

## As Per NEP 2020

# University of Mumbai



### Syllabus for Basket of OE

**Board of Studies in Data Science**

**UG First Year Programme**

<b>Semester</b>	<b>I</b>
<b>Title of Paper</b>	<b>Credits 2/ 4</b>
<b>I. DS_Excel for Data Analytics (Open Elective)[OE]</b>	<b>2</b>
<b>II.</b>	
<b>From the Academic Year</b>	<b>2024-2025</b>

**Name of the Course: DS\_Excel for Data Analytics**

Sr.No.	Heading	Particulars
1	<b>Description the course : Including but Not limited to:</b>	<p>Excel is a versatile tool to work with numeric data. Numbers are the base of our day to day life. People need to use functionalities like daily expenses, investment planning, income vs. expenditure, mark-sheets, sales data, employee data, salary data etc. Microsoft Excel use to record, store numeric data for data analysis through sorting, filtering, pivot tables, and data visualization using charts and graphs. It benefits to user by providing easy calculations, reduced redundancy, data manipulation and data management. Everyone needs to know about the excel to work with numbers.</p> <p>Prerequisite: Basic Computer knowledge to work with Microsoft Excel. Familiarity with windows operating system</p>
2	<b>Vertical :</b>	<b>Open Elective</b>
3	<b>Type :</b>	Practical
4	<b>Credits :</b>	2 credits
5	<b>Hours Allotted :</b>	60 Hours
6	<b>Marks Allotted:</b>	50 Marks
7	<b>Course Objectives(CO):</b>	<p>CO 1. To understand basic functions and features of excel.</p> <p>CO 2. To understand the worksheet structure and working.</p> <p>CO 3. To develop proficiency in data entry, formatting, and manipulation.</p> <p>CO 4. To enable users to perform calculations easily.</p> <p>CO 5. To use mathematical, statistical, and logical functions.</p> <p>CO 6. To earn techniques for organizing and managing data effectively.</p> <p>CO 7. To develop the skill of data analysis using excel for research.</p> <p>CO 8. To implement basics in mini projects/case studies based on excel.</p>
8	<b>Course Outcomes (OC):</b>	<p>OC 1. Students should be able to use the excel to store and organize data for small to medium-sized datasets.</p> <p>OC 2. Students should be able to design formulas.</p> <p>OC 3. Students should be able to do the formatting of the numeric data.</p> <p>OC 4. Students should be able to work with pivot table and chart.</p> <p>OC 5. Students should be able to implement basics in case study.</p>
9	<p><b>Modules:- Module 1: (30 hrs)</b></p> <p><b>Practical No. 1:</b></p> <p><b>Introduction to Microsoft Excel:</b></p> <ol style="list-style-type: none"> <li>Study of Microsoft Excel Features and interface.</li> <li>List the advantages of the Excel in business process,</li> <li>Discuss the applications of Excel. List out the new areas of excel applications.</li> <li>Study Excel - Spreadsheet structure with all component. Draw the spreadsheet structure.</li> </ol>	

**Practical No. 2:****Working with Spreadsheet/Worksheet:**

- a. Study of Excel Menu bar, Tool bar, Formula bar, ribbon
- b. Perform the addition and deletion of tabs, Setting colour theme, Shortcut keys in Excel.
- c. Navigating worksheets, Adding/deleting/modifying worksheets, rows or columns.
- d. Addition of Cell comments.

**Practical No. 3:****Data Entry and formatting in Worksheet:**

- a. Study of types of data and formats in Excel.
- b. Data entry – Number, Text, Date in excel cell.
- c. Perform Date and Time Formatting
- d. Perform Number Formatting
- e. Perform Text Formatting –
  - i. Use of Format Painter,
  - ii. Format Colors,
  - iii. Format Fonts,
  - iv. Format Borders, shades
  - v. Format Grids, and Settings,
  - vi. Row formatting,
  - vii. Conditional formatting,
  - viii. Wrap text
- f. Perform Cell Formatting
  - i. Cell alignment
  - ii. Cell width, height
  - iii. Cell merge
  - iv. Cell unmerge
  - v. Cell colour
  - vi. Cell highlight
  - vii. Cell borders
- g. Perform Conditional Formatting

**Practical No. 4:****Data Calculations and Formulas:**

- a. Introduction to basic arithmetic operations
- b. Design the formulas for the given arithmetic equations.
- c. Copying formulas in different cells/sheets and Application of autofill
- d. Insert function, Autosum, Use of Calculations tool.

**Practical No. 5:****Page layout and Document printing:**

- a. Setting margins, orientations, size, print area.
- b. Setting page break, background
- c. Setting gridlines, heading and selection pane.
- d. Setting Printing layout and printing options
- e. Inserting table, title, column heading, row heading, resizing table.

