B.Sc., Software

Semester I - Allied -I Theory for other departments

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOA1	**OFFICE AUTOMATION**	Allied I Theory	**3**	-	-	-	3	3	25	75	100

Learning Objectives	
LO1	Understand the basics of computer systems and its components.
LO2	Understand and apply the basic concepts of a word processing package.
LO3	Understand and apply the basic concepts of electronic spreadsheet software.
LO4	Understand and apply the basic concepts of database management system.
LO5	Understand and create a presentation using PowerPoint tool.

	Contents	**No. of Hours**
UNIT I	Introductory concepts: Memory unit– CPU-Input Devices: Key board, MouseandScanner.Outputdevices:Monitor,Printer. IntroductiontoOperatingsystems&itsfeatures:DOS–UNIX–Windows. IntroductiontoProgrammingLanguages.	6
UNIT II	**Word Processing:** Open, Save and close word document; Editing text – tools, formatting, bullets;SpellChecker - Document formatting – Paragraph alignment, indentation, headers and footers,numbering;printing–Preview,options,merge.	6
UNIT III	**Spreadsheets:**Excel– opening,enteringtextanddata,formatting,navigating;Formulas– entering,handlingand copying;Charts–creating,formatting and printing,analysistables,preparationoffinancialstatements,introductiont odataanalytics.	6
UNIT IV	**Database Concepts:** The concept of data base management system; Data field, records, and files,Sorting and indexing data; Searching records. Designing queries, and reports; Linking of datafiles; Understanding Programming environment in DBMS; Developing menu drive applicationsinquerylanguage(MS–Access).	6
UNIT V	**Power point:** Introduction to Power point - Features – Understanding slide typecasting &viewingslides – creating slide shows. Applying special object – including objects & pictures – Slidetransition–Animationeffects,audioinclusion,timers.	6
	Total	**30**

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Possess the knowledge on the basics of computers and its components	PO1,PO2,PO3,PO6, PO8

CO2	Gain knowledge on Creating Documents, spreadsheet and presentation.	PO1,PO2,PO3,PO6
CO3	Learn the concepts of Database and implement the Query in Database.	PO3,PO5,PO7
CO4	Demonstrate the understanding of different automation tools.	PO3,PO4,PO5,PO7
CO5	Utilize the automation tools for documentation, calculation and presentation purpose.	PO4,PO6,PO7,PO8
Text Book		
1	PeterNorton,"IntroductiontoComputers"–TataMcGraw-Hill.	
Reference Books		
1.	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, "Microsoft 2003", Tata McGrawHill.	
Web Resources		
1.	https://www.udemy.com/course/office-automation-certificate-course/	
2.	https://www.javatpoint.com/automation-tools	

Mapping with Programme Outcomes:

MAPPING TABLE						
CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	2	3	3	3
CO2	3	3	3	3	3	3
CO3	3	3	3	3	3	3
CO4	3	3	3	3	3	3
CO5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	14	14	15	15	15

S-Strong-3 M-Medium-2 L-Low-1

Semester I - Allied -I Practical for other departments

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOAP1	**OFFICE AUTOMATION LAB**	Allied Lab	-	-	2	-	2	2	25	75	100
Learning Objectives											
LO1	Understand the basics of computer system, operating system and I/O devices										
LO2	Understand the basics of Word Processor tool and able to create letters, reports, tables										
LO3	Understand the basics of Excel Spreadsheet tool and able to perform visible calculations and data analysis.										
LO4	Understand the basics of ACCESS database management system tool and able to create database for specific application.										
LO5	Understand the basics PowerPoint tool and able to create slide shows.										
	Contents										**No. of Hours**
UNIT I	1. Working with windows and menus 2. Creating Folders and working with files 3. Creating Shortcuts for applications and files 4. Copying and moving files between folders 5. Deleting files and understanding recycle bin 6. Creating opening and saving text in files										6
UNIT II	**MS – WORD** 7. Preparing an Official Letter / Business Letter / Circular Letter Covering formatting commands - font size and styles - bold, underline, upper case, lower case, superscript, subscript, indenting paragraphs, spacing between lines and characters, tab settings etc., 8. Preparing a newsletter: To prepare a newsletter with borders, two columns text, header and footer and inserting a graphic image and page layout. 9. Creating and editing the table to create a table using table menu, to create a monthly calendar using cell editing operations like inserting, joining, deleting, splitting and merging cells, to create a simple statement for math calculations viz. Totalling the column. 10. Creating numbered lists and bulleted lists to create numbered list with different formats (with numbers, alphabets, roman letters), to create a bulleted list with different bullet characters. 11. Printing envelopes and mail merge, to print envelopes with from addresses and to addresses, to use mail merge facility for sending a circular letter to many persons, to use mail merge facility for printing mailing labels. 12. Using the special features of word to find and replace the text, to spell check and correct, to generate table of contents for a document.										6

