Programme	B. Sc. Computer S	Science			
Course Code	CSC1CJ101/CSC	C1MN100			
Course Title	Fundamentals of	Computers	and Computa	ational Thinki	ng
Type of Course	Major/Minor				
Semester	Ι				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	4	3	-	2	75
Pre-requisites	 Fundamentals of Basic mathematic 	of electronic c tical operation	omponents 18		
Course Summary	2. Basic mathematical operations This course provides a comprehensive overview of computing, covering historical milestones, hardware components, software systems, and computational thinking principles. Students will explore the evolution of computing systems, from early pioneers to modern processors and quantum units. The curriculum delves into hardware intricacies, software distinctions, and essential concepts in computer science, emphasizing problem-solving skills and algorithmic thinking. Practical aspects include hands-on experiences with hardware assembling, operating system installation, algorithm and flowchart visualization.				

Course Outcomes (CO):

CO	CO Statement	Cognitive	Knowledge	Evaluation Tools
	The	Level*	Category#	used
CO1	Develop a foundational knowledge of	U	F	Instructor-created
	computing systems, encompassing their			exams / Quiz
	historical development, evolutionary	100		
	milestones, and the notable contributions of	C. T. S. Marcoll		
	key figures in the field.			
CO2	Acquire familiarity with diverse hardware	U	С	Practical
	components constituting a computer system.			Assignment /
				Observation of
				Practical Skills
CO3	Explore the spectrum of software types, and	Ар	Р	Practical
	actively participate in the partitioning,			Assignment /
	installation, and configuration of operating			Observation of
	systems to cultivate a comprehensive			Practical Skills
	understanding of software systems.			

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CO4	Develop a foundational understanding of computer science as a discipline, examining problems through the lens of computational thinking and cultivating analytical skills to address challenges in the field.	An	F	Practical Assignment / Observation of Practical Skills			
CO5	Represent complex problems using algorithmic approaches and enhance problem solving skills by visualizing solutions through the utilization of various software tools and gain practical expertise by engaging in hands on activities focused on the installation and configuration of diverse hardware components within a computer system.	An	Р	Instructor-created exams / Quiz Practical Assignment / Observation of Practical Skills			
* - Re # - Fa	* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C) # - Factual Knowledge (E) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive						
Know	Knowledge (M)						

Detailed Syllabus:

Fundamentals of Computers and Computational Thinking

Detaile Funda	ed Sylla mental	abus: s of Computers and Computational Thinking	Umo	Monka
T	Unit	History and Evolution of Computing System	0	15 IVIALKS
1	1	Evolution of Computers – History, Generations	9	15
	2	Overview of Computer System- Von Neumann Model, Number Systems(Binary, Hexa, Octal, Decimal)	2	
	3	Number Conversion and Digital Codes- Conversion from one number system to another, Digital Codes (Gray, Excess-3, BCD)	2	
	4	Pioneers and Contributors of Computing Systems - First Mechanical computer - Charles Babbage, Stored-Program Architecture - John von Neumann, Turing machine - Alan Turing, First General-Purpose Electronic Digital Computer -	2	
		John Mauchly and J. Presper Eckert, Artificial Intelligence- John McCarthy (Contributions only).		
	5	Computing Systems: Past to Present - Single Core, Dual- Core and Multi-Core Processors, Graphics Processing Unit (GPU), Accelerated Processing Unit, Quantum Processing Units (QPU) (Concept only).	2	

