Royal College of Arts Science and Commerce (Autonomous)

Affiliated to University of Mumbai

Program: F. Y. B. Com

Course: Mathematical & Statistical Techniques using EXCEL

Syllabus for Semester: I and II

Syllabus for Undergraduate Programme as per National Education Policy (NEP-2020) with effect from the academic year 2025-2026

Course/ Paper Title	**Mathematical & Statistical Techniques using EXCEL**
Course offered as	**VSC**
Course Code	**RUCVSC101**
Semester	**I**
No. of Credits	**2**
No. of lecture Hours/week	**4 (2 Practical)**

Sr No.	Course Learning Objectives:
CLO1	To introduce the concept of data analysis using spreadsheets
CLO2	To acquaint with use of functions and formulas on excel spreadsheet
CLO3	To impart the knowledge about Pivot tables and graphs

Course Outcome:

	On completing the course, the student will be able to:
CO1	prepare basic spreadsheet task like navigate, enter and edit data.
CO2	analyze data using Pivot Tables and graphs
CO3	perform basic operations using function.

Detailed Syllabus:

Module	Title with content	No. of lectures
I	**Excel Interface and Basic Functions:** Types of data, entering different types of data such as texts, numbers, dates, functions. Quick way to add data Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo. Moving data, contiguous and noncontiguous selections, Selecting with keyboard. Cut-Copy, Paste. Adding and moving columns or rows. Inserting columns and rows. Find and replace values. Spell check. Formatting cells, Numbers, Date, Times, Font, Colors, Borders, Fills.	15 P
	Mathematical Functions in EXCEL: Financial functions: Simple and Compound Interest (FV, PV, NPER, RATE), Loan Amortization schedules (PMT, PPMT, IPMT), Depreciation methods (SLN, DB, DDB) other functions like ROUND, ROUNDDOWN, ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, SUM, COUNT, AVERAGE.	
II	**Multiple Spreadsheets:** Adding, removing, hiding and renaming worksheets. Add headers/Footers to a Workbook. Page breaks, preview. Creating formulas, inserting functions, cell references, Absolute, Relative (within a worksheet, other worksheets and other workbooks).	15 P
	Data Analysis: Measures of Central Tendency and dispersion, Sorting, Subtotal. Pivot Tables- Building Pivot Tables, Pivot Table regions, Rearranging Pivot Table. The Graphical representation of data Column, Line, Pie and Bar charts.	

Practical topics:

1. Entering different types of data such as texts, numbers, dates, functions.
2. Auto complete, Autocorrect, Auto fill, Auto fit. Undo and Redo.
3. Moving data, contiguous and non contiguous selections, Selecting with keyboard. Cut-Copy, Paste.
4. Adding and moving columns or rows. Inserting columns and rows
5. Find and replace values. Spell check
6. Formatting cells, Numbers, Date, Times, Font, Colors, Borders, Fills
7. Adding, removing, hiding and renaming worksheets.
8. Add headers/Footers to a Workbook. Page breaks, preview.
9. Creating formulas, inserting functions.
10. Cell references, Absolute, Relative.
11. Financial functions: FV, PV, PMT, PPMT, IPMT, NPER, RATE, SLN, DB, DDB.
12. Mathematical and statistical functions. ROUND, ROUNDDOWN, ROUNDUP, CEILING, FLOOR, INT, MAX, MIN, MOD, SQRT, ABS, SUM, COUNT, AVERAGE
13. Sorting, Subtotal
14. Building Pivot Tables, Pivot Table regions, Rearranging Pivot Table.
15. Graphical representation of data.

Reference Book:

1. Wayne. L. Winston, Microsoft Excel 2010, Data Analysis and Business Modelling, E.E.E.

Course/ Paper Title	**Mathematical & Statistical Techniques using ADVANCED EXCEL**
Course offered as	**VSC**
Course Code	**RUCVSC201**
Semester	**II**
No. of Credits	**2**
No. of lecture Hours/week	**4 (2 Practical)**

Sr No.	Course Objectives:
CLO1	To acquaint with use of solver to solve financial mathematics problems
CLO2	To introduce concept of scenario and goal seek
CLO3	To acquaint with use of advanced functions and formulas on excel spreadsheet
CLO4	To introduce correlation and regression analysis using excel