<table>
<tr><td>UNIT III</td><td><u>MS - EXCEL</u>
13. Using formulas and functions: To prepare a Worksheet showing the monthly sales of a company in different branch offices (Showing Total Sales, Average Sales).
14. Creating a Chart: To create a chart for comparing the monthly sales of a company in different branch offices.
15. Sorting Data, Filtering Data and creation of Pivot tables.
16. Create a sales table using the following data :
<table><tr><th>Item</th><th>Year1</th><th>Year2</th><th>Year3</th><th>Year4</th></tr><tr><td>Rice</td><td>1000</td><td>1050</td><td>1100</td><td>1200</td></tr><tr><td>Sugar</td><td>950</td><td>1050</td><td>1150</td><td>1200</td></tr><tr><td>Dal</td><td>1100</td><td>1200</td><td>1200</td><td>1300</td></tr></table>a. Draw the bar graph to compare the sales of the three items for four years.
b. Draw a line graph to compare the sales of three items for four years using insert option.
c. Use condition, to highlight all the cells having value >=1000 with red color (Use conditional formatting).</td><td>6</td></tr>
<tr><td>UNIT IV</td><td><u>MS - ACCESS</u>
17. Create a database “Student” with
a. Atleast one table named “Mark Sheet” with field name “Student Name, Roll Number, Mark1, Mark2, Mark3, Mark4, Total”
b. The data types are, Student Name : text, Roll Number : number, Mark1 to Mark4 : number, Total : number. Make Roll Number the primary key.
c. Enter data in the table. The total must be calculated using update query.
d. Use query for sorting the table according to the descending/ascending order of the total marks.
18. In addition to the table above,
a. Add an additional field “Result” to the “Mark Sheet” table.
b. Enter data for at least 10 students.
c. Calculate the result for all the students using update query. (If total > = 200, then pass, else fail).
d. Search the students, whose name starts with “An”.
Show the names and total marks of the students who have passed the examination.</td><td>6</td></tr>
<tr><td>UNIT V</td><td><u>MS - POWERPOINT</u>
19. Creating a new presentation based on a template – Using Auto content wizard, design template and plain blank presentation.
20. Creating a presentation with slide transition – Automatic and Manual with different effects.
21. Creating a presentation applying custom animation effects – applying multiple effects to the same object and changing to a different effect and removing effects.
22. Creating and printing handouts.</td><td>6</td></tr>
<tr><td></td><td>Total</td><td>30</td></tr>
</table>

Course Outcomes		Programme Outcomes
CO	On completion of this course, students will	
CO1	Possess the knowledge on the basics of computers and its components	PO1,PO2,PO3,PO6,PO8
CO2	Gain knowledge on Creating Documents, spreadsheet and presentation.	PO1,PO2,PO3,PO6
CO3	Learn the concepts of Database and implement the Query in Database.	PO3,PO5,PO7
CO4	Demonstrate the understanding of different automation tools.	PO3,PO4,PO5,PO7
CO5	Utilize the automation tools for documentation, calculation and presentation purpose.	PO4,PO6,PO7,PO8
Text Book		
1	PeterNorton,"IntroductiontoComputers"–TataMcGraw-Hill.	
Reference Books		
1.	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, "Microsoft 2003", Tata McGrawHill.	
Web Resources		
1.	https://www.udemy.com/course/office-automation-certificate-course/	
2.	https://www.javatpoint.com/automation-tools	

Mapping with Programme Outcomes:

MAPPING TABLE						
CO/ PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**2**	**3**	**3**	**3**
CO2	**3**	**3**	**3**	**3**	**3**	**3**
CO3	**3**	**3**	**3**	**3**	**3**	**3**
CO4	**3**	**3**	**3**	**3**	**3**	**3**
CO5	**3**	**3**	**3**	**3**	**3**	**3**
Weightage of course contributed to each PSO	**15**	**14**	**14**	**15**	**15**	**15**

S-Strong-3 M-Medium-2 L-Low-1

Semester II – Allied II Theory for other departments

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOA2	**PROGRAMMING IN C**	A-I Allied Theory	3	-	-	-	3	3	25	75	100
Learning Objective											
LO1	To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.										
LO2	To understand the concept using if statements and loops										
LO3	This unit covers the concept of Arrays and Functions										
LO4	This unit covers the concept of Structurs and unions and Preprocessors										
LO5	To understand the concept of implementing pointers.										
	Contents										**No. of Hours**
UNIT I	**Overview of C**: Importance of C, sample C program, C program structure, executing C program. Constants, Variables, and Data Types: Character set, C tokens, keywords and identifiers, constants, variables, data types, declaration of variables, Assigning values to variables---Assignment statement, declaring a variable as constant, as volatile. **Operators and Expression**: Arithmetic, Relational, logical, assignment, increment, decrement, conditional, bitwise and special operators, arithmetic expressions, operator precedence, type conversions, mathematical functions **Managing Input and Output Operators**: Reading and writing a character, formatted input, formatted output.										6
UNIT II	**Decision Making and Branching**: Decision making with If, simple IF, IF ELSE, nested IF ELSE , ELSE IF ladder, switch, GOTO statement. **Decision Making and Looping**: While, Do-While, For, Jumps in loops.										6
UNIT III	**Arrays**: Declaration and accessing of one & two-dimensional arrays, initializing two-dimensional arrays, multidimensional arrays. **Functions**: The form of C functions, Return values and types, calling a function, categories of functions, Nested functions, Recursion, functions with arrays, call by value, call by reference, storage classes-character arrays and string functions.										6
UNIT IV	**Structures and Unions**: Defining, giving values to members, initialization and comparison of structure variables, arrays of structure, arrays within structures, structures within structures, structures and functions, unions. **Preprocessors**: Macro substitution, file inclusion.										6
UNIT V	**Pointers:** definition, declaring and initializing pointers, accessing a variable through address and through pointer, pointer expressions, pointer increments and scale factor, pointers and arrays, pointers and functions, pointers and structures.										6
	Total										**30**

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
CO1	Remember the program structure of C with its syntax and semantics	PO1,PO3,PO5
CO2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2,PO3,PO6
CO3	Apply the programming principles learnt in real-time problems	PO3,PO4,PO5
CO4	Analyze the various methods of solving a problem and choose the best method	PO4,PO5,PO6
CO5	Code, debug and test the programs with appropriate test cases	PO5,PO6
Text Book		
1	E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw-Hill, 2010.	
Reference Books		
1.	Byron Gottfried, Schaum's Outline Programming with C, Fourth Edition, Tata McGraw-Hill, 2018.	
2.	Kernighan and Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1998	
3.	YashavantKanetkar, Let Us C, Eighteenth Edition, BPB Publications,2021	
Web Resources		
1.	https://codeforwin.org/	
2.	https://www.geeksforgeeks.org/c-programming-language/	
3.	http://en.cppreference.com/w/c	
4.	http://learn-c.org/	
5.	https://www.cprogramming.com/	

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	2	3	3
CO 3	2	3	2	3	3	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	2
Weight age of course contributed to each PSO	14	15	14	14	15	13

S-Strong-3 M-Medium-2 L-Low-1

Semester II - Allied – II Practical (to other departments)

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOAP2	**PROGRAMMING IN C LAB**	A-I Allied Practical	-	-	2	-	2	2	25	75	100

Course Objective	
LO1	To familiarize the students with the Programming basics and the fundamentals of C, Datatypes in C, Mathematical and logical operations.
LO2	To understand the concept using if statements and loops
LO3	This unit covers the concept of Arrays and Functions
LO4	This unit covers the concept of Structurs and unions and Preprocessors
LO5	To understand the concept of implementing pointers and files