II		Hardware	11	20
	6	Electronic Components – Active Components - Diode, Transistor, Integrated Circuits (Definition, Symbol and Function).	1	
	7	Electronic Components - Passive Components – Resistors, Capacitors, Inductors (Definition, Symbol and Function).	1	
	8	Motherboard Components – CPU and Cooling Fan, RAM, Expansion Slots (PCIe), Input/Output Ports, Chipset (Concept only).	2	
	9	Motherboard Components – BIOS/UEFI Chip, SATA/NVMe Slots, Network Interface, Ports- Ethernet, VGA, HDMI, USB (Concept only).	3	
	10	Computer Components – SMPS, Motherboard, Storage Devices (HDD, SSD, NVMe)(Concept only).	2	
	11	Computer Components – RAM (DRAM, SRAM, DDR SDRAM), ROM, Cache (Concept only).	2	
III		Software	10	15
	12	Softwares - Application Software, System Software, Examples	1	
	13	Operating Systems – Need of OS, Types – Proprietary and Open Source, Hardware Software Compatibility, POST, Booting.	4	
	14	OS Installation – Bootable Media, UEFI/Legacy BIOS, Disk Partitioning, Dual Booting, Boot Manager – BOOTMGR, Grub, File Systems- FAT, NTFS, ext4.	4	
	15	Device Drivers – Need of Device Drivers, Driver Interactions (Basic concept only).	1	
IV		Computer Science and Computational Thinking	15	20
	16	Computer Science - Introduction, Role of Computer Science in the Modern Era	1	
	17	Problem Solving - Defining the Problem, Systematic Approach.	2	
	18	Computational Thinking – Problem Decomposition, Pattern Identification, Abstraction, Generalization.	2	
	19	Logical Thinking – Inductive and Deductive Reasoning, Logical Expressions.	2	
	20	Algorithmic Thinking – Intuition vs Precision, Defining algorithms.	2	
	21	Algorithm – Need of Algorithm, Qualities of a Good Algorithm, Examples.	3	
·	22	Flowchart - Flowchart Symbols, Examples. Raptor.	3	
V		Lab Activities	30	30

Some of the suggested lab activities are given below. 1. Identify, categorize and list out specifications of given	
1. Identify, categorize and list out specifications of given	
electronic components.	
2. Identify and list out specifications of given motherboard	
components.	
3. Identify and Describe various ports and connectors on the	
motherboard.	
4. Installation of various components on the motherboard	
(Processor, Fan, Heat Sink, RAM etc.)	
5. Hands-on experience in assembling and disassembling a	
computer system (SMPS, Motherboard, Storage Device etc.).	
6. Accessing and configuring the Basic Input/ Output System	
(BIOS) or Unified Extensible Firmware Interface (UEFI)	
settings.	
7. Preparation of Bootable media with software like <i>Rufus</i> .	
8. Check the hardware compatibility and Install operating	
system (single booting) on given computer.	
9. Check the hardware compatibility and Install operating	
systems (dual booting – Windows and Linux) on a given	
computer.	
Develop algorithms and implement the solutions using	
RAPTOR flowchart execution tool for the following problems.	
10. Read and print a number.	
11. Read the price of three items and print the total bill amount.	
12. Read the ages of two persons and print the elder one.	
13. Read the number of units of electricity consumed and print	
the bill amount for various slabs.	
14. Read a year and check whether it is a leap year.	
15. Print first N numbers (using loop).	

References:

1. Gary B. Shelly, Thomas J. Cashman, and Misty E. Vermaat. "Introduction to Computers", Cengage Learning, 2008.

2. Pradeep K. Sinha and Priti Sinha, Computer Fundamentals: Concepts, Systems & Applications. BPB Publications.

3. Kevin Wilson, Computer Hardware: The Illustrated Guide to Understanding Computer Hardware. Amazon Digital Services LLC – KDP, 2018.

4. John Hanna, OS Installation 101: A Step-by-Step Approach for Newbies.

5. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC, 2014

6. R.G. Dromey, How to solve it by Computer, PHI, 2008

Programme	B. Sc. Computer Science				
Course Code	CSC1MN101				
Course Title	Exploring Computer Ba	Exploring Computer Basics & Computational Thinking			
Type of Course	Minor				
Semester	1				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours
	4	3E (A	1000	2	75
Pre-requisites	 Foundation on Foundation on 	Mathematics a	at Plus Two lev at Plus Two Lev	el vel	
Course Summary			Call B	12	
Course Outcomes (CO):					

Detailed Syllabus of Minor Courses

Course Outcomes (CO):

СО	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
CO1	Understanding of computer hardware, software, and basic operation principles		C	Exams/ Assignments/ Quizzes/ Seminars/ Practical
CO2	Understand and identify computer hardware components	U	С	Exam/ Assignments/ Quizzes/ Seminars/ v
CO3	Understand how data is represented and manipulated within a computer system.	U	C	Exam/ Assignments/ Quizzes/ Seminars
CO4	Understand the basics of computer languages, operating systems, and their comparison	U	C	Exam/ Assignments/ Quizzes/ Seminars

CO5	Learn to design and implement algorithms to solve simple computational problems. Develop computational thinking skills essential for problem-solving in various domains.	Ар	Ρ	Exam/ Assignments/ Quizzes/ Seminars/ / Practical
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* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C)

- Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)

Detailed	Detailed Syllabus:						
Module	Unit	Content	Hrs	Marks			
Ι	Histo	ry, Evolution of Computers, and Number System	8	15			
	1	Introduction to Computers, Characteristics of Computers	1				
	2	Generations of Computers	1				
	3	Classification of Computers: Super Computers, Main Frame Computers, Mini Computers, Micro Computers	1				
	4	Number Systems (Binary, Decimal, Octal, Hexadecimal) and Conversion	3				
	5	Computer Codes: BCD Code, Excess 3 Code, ASCII Code, Unicode, Gray Code	2				
	Basic	Computer Organization and Concept of Hardware	14	20			
Π	6	 Basic Computer Organization: Input Unit, Storage Unit, Processing Unit, Control Unit, Output Unit 	1				
	7	Concept of hardware	1				
	8	CPU: Arithmetic and Logic Unit, Control unit	1				
	9	 Memory: Primary Memory, Secondary Memory, Access Time, Storage Capacity-bit, byte, nibble, volatile memory 	2				
	10	 Memory hierarchy: Register memory, Cache memory, RAM (Static, Dynamic), ROM(Masked ROM, PROM and EPROM), Secondary storage devices (Magnetic tape, Hard disk, SSD and CD drive) 	5				

		 Inside CPU: SMPS, Motherboard, Processor, Storage 	1	
		Devices (HDD, SSD, RAM, ROM).		
	11	Mathematic Components: Dresses of Clat. Capling For	2	
	11	Motherboard Components: Processor Slot, Cooling Fan, RAM Expansion Slots (BCIo), Input (Output Ports	5	
		Chineset, BLOS (LEEL Chine SATA (N)/Ma Slate, Natwork		
		Interface Ports, Ethernet VGA port HDMI port USP		
		nort		
Ш	Input	-Output Devices, Concept of Software	12	15
	12	 Input Devices: keyboard, pointing devices (mouse, 	2	
		touchpad), Video digitizer, remote control, joystick,		
		scanner, digital camera, microphone, sensor		
	13	 Output Devices: monitor. printer (laser, inkiet, dotmatrix). 	2	
		plotter, speaker, control devices (lights, buzzers, robotic		
		arms, and motors)		
	14	Iypes of Software: System Software vs. Application Software Draggister V/s Open Sources	2	
		Software, Proprietary vs Open Source		
	15	Operating Systems: Functions, types of OS (batch,	2	
		multiprogramming, tim <mark>e-sharing, real-time</mark> , and distributed)		
	16	Programming Languages (Machine, assembly & High Java)	2	
	10	Programming Languages (Machine, assembly & Fightever),	2	
	17	language Translators (Assembler, Interpreter and Compiler)	2	
1V	Probl	em-solving and logical Thinking	11	20
	18	Introduction to Problem Solving: Understanding the importance	2	
		of problem-solving in computer science, Identifying and defining		
		problems in a computational context.		
	10	Algorithm and its characteristics	1	
	19		1	
	20	Algorithm Development: Steps involved in designing algorithms,	2	
		Pseudocode is an intermediate step in algorithm development.		
	21	Flowchart Basics: Introduction to flowcharts as a visual	2	
		representation of algorithms, Understanding flowchart		
		symbols and their meanings		
	22	Drawing simple flowcharts	1	
	22		4	
V	Hand	s-on Data Structures:	30	
	Pract			

1	Hardware:	5	
	1. Identify the given motherboard components.		
	2. Identify and describe various ports and connectors on		
	the motherboard.		
2	Software:	5	
	1. Check the hardware compatibility and Install an		
	operating system on a given computer.		
	2. Install any device driver on a given computer system to		
	communicate with peripheral devices like Printers, Scanner, etc		
3	Design Algorithm and visualize it using RAPTOR software	20	
	Problem 1: Calculate the Sum of Two Numbers		
	Problem 2: Find the Larger of Two Numbers		
	Problem 3: Check if a Number is Even or Odd		
	Problem 4: Calculate the Factorial of a Number		
	Problem 5: Temperature Conversion		
	Problem 6: Simple Interest Calculation		
	Problem 7: Calcula <mark>te the Sum of Digits in a</mark> Number		
	Problem 8: Check if a Number is Positive, Negative, or Zero		
	Problem 9: Determine if a Triangle is Equilateral, Isosceles, or		
	Scalene		
	Problem 10: Check if a Number is Prime or Composite		