**Practical No. 6:****Data Analysis:**

- a. Use of Filter to filter given data in various ways.
- b. Set the cell rules, top bottom rules.
- c. Sorting data in ascending and descending order
- d. Sorting data using filled colour in cells.
- e. Use data bars, colour scales

### **Module 2: (30 hrs)**

#### **Practical No. 1:**

##### **Excel Functions:**

- a. Create a Employee Salary sheet
- b. Perform logical functions AND, OR on net salary column.
- c. Perform the following functions  
AVERAGE, AVERAGEIF, AVERAGEIFS, CONCAT, COUNT, COUNTA, COUNTBLANK,
- d. Perform the following functions LEFT, LOWER, MAX, MEDIAN, MIN, MODE, NPV, OR, RAND, RIGHT, STDEV.P, STDEV.S, SUM, SUMIF, SUMIFS, TRIM

#### **Practical No. 2:**

##### **Data Navigation Functions:**

- a. Perform VLOOKUP and HLOOKUP on sales dataset.
- b. Perform the COUNTIF, COUNTIFS, IF, IFS on employee dataset.
- c. Working with multi cell calculations.

#### **Practical No. 3:**

##### **Data Visualization:**

- a. Study of types of charts used for data visualization.
- b. Create a sales data set in excel or use any relevant data set.
- c. Create bar charts, line graphs, pie charts, scatter plots.
- d. Create hierarchy charts, statistic chart, bubble chart
- e. Create combo chart, water fall chart and radar chart
- f. Customize the chart as per data report requirement.
- g. Set data legends, scales, axes, title etc in above charts.
- h. Write interpretation of above chart

#### **Practical No. 4:**

##### **Data Management in excel:**

- a. Create a payroll data set.
- b. Study of Pivot table.
- c. Create pivot table and analyse the data using pivot.
- d. Generate various reports of using functions in Pivot table.
- e. Use of Pivot chart for data representation.
- f. Study of data tools: Remove duplicate data set, Group, Ungroup, sub-total and
- g. Use of Data analysis tools

#### **Practical No. 5:**

##### **Research Data processing::**

- a. Basics of statistics using excel on sales data.
- b. Find out mean, mode, median, standard deviation, variance.
- c. Perform the distributions, and t test for hypothesis of testing

#### **Practical No. 6:**

	<p><b>Mini Projects based on real life needs:</b></p> <ul style="list-style-type: none"> <li>i. Prepare a budget spreadsheet for personal finances.</li> <li>j. Perform Sales data analysis and prepare reports with visualization.</li> <li>k. Analyse your college result analysis. Create reports with charts.</li> <li>l. Track the key performance indicators using dashboard.</li> <li>m. Create trackers and Gantt chart.</li> </ul> <p><b>Practical No. 7:</b></p> <ul style="list-style-type: none"> <li>a. Identify a specific area of the research domain and perform the practical using various tools and process starting from data entry to data visualization. Generate the report in standard format.</li> <li>b. <b>Case Studies:</b> Business cases (Sales data analysis, Result analysis, etc)</li> </ul>	
10, 11	<p><b>Reference and Text Books</b></p> <ol style="list-style-type: none"> <li>1. "Excel 2019 Bible" by Michael Alexander and Richard Kusleika, 1<sup>st</sup> Edition, Publisher: Wiley 2018</li> <li>2. "Microsoft Excel 2019 Step by Step" by Curtis Frye Publisher: Microsoft Press 2018</li> <li>3. Ctrl+Shift+Enter Mastering Excel Array Formulas by Mike Girvin, 1<sup>st</sup> Edition, Publisher: Holy Macro Books</li> <li>4. Excel 2019 Pivot Table Data Crunching" by Bill Jelen and Michael Alexander Publisher: Pearson Education 2019</li> </ol>	
12	<p><b>Internal Continuous Assessment: 40% (20 marks)</b></p>	<p><b>Semester End Examination: 60% (30 marks)</b></p>
14	<p><b>Continuous Evaluation through:</b> Performance of each Practical to be assessed and evaluate during practical sessions. Additional relevant practicals with different data set to be given for practice. / Mini project in group of 4 students, project presentation. Identify any business case/project topics (like mark-sheet, library, payroll, result, sales, inventory, hotel, hostel dataset – mini project covered data entry, data formatting, data analysis and data visualization)</p>	Practical Exam of 30 marks
	<p><b>Format of Question Paper: Duration 2 hours. Certified copy of Journal is compulsory to appear for the practical examination</b></p> <p>Practical Slip:</p> <p>Q1. From Module 1 13 marks  Q2. From Module 2 12marks  Q3. Journal and Viva 05 marks</p>	

**Sign of Chairperson**

**Dr. Mrs. R. Srivaramangai**  
**Ad-hoc BoS (Data Science)**

**Sign of the**

**Offg. Associate Dean**  
**Dr. Madhav R. Rajwade**  
**Faculty of Science & Technology**

**Sign of Offg. Dean,**

**Prof. Shivram S. Garje**  
**Faculty of Science & Technology**