	List of Exercises	**No. of Hours**	**Course Objectives**
UNIT I	**Variables, Data types, Constants and Operators** 1.Evaluation of expression ex: ((x+y) ^2 * (x+z))/w 2.Temperature conversion problem (Fahrenheit to Celsius) 3.Program to convert days to months and days (Ex: 364 days = 12 months and 4 days) 4.Solution of quadratic equation 5.Salesman salary (Given: Basic Salary, Bonus for every item sold, commission on the total monthly sales)	6	
UNIT II	**Decision making Statements** 6.Maximum of three numbers 7.Calculate Square root of five numbers (using gototatement) 8.Pay-Bill Calculation for different levels of employee (Switch statement) 9. Fibonacci series 10.Floyds Triangle 11.Pascal's Triangle	6	
UNIT III	**Arrays, Functions and Strings** 12.Prime numbers in an array 13.Sorting data (Ascending and Descending) 14.Matrix Addition and Subtraction 15.Matrix Multiplication 16.Function with no arguments and no return values 17.Function that convert lower case letters to upper case 18. Factorial using recursion. 19.Perform String Operations using Switch Case.	6	

UNIT IV	**Structures and Macros** 20.Structure that describes a Hotel (name, address, grade, avg room rent, number of rooms) Perform some operations (list of hotels of a given grade etc.) 21. Using Pointers in Structures. 22.Cricket team details using Union. 23.Write a macro that calculates the max and min of two numbers 24.Nested macro to calculate Cube of a number.	6
UNIT V	**Pointers and Files** 25.Evaluation of Pointer expressions 26.Function to exchange two pointer values 27.Creation, insertion and deletion in a linked list 28.Program to read a file and print the data. 29.Program to receive a file name and a line of text as command line arguments and write the text to the file 30. Program to copy the content of one file to another file.	6
	Total	**30**

Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	Remember the program structure of C with its syntax and semantics	PO1,PO3,PO5
2	Understand the programming principles in C (data types, operators, branching and looping, arrays, functions, structures, pointers and files)	PO2,PO3,PO6
3	Apply the programming principles learnt in real-time problems	PO3,PO4
4	Analyze the various methods of solving a problem and choose the best method	PO4,PO5,PO6
5	Code, debug and test the programs with appropriate test cases	PO4,PO6

Text Book	
1	E. Balagurusamy, Programming in ANSI C, Fifth Edition, Tata McGraw-Hill, 2010.
Reference Books	
1.	Byron Gottfried, Schaum's Outline Programming with C, Fourth Edition, Tata McGraw-Hill, 2018.
2.	Kernighan and Ritchie, The C Programming Language, Second Edition, Prentice Hall, 1998
3.	YashavantKanetkar, Let Us C, Eighteenth Edition, BPB Publications,2021
Web Resources	
1.	https://codeforwin.org/
2.	https://www.geeksforgeeks.org/c-programming-language/
3.	http://en.cppreference.com/w/c
4.	http://learn-c.org/
5.	https://www.cprogramming.com/

Mapping with Programme Outcomes:

CO/PSO	PSO 1		PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3		3	3	3	3	3
CO 2	2		3	3	3	3	3
CO 3	3		3	2	3	3	2
CO 4	3		3	3	3	3	3
CO 5	3		3	3	3	3	3
Weight age of course contributed to each PSO	14		15	14	15	15	14

S-Strong-3 M-Medium-2 L-Low-1

Semester III - Allied – III Theory (offered by B.Sc. Software Dept to other departments)

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOA3	**Internet and Web Design**	A-III Allied Theory	3	-	-	-	3	3	25	75	100
Learning Objective											
LO1	To familiarize the internet and its capabilities										
LO2	To understand the structure Hyper Text Markup Language and handle basic tags for text and image display										
LO3	To understand the use of lists and tables										
LO4	To understand the necessity of dynamic content on web and screen space management using framesets										
LO5	To understand the features of DOM (Document Object Model) and its elements for data capture										