Reference Books:

- 1. Brookshear, J. Glenn. Computer Science: An Overview. 13th ed., Pearson, 2014.
- 2. Norton, Peter. Introduction to Computers. 7th ed., McGraw-Hill, 2016.
- 3. Patterson, David A. and John L. Hennessy. Computer Organization and Design: The Hardware/Software Interface. 5th ed., Morgan Kaufmann, 2013.
- 4. Sedgewick, Robert, and Kevin Wayne. Algorithms. 4th ed., Addison-Wesley Professional, 2011.
- 5. Knuth, Donald E. The Art of Computer Programming, Volumes 1-4A Boxed Set. AddisonWesley Professional, 2011.
- 6. Grover, Aditya Bhargava. Grokking Algorithms: An Illustrated Guide for Programmers and Other Curious People. Manning Publications, 2016.

Mapping of COs with PSOs and POs :

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
						6							
CO													
1							3						
								1	3	1	1	1	1

CO 2				3		2			4	1
					1	3	1	1	1	1
CO										
3				1						
					1	1	1	1	1	1
CO										
4				1						
					1	1	1	1	1	1
CO				2	1	3	3	3	1	2
5										

Correlation Levels:

Level	Correlation
-13	Nil
1	Slightly / Low
2	Moderate / Medium
3	Substantial / High

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments (20%)
- Final Exam (70%)

Mapping of COs to Assessment Rubrics:

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1		1		1
CO 2	1	<i>✓</i>		1
CO 3	1	1		1
CO 4	1	1		1
CO 5	1	1		1

B. Sc. Computer Science							
CSC1MN102							
Python Programming							
Minor							
Ι							
100-199							
Credit	Lecture	Tutorial	Practical	Total			
	per week	per week	per week	Hours			
4	3	and the particular of the part	2	75			
Have an unders	tanding about alg	orithms and flow	chart				
Course Summary This course explores the versatility of Python language in programming a teaches the application of various data structures using Python.							
	 B. Sc. Compute CSC1MN102 Python Program Minor I 100-199 Credit 4 Have an underse This course exp teaches the app structures using 	B. Sc. Computer Science CSC1MN102 Python Programming Minor I 100-199 Credit Lecture per week 4 3 Have an understanding about alg This course explores the versatiliteaches the application of variou structures using Python.	B. Sc. Computer Science CSC1MN102 Python Programming Minor I 100-199 Credit Lecture per week per week per week per week per week Der week per week per week per week Lecture This course explores the versatility of Python lang teaches the application of various data structures using Python.	B. Sc. Computer Science CSC1MN102 Python Programming Minor I 100-199 Credit Lecture per week per week per week per week 4 3 - Have an understanding about algorithms and flowchart This course explores the versatility of Python language in programm teaches the application of various data structures using Python.			

Course Outcomes (CO):

СО	CO Statement	Cognitiv e Level*	Knowledg e	Evaluation Tools used
CO1	Understand the basic concepts of Python programming	ALAK	С	Instructor- created exams / Quiz
CO2	Analyse problem- solving skills using different control structures and loops	An	Р	Coding Assignments/ Code reading and review
CO3	Analyse the various data structures and operations on it using Python	An	Р	Coding Assignments/ Exams

30. *

CO4	Examine modular programming using functions	An	Р	Instructor-created exams / Case studies
CO5	Design Python programs to solve basic computational problems and acquire knowledge of data analysis and visualization using Python	С	М	Instructor- created exams / Quiz Coding
* - Remember (R),	Understand (U), Apply (A	p), Analyse (An), E	valuate (E), Create (C	C)

- Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)
Detailed Syllabus: (M) 1

Module	Unit	Content	Hrs	Mark s
	Introduction	to Python	12	20
	1	Features of Python, Different methods to run Python,Python IDE	2	
	2	Comments, Indentation, Identifiers, Keywords, Variables	2	
	3	Standard Data Types	2	
I	4	Input Output Functions, Import Functions, range function	1	
	5	Operators and Operands, Precedence of Operators, Associativity	2	
	6	Type Conversion, Multiple Assignment	1	