Course Outcome:

	On completing the course, the student will be able to:
CO1	use solver for solving problems
CO2	use scenario and goal seek to solve mathematical problems
CO3	perform advanced operations using function.
CO4	perform correlation and regression analysis using excel

Detailed Syllabus:

Module	Title with content	No. of lectures
I	**Financial Mathematics:** Using predefined templates, Creating and using named ranges, Using Solver for optimization problems and Financial Mathematics problems, Using Goal seek to solve problems on Shares and Mutual Funds.	15 P
	Basic database functions: Database Functions LOOKUP, VLOOKUP, HLOOKUP, String functions: LEFT, RIGHT, MID, LEN, UPPER, LOWER, PROPER, TRIM, FIXED. Date functions: TODAY, NOW, DATE, TIME, DAY, MONTH, YEAR, WEEKDAY, DAYS360.	
II	**Correlation, Regression and statistical Functions:** Statistical Functions: COUNTA, COUNTBLANK, CORREL, LARGE, SMALL. Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF, scatterplot, fitting straight line to the data.	15 P
	Time series data analysis: Filter with customized condition. Using Scenarios, creating and managing a scenario. Moving average method, Least squares method and plotting time series and trend values.	

Practical topics:

1. Using predefined templates.
2. Creating and Linking Multiple Spreadsheets.
3. Using formulas and logical operators.
4. Creating and using named ranges.
5. Creating Formulas that use reference to cells in different worksheets.
6. Using Solver for solving problems in Financial Mathematics.
7. Database Functions LOOKUP, VLOOKUP, HLOOKUP.
8. Conditional Logic functions IF, Nested IF, COUNTIF, SUMIF, AVERAGEIF.
9. String functions LEFT, RIGHT, MID, LEN, UPPER, LOWER, PROPER, TRIM, FIXED.
10. Date functions TODAY, NOW, DATE, TIME, DAY, MONTH, YEAR, WEEKDAY, DAYS360.
11. Statistical Functions COUNTA, COUNTBLANK, LARGE, SMALL.
12. Using Scenarios, creating and managing a scenario.
13. Using Goal Seek to solve problems based on Financial Mathematics.
14. Solving problems on correlation, regression analysis.
15. Solving problems on time series analysis.

Reference Books:

1. Wayne. L. Winston, Microsoft Excel 2010, Data Analysis and Business Modelling, E.E.E.

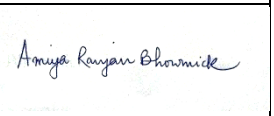
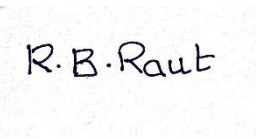
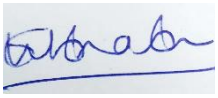
Royal College of Arts, Science and Commerce

(Autonomous)

Evaluation Pattern

a	Sem end practical examination	30 marks
b	VIVA	10 marks
c	Journal	10 marks
	Total	50 marks

Board of studies in Mathematics

	Category	Name and Designation	Affiliation	Signature
1	Chairperson (Head of Department)	Mrs Komal Pravin Wategaonkar, Assistant Professor.	University of Mumbai	
2	Full time teacher of the Department	Mrs Rugma Pramod Nair, Assistant Professor.	University of Mumbai	
3	Two subject experts fromoutside the Parent University nominated by the Academic Council.	Dr Ananthnarayan Hariharan, Associate Professor.	I.I.T., Bombay	
		Dr. Amiya Bhowmick, Assistant Professor.	ICT Mumbai	
4	One expert nominated by the Vice-Chancellor froma panel of six recommended by the College Principal.	Dr. Rajesh Raut Assistant Professor, R. D. National college.	University of Mumbai	
5	One expert nominated by the college Principal	Mr. Subhash Krishnan Associate Professor, Vice Principal, K J Somaiya college of Science and Commerce.	University of Mumbai	
6	One representative from industry/corporate sector/allied area relating to placement.	Mr. Arbaz Sayed Data Scientist	Wipro, Hyderabad, Telangana	
7	One postgraduate meritorious alumnus nominated by the Principal.	Ms. Harshita Rathore, Supply Chain Fulfillment Manager,	Microsoft, Austin, Texas, USA