UNIT	Contents	No. of Hours
I	**UNIT I : Introduction to the Internet** Electronic mail – Resource Sharing – Remote Login – World Wide Web – Search Engine – Browsers – Introduction to static, dynamic and active web pages. Introduction to HTML: Designing a Home page - History of HTML - HTML Generations - HTML Documents - Anchor Tag - Hyper links	6
II	**UNIT II : Head and Body Sections** Header Section – Title – Links - Colorful Web page - Comment Lines - Designing the Body Section: Heading – Printing - Aligning the Headings - Horizontal Rule - Paragraph-Tab Settings - Images and Pictures - Embedding Images	6
III	**UNIT III: Ordered and Un Ordered Lists:** Lists – Un Ordered Lists - Headings in a List - Ordered Lists - Nested Lists - Table Handling: Table creation in HTML - width of the Table and Cells - Cells Spanning Multiple Rows/Columns - Coloring Cells - Column Specification	6
IV	**UNIT IV : DHTML and Style Sheets** Defining Styles - Elements of Styles - Linking a Style Sheet to an HTML Document – In-line Styles - Internal and External Style Sheets - Multiple Styles - Frames: Frameset Definition - Frame Definition - Nested Framesets	6
V	**UNIT V: Forms** Action Attribute - Method Attribute - Enctype Attribute - Drop down list - Check Boxes - Radio Buttons - Text Field - Text area - Password and Hidden Fields - Submit and Reset Buttons - Designing Sample Forms	6
	Total	**30**

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
CO1	To appreciate the use of internet and design of web pages	PO1,PO3,PO5
CO2	To be able to use all the basic HTML tags used to design web content with multimedia elements	PO2,PO3,PO6
CO3	To be able to create and format different types of lists and tables	PO3,PO4,PO5
CO4	To be able to specify styles for web pages and dynamically change the appearance of web pages and manage screen space by defining multiple frames	PO4,PO5,PO6
CO5	To be able to design web forms for data capture and transmit to the server	PO5,PO6
Text Books		
1	C. Xavier(2000), World Wide Web design with HTML - Tata McGraw Hill Publishing Company Limited ISBN 9780074639719	
2	Ivan Bayross (2012) HTML 5 and CSS 3 Made Simple, BPB Publications ISBN 9788183334419	
Reference Books		
1.	Jon Duckett (2011),HTML and CSS: Design and Build Webs Illustrated, Wiley	
Web Resources		
1.	http://www.pagetutor.com/html_tutor/index.html	
2.	http://www.tutorialspoint.com/html/html_tutorial.pdf	
3.	http://www.htmlcodetutorial.com/	
4.	http://www.w3schools.com	

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	2	3	3
CO 3	2	3	2	3	3	2
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	2
Weightage of course contributed to each PSO	14	15	14	14	15	13

S-Strong-3 M-Medium-2 L-Low-1

Semester III - Allied – III Practical (Offered by B.sc. Software Dept to other departments)

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOAP3	**INTERNET AND WEB DESIGN LAB**	A-III Allied Practical	-	-	2	-	2	2	25	75	100
Course Objective											
LO1	To be familiar with internet principles and HTML tags										
LO2	Learn to design web pages with simple static text displays										
LO3	Learn to design web pages with lists and tables										
LO4	Learn to dynamically control the appearance of the website with style sheets										
LO5	Learn to manage screen space with multiple contents and design forms to capture data from user										
	List of Excercises							**No. of Hours**			
	1. Cretae HTML file with tags using an editor and display your name and address in different colors and fonts centered across the screen. 2. Write HTML tags to display images in different height and widths 3. Write HTML tags to play audio file when play button is pressed 4. Write HTML tags to create list of courses availbe in a college and show their features in definition list. 5. Write HTML tags to link another web page to your page 6. Write HTML tags to create a table with text content and format it suitably with colors and features. 7. Write HTML tags to create a table with photographs of animals and show their lifesspan and habits in a different page when mouse is clicked over the photos. 8. Write HTML tags to define inline style sheet and test it. 9. Write HTML tags to define internal style sheet and test it. 10. Write HTML tags to define external style sheet and test it. 11. Write HTML tags to divide the screen space into horizontal and vertical partitions and load a different html file in each partitiion. 12. Write HTML tags to design a form to enable a student to fill								30		