7	Expressions and Statements, Evaluation of Expressions	1	
8	Boolean Expressions	1	
Control Structures		12	20

	9	Decision Making- if statement, ifelse statement, ifelse statement, Nested if statement	5	
	10	Loops - for loop, for loop with else, while loop, while loop with else, Nested Loops	5	
	11	Using indentation in Python to define code blocks	1	
II	12	Control Statements- break, continue, pass	1	
	Data Structures in	Python	12	20
	13	Working with strings and string manipulation	3	
	14	List - creating list, accessing, updating and deleting elements from a list	2	
	15	Basic list operations	1	
	16	Tuple- creating and accessing tuples in python	2	
	17	Basic tuple operations	1	
ш	18	Dictionary, built in methods to create, access, and modify key-value pairs	2	
	19	Set and basic operations on a set	1	
	Functions 🔶		9	15
IV	20	Built-in functions - mathematical functions, date time functions, random numbers	1	
	21	Writing user defined functions - function definition, function call, flow of execution, parameters and arguments, return statement	6	
	22	Recursion. Introduction to basic Python libraries (e.g., math, random)	2	

Hands-on Data Structures:	30	
Practical Applications, Case Study and Course Project		

Design pro	ograms from the concepts listed below. Select the topics and programs suited	
for your d	omain	
v	1 Programs to: 1 • Run instructions in Interactive interpreter and as Python Script • Perform calculations involving integers and floating point numbers using Python arithmetic operators Data Structures in Python • String - Create a string , Indexing / Looping / Slicing • Lists - Create a list , Indexing / Looping / Slicing / Adding items / Modifying items / Removing items • Tuples - Create a tuple , Indexing / Looping / Slicing / Adding items to a tuple • Dictionary - Create a dictionary and access values with key / Adding a key- value pair / Adding to an empty dictionary /Modifying values in a dictionary / Removing key-value pair Function • Call functions residing in the math module • Define a function for later use • Pass one or more values into a function • Return one or more results from a function	
	 Case study: Create a Todo List Manager where Users should be able to add, remove, and view tasks Create Student Grade Tracker: Allow users to add students, add grades for subjects, and calculate average grades. 	

Mapping of COs with PSOs and POs :

	PSO	PSO	PSO	PSO4	PSO5	PSO6	PO 1	PO2	PO3	PO4	PO5	PO6	PO7
	1	2	3										
CO 1													
								1	1	1	1	1	1
CO 2													
								1	2	2	2	1	3
CO 3								1	~				
								1	2	2	2	1	3
CO 4								1	2	2	2	1	2
CO 5				15	LE.	GE	(4)	3	2	3	3	3	3
Corre	elation I	Levels:	1		FE			P				<u>, </u>	5

≊		1 Z
Level	Correlation	1.2
- \ *	Nil	*
1	Slightly / Low	
2	Moderate / Medium	~/
3	Substantial / High	

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments (20%)
- Final Exam (70%)

Mapping of COs to Assessment Rubrics :

	Internal Exam	Assignment	Project	End Semester
			Evaluation	Examinations
CO 1	✓			1
CO 2	✓	✓	1	✓
CO 3	✓		✓	✓
CO 4	✓	\checkmark	✓	✓
CO 5	✓			1

Reference Books:

- 1. Jose, Jeeva. Taming Python By Programming. Khanna Book Publishing, 2017. Print.
- 2. Downey, Allen. Think Python. Green Tea Press, 2nd ed. 2009



Programme	B. Sc. Computer Science							
Course Code	CSC1MN103							
Course Title	Data analysis using Spreadsheet							
Type of Course	Minor							
Semester	1							
Academic Level	100-199							
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours			
	4	3		2	75			
Pre-requisites	1. Basic mathematics knowledge 2. Basic computer knowledge							
Course Summary	This syllabus aims to co participants with varyi	over a broad s	pectrum of Ex	cel skills, cater	ing to			

Course Outcomes (CO):

СО	CO Statement	Cognitive Level*	Knowledge Category#	Evaluation Tools used
C01	Demonstrate creation and manipulation of data within Excel workbook including formating of Data	Ар	P	Instructor-created exams / Quiz
CO2	Demonstarte the impotantance of sorting,filtering,cell referencing in Excel for effective data management	Ар	Ρ	Problem-solving assessments
CO3	Analyse basic functions and formulas in Excel .	An	Ρ	Instructor-created exams / Quiz

