduction to Numerical Functions and Vector Access using R Software.
7	Managing Data Frames and Importing from Excel in R Software.
8	Combinatorial Techniques, Probability distribution and Simulation using R Software.
9	Measures of central tendency for both grouped and ungrouped data using R Software.
10	Measures of dispersion for both grouped and ungrouped data using R Software
11	Implementing Conditional Statements with if-else, loop in R Software
12	Applying Excel and R skills for analysing and interpreting case studies.

Note: Every practical is equivalent to four hours per batch per week

References:

1. M. L. Humphrey, Excel for Beginners
2. S. C. Gupta, V.K. Kapoor, Fundamental of Mathematical Statistics
3. William Fischer, Excel: Quickstart Guide for Beginner to Expert
4. Michkel Alexander, Dick Kusleika, John Walkenbeach, Microsoft Excel 2019 BIBLE The Comprehensive Tutorial Resource, Wiley Publication.
5. Frag Curtis (2013). Step by Step Microsoft Excel 2013, MS Press
6. Frye Curtis D. (2007). Step by step Microsoft Office Excel 2007, Microsoft Press
7. Salkind Neil J. and Frey Bruce B (2021). Statistics for people who (Think They) Hate Statistics, Using MS- Excel, Sage Publications.