	up application form for admission to a degree programme in a college. 13. Write HTML tags to design a simple personal website with three or more pages accessible from home page. 14. Write HTML tags to design a simple website to promote a product of a company. 15. Write HTML tags to design a simple website showing images of cover page of books and display the details about the book in their own pages when mouse is clicked over the respective photographs	
	Total	**30**
Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	be able to appreciate the use and necessity of intenet and websites	PO1,PO3,PO5
2	be able to master the HTML tags and display text and multimedia contents on web pages	PO2,PO3,PO6
3	be able to design lists and display them on web pages	PO3,PO4
4	be able to design tables and display colourful and hypertext leading to other pages	PO4,PO5,PO6
5	be able to manage screen space effectively with multiple frames and design web forms	PO4,PO6
Web Resources		
1.	http://www.pagetutor.com/html_tutor/index.html	
2.	http://www.tutorialspoint.com/html/html_tutorial.pdf	
3.	http://www.htmlcodetutorial.com/	
4.	http://www.w3schools.com	

Mapping with Programme Outcomes:

CO/PSO	**PSO 1**		**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO 1	3		3	3	3	3	3
CO 2	2		3	3	3	3	3
CO 3	3		3	2	3	3	2
CO 4	3		3	3	3	3	3
CO 5	3		3	3	3	3	3
Weight age of course contributed to each PSO	14		15	14	15	15	14

S-Strong-3 M-Medium-2 L-Low-1

Allied Theory 4 offered by B.sc. Software Dept for other department students

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOA4	**ADVANCED EXCEL**	Allied IV Theory	**3**	-	-	-	3	3	25	75	100

Learning Objectives	
LO1	Handle large amounts of data
LO2	Aggregate numeric data and summarize into categories and subcategories
LO3	Filtering, sorting, and grouping data or subsets of data
LO4	Create pivot tables to consolidate data from multiple files
LO5	Presenting data in the form of charts and graphs

UNIT	**Contents**	**No. of Hours**
UNIT I	Basics of Excel- Customizing common options- Absolute and relative cells- Protecting and un-protecting worksheets and cells- Working with Functions - Writing conditional expressions - logical functions - lookup and reference functions- VlookUP with Exact Match, Approximate Match- Nested VlookUP with Exact Match- VlookUP with Tables, Dynamic Ranges- Nested VlookUP with Exact Match- Using VLookUP to consolidate Data from Multiple Sheets	6
UNIT II	Data Validations - Specifying a valid range of values - Specifying a list of valid values- Specifying custom validations based on formula - Working with Templates Designing the structure of a template- templates for standardization of worksheets - Sorting and Filtering Data -Sorting tables	6
UNIT III	Creating Pivot tables Formatting and customizing Pivot tables- advanced options of Pivot tables- Pivot charts- Consolidating data from multiple sheets and files using Pivot tables- external data sources- data consolidation feature to consolidate data- Show Value As % of Row, % of Column, Running Total, Compare with Specific Field- Viewing Subtotal under Pivot- Creating Slicers.	6
UNIT IV	More Functions Date and time functions- Text functions- Database functions- Power Functions - Formatting Using auto formatting option for worksheets- Using conditional formatting option for rows, columns and cells- WhatIf Analysis - Goal Seek- Data Tables- Scenario Manager.	6
UNIT V	Charts - Formatting Charts- 3D Graphs- Bar and Line Chart together- Secondary Axis in Graphs- Sharing Charts with PowerPoint / MS Word, Dynamically- New Features Of Excel Sparklines, Inline Charts, data Charts- Overview of all the new features.	6
	Total	**30**

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	be able to create worksheets to compute formulae automatically by copying	PO1,PO2,PO3,PO6, PO8

CO2	be able to validate data and perform sorting and filtering data	PO1,PO2,PO3,PO6
CO3	be able to perform What-If analysis with pivot tables.	PO3,PO5,PO7
CO4	be able to put built-in function for effective use in computations	PO3,PO4,PO5,PO7
CO5	be able to present data in the form of charts and share with other packages	PO4,PO6,PO7,PO8
Text Book		
1	Ritu Arora (2023) Mastering Advanced Excel, BPB publishers	
Reference Books		
1.	Ken Bluttman (2020), Microsoft Excel Formulas $ Functions, 5th Edition, Learning Made Easy, Wiley	
Web Resources		
1.	https://www.tutorialspoint.com/advanced_excel/index.htm	
2.	https://sunsreynat.wordpress.com/wp-content/uploads/2014/06/excel-2010-advanced.pdf	
3.	https://www.yashada.org/yashada_2019/pdfs/e_library_cit/excel_Microsoft_Excel_2010_intermediate_YASHADA%20_June_2014%20(2).pdf	
4.	https://www.w3schools.com/excel/index.php	