CO4	Implement the usage of tables and charts to draw meaningful conclusions to support decision-making.	Ар	Ρ	Instructor-created exams / Quiz
CO5	Creating Excel solutions	С	Ρ	Modelling Assignments/
	for various real world			/ Case studies

* - Remember (R), Understand (U), Apply (Ap), Analyse (An), Evaluate (E), Create (C)

- Factual Knowledge(F) Conceptual Knowledge (C) Procedural Knowledge (P) Metacognitive Knowledge (M)

Detailed Syllabus:

designing dash board for

data analysis

Module	Unit	Content	Hrs	Mar ks
I	Introd	luction to Spreadsheets	12	18
	1	Overview - Overview of spreadsheet software (Microsoft Excel, Google Sheets) and their application	2	
	2	Excel Interface and Navigation-Ribbon,Row ,Column, Cell Worksheet,Workbook,Cell Address,Data range,Formula, Chart)	2	
	3	Basic navigation techniques within the workbook	2	
	4	Creating and Saving Workbooks - Creating a new workbook and saving it , Different file formats and when to use them	2	
	5	Inserting or deleting rows or columns	2	
	6	Basic Cell Formatting - Formatting text, numbers, and dates,	2	
II	Data N	Vanagement	11	18
	7	Find and select -Find,Replace,Go To,Go To Special	2	

	8	Cell Referencing-Relative, Absolute and Mixed	1	
	9	Sorting data-Quick Sorting, Sorting by Multiple Criteria	2	
	10	Filtering data-Quick Filtering, Filtering by Multiple Criteria ,	2	
		Performing Calculations on Filtered Data		
	11	AutoFill and Flash Fill	1	
	12	Remove Duplicates	1	
	13	Get External Data - From web, from text and from other sources	2	
III	Excel F	Functions and formulas	10	18
	14	Mathematical and Statistical functions(-SUM, AVERAGE, MAX, MIN, ROUND, ABS, SQRT, MOD.,COUNT, COUNTIF, SUMIF, AVERAGEIF, MEDIAN, STDEV, VAR)	2	
	15	Logical Functions(IF, AND, OR, NOT, XOR, IFERROR, IFNA, SWITCH.)	2	
	16	Text Functions (CONCATENATE, LEFT, RIGHT, MID, LEN, SUBSTITUTE, FIND, SEARCH.)	2	
	17	Date & Time Functions-(TODAY, DATE, DAY, MONTH, YEAR, HOUR, MINUTE, SECOND.)	2	
	18	Using formula :Witing a formula ,Cell reference	2	
1V	Data A	nalysis and Manipulation	12	16
	19	Introduction to Tables and Data Organization - Creating and formatting tables for effective data management, Sorting and filtering data within tables	3	
	20	Data Analysis Techniques - Advanced functions (VLOOKUP, HLOOKUP, INDEX, MATCH)	3	
	21	PivotTables and PivotCharts - Understanding PivotTables for data analysis, Creating PivotCharts for visual representation	3	
	22	Data Visualization: Creating and customizing various chart types, Effective use of charts for data presentations	3	
V	Projec	t and Practical Applications	30	

1	Practical session on real-world applications (Eg: Use advanced functions relevant to field of study, Tabulation of Lab experiments data for better analysis and visualisation)	15	
2	Course Project: Creating a comprehensive project using Excel features.	15	

References

- 1. "Microsoft Excel 2019 Step by Step" by Curtis Frye
- 2. "Excel 2019 Bible" by Michael Alexander and Richard Kusleika
- 3. "Microsoft Excel 2019 Data Analysis and Business Modeling" by Wayne Winston

Mapping of COs with PSOs and POs :

	PSO1	PSO2	PSO3	PSO4	PS O5	PSO6	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO 1						7111	1	1	3	3	1	1	1
CO 2			2		15		2	1	3	3	3	1	1
CO 3			1	10	51		1	1	3	3	3	1	1
CO 4					and the second		1	1	3	3	3	1	1
CO 5							1	2	3	3	3	1	2

Correlation Levels:

Level	Correlation
-	Nil
1	Slightly / Low
2	Moderate / Medium

3	Substantial / High

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments (20%)
- Final Exam (70%)

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RINIA

Mapping of COs to Assessment Rubrics :

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1			OF MAR	
CO 2	1	1	000	11
CO 3	12	J		1
CO 4	1	1		10
CO 5				•

RUDA