Mapping with Programme Outcomes:

MAPPING TABLE						
CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	2	3	3	3
CO2	3	3	3	3	3	3
CO3	3	3	3	3	3	3
CO4	3	3	3	3	3	3
CO5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	14	14	15	15	15

S-Strong-3 M-Medium-2 L-Low-1

Semester IV Allied Practical offered by B.Sc. Software dept to other department students

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
23BSOAP4	**ADVANCED EXCEL LAB**	A-IV Allied Practical	-	-	2	-	2	2	25	75	100

Course Objective	
LO1	Handle large amounts of data
LO2	Aggregate numeric data and summarize into categories and subcategories
LO3	Filtering, sorting, and grouping data or subsets of data
LO4	Create pivot tables to consolidate data from multiple files
LO5	Presenting data in the form of charts and graphs

	List of Excercises	**No. of Hours**
	1. Enter data Roll.Nos. & Marks in 5 subject of a student in a worksheet. Calculate his grades as per the following using HLOOKUP() functoin: **Marks** — **Grades** 0-40 — 4 40-50 — 3 50-60 — 2 60 & above — 1 **2.** Enter Names & Sales value for 10 salesmen. Calculate their bonus using VLOOKUP() function as per the following : **Sale** — **Bonus** 0-30000 — 0 30000-40000 — 3000 40000-50000 — 4000 50000-60000 — 5000 60000-70000 — 6000 70000-80000 — 7000 80000 & above — 8000 NAME SALE BONUS Deep 30000 **3.** A worksheet contains Roll Number , Marks in 2 subjects for 50 students in a class. Calculate Result and Grade using the following: A student is declared as PASS if he gets 40 or more in both the subjects , Otherwise FAIL. All FAILED students will be given Grade IV. For PASSED students Grade will be obtained as follows :	30

AVERAGE	GRADE
>=60	I
<60 but >=50	II
<50 but >=40	III

ROLL	SUB1	SUB2	AVERAGE	RESULT	GRADE
ARUN	50	60	**55**	**PASSED**	**II**

4. The following worksheet contains Name & Sales of 10 salesmen .

NAME	SALE	COMMISSION
BABY	20000	

Calculate commission (using nested IF statements) as per the following:

Sales	Commission
First 30,000	5%
Next 40,000	10%
Above 70,000	15%

NAME	SALE	COMMISSION
BABY	20000	**1000**

5. The following worksheet contains Name & Taxable Income for 50 employees .

NAME	TAXABLE INCOME	INCOME TAX	SURCHARGE	TOTALTAX
RAVI	300000			
MARY	600000			

CalculateIncome Tax Surcharge and Total Tax.

Income Tax is calculated as follows :

First 1,50,000	Nil
Next 1,00,000	10%
Next 75,000	20%
Above 3,25,000	30%

Surcharge is 3% on Income Tax if Taxable income is above 5,00,000

NAME	TAXABLE INCOME	INCOME TAX	SURCHARGE	TOTALTAX

RAVI | 300000 | **20000 0** | **20000**
MARY | 600000 | **107500** **3225** | **110725**

6. Enter data in a worksheet as shown below:

	A	B	C	D	E
1	NAME	GENDER	CLASS	CATEGORY	FEES
2	Deep	M	FY	Open	**3000**
3	Jayesh	M	SY	Reserved	**1000**
4	Yash	M	TY	Reserved	**1000**
5	Sara	F	FY	Reserved	**500**
6	Gita	F	FY	Open	**3000**
7	Jinal	F	TY	Open	**5000**
8	Kavita	F	SY	Open	**4000**
9	Minal	F	SY	Reserved	**1000**
10	Karan	M	TY	Reserved	**1000**
11	Abhay	M	TY	Open	**5000**
12	Bina	F	FY	Open	**3000**
13	Seema	F	FY	Reserved	**500**
14	Naresh	M	FY	Reserved	**500**
15	Rima	F	TY	Open	**5000**
16	Gajendra	M	SY	Open	**4000**

Filter the worksheet to show

a) Female students from Reserved category
b) Male students from TY
c) Open category students paying fees > 3000

7. Create a worksheet with the following data:

SLNO	REGNO	NAME	AGE
1	1785	ARUN	20
2	1784	MARY	23
3	1781	SURESH	21
4	1783	ZAVIER	18
5	1782	ARUN	22

Sort the table data in the following ways:
a) Sort in the ascending order of REGNO
b) Sort in the alphabetical order of NAME
c) Sort in alphabetical order of NAME and by descending order of AGE(two students with the same name ARUN should be sorted as
ARUN 22
ARUN 20
(with **same names ARUN they were sorted by descending order of AGE**)
d) Sort the data back to orginal order using SLNO column

8. Create a worksheet for sales of products by salesman in different cities as given below:

Saleman code	Salesman Name	City	PRODUCT CODE	PRODUCT NAME	QUALITY	SALE AMOUNT
1021	ARUN	TRICHY	13071	TV	1	22000
1022	BALU	TRICHY	13088	FRIDGE	1	16000
1018	MARY	CHENNAI	13090	W MACHINE	1	23000
1021	ARUN	CHENNAI	13071	TV	1	22000

Add data for 5 different CITIES (DELHI, BOMBAY, TRICHY, CHENNAI, MADURAI) 5 salesmen and 5 different products TV, FFRIDGE, WASHING MACHINE, GRINDER and MIXIE. Consolidate the data in the following ways:

a) Find salesman wise total quantity and sales amount.
b) Find product wise total quantity and sales amount.
c) Find city wise total quantity and sales amount.

9. Create a worksheet with student data REGNO, NAME, marks in 5 different subject. Find total marks. Create bar chart showing each subject mark and total mark for each student. Find subjectwise maximum and minimum marks scored by students.

10. Create a worksheet showing votes polled by 4 political parties in 3 constituencies. Create PIE exploded PIE charts for each constitutency showing votes polled by different parties in that constituency.

11. Create a line chart showing employees age in the X axis and their income in Y axis. Display Legend and data labels with background grid lines.

12. Enter the following data once, as shown below:

Sell Price | Cost Price | Profit

120 | 90 | 30

Create a pivot table showing Selling prices in rows and Cost Price in Columns. Generate profits as pivot table entries. Refer the formula entered once in a cell to find the profit. Fill up the entire pivot table with command.

COST PRICE

	70	80	90	100	110	120
60	-10	-20	-30	-40	-50	-70
70	0	-10	-20	-30	-40	-50
80	10	0	-10	-20	-30	-40
90	20	10	0	-10	-20	-30
100	30	20	10	0	-10	-20
110	40	30	20	10	0	-10
120	50	40	30	20	10	0

↑Sale Price

	Total	**30**
Course Outcomes		**Programme Outcome**
CO	On completion of this course, students will	
1	be able to create worksheets to compute formulae automatically by copying	PO1,PO3,PO5

2	be able to perform data sorting and filtering	PO2,PO3,PO6
3	be able to perform What-If analysis with pivot tables.	PO3,PO4
4	be able to employ built-in functions for effective computations	PO4,PO5,PO6
5	be able to present data in the form of charts and share with other packages	PO4,PO6
Web Resources		
1.	https://www.w3schools.com/EXCEL/index.php	
2.	https://www.geeksforgeeks.org/excel-tutorial/	
3.	https://www.tutorialspoint.com/excel/index.htm	
4.	https://www.javatpoint.com/advanced-excel-tutorial-how-to-master-microsoft-excel	

Mapping with Programme Outcomes:

CO/PSO	PSO 1		PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3		3	3	3	3	3
CO 2	2		3	3	3	3	3
CO 3	3		3	2	3	3	2
CO 4	3		3	3	3	3	3
CO 5	3		3	3	3	3	3
Weight age of course contributed to each PSO	14		15	14	15	15	14

S-Strong-3 M-Medium-2 L-Low-1