B. C. A.

Semester-I

25BCA020T: Fundamentals of Computer

Course Objectives

- To know about basic concepts of computers and Number Systems.
- To learn about CPU, memory and input devices.
- To learn and practice software development life cycle.
- To know about different types of computer languages.
- To know about the basics of operating systems and computer networks.

Course Outcomes

1. Understand the concepts of the Number System.
2. Identify and classify input and output devices based on a given computer system diagram.
3. Analyze the advantages and disadvantages of algorithms and flowcharts in software development
4. Evaluate the suitability of different programming languages for specific tasks.
5. Design and create batch files for automating tasks in a DOS environment

Articulation Matrix

(Program Articulation Matrix is formed by the strength of the correlation of COs with POs and PSOs. The strength of correlation is indicated as 3 for substantial (high), 2 for moderate (medium) correlation, and 1 for slight (low) correlation)

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	1	3	-	2	-	-	-	-	-	-	-	-
CO2	-	2	3	-	1	-	-	-	2	-	-	-
CO3	-	-	2	3	1	-	1	-	-	-	-	-
CO4	-	-	2	-	3	1	-	-	-	-	2	1
CO5	-	1	-	2	-	3	-	-	-	-	1	2

High-3 Medium-2 Low-1

Unit I: Introduction to Computers   **12 Hours**
Introduction to Computers: Introduction, Characteristics of Computers, Block diagram of computer, Generation of Computers, Types of computers, Mini Computers, Micro Computers, Mainframe Computers, Super Computers etc., Applications of Computers.
Computer Software: Introduction, Software: Definition, Relationship between Software and Hardware, Software Categories, System Software, Application Software**. Number System:** Decimal, Binary, Octal, Hexadecimal, Conversions of number systems.

Unit II: Basic computer organization   **12 Hours**
Basic computer organization: Block diagram of computer, **Input devices**: classification of input devices, **Output devices**: classification of output devices, Printer, types of printers, **Central Processing Unit (CPU)**, Introduction, Elements of CPU: Control Unit (CU), Arithmetic Logical Unit (ALU), Registers, Instruction format Instruction set, Processor Speed, **Memory**: Introduction, memory measuring units, main memory, types of primary memory chips, Secondary storage: Introduction, types of secondary storage devices.

Unit III: Software Development Life Cycle   **12 Hours**
SDLC: Software development life cycle, Algorithm: Definition, Characteristics, Advantages and disadvantages, Flowchart: Definition, Define symbols of flowchart, Advantages and disadvantages. **Programming Logic Buildings:** Introduction, Logic Buildings using flowchart and algorithms.

Unit IV   Computer Languages   **12 Hours**
Computer Languages: Machine language, Assembly language, High level language, Program Language Translators: Assembler, Compiler, Interpreter, **Programming Languages**: Introduction, Evolution of Programming Languages, Classification of Programming Languages, Generations of Programming Languages, Features of a Good Programming Language, What are the characteristics of a good program, Top-down design, Bottom-up design.

Unit V: Operating System   **12 Hours**
Operating System: Introduction, Operating System, Evolution of Operating System, Types of Operating System, Functions of an Operating System, **Dos**–History, Files and Directories, Internal and External Commands, Batch Files, etc. **Networking Basics:** Introduction, Types of Networks, Topology, Client-Server Concepts
                                                                    Total: 60 Hours

 Reference Books:
   1. Computer Fundamental Organization, B. Ram
   2. Computer Fundamentals, Anita Goel, Pearson, 2010.
   3. Fundamental of Computers – By V.Rajaraman B.P.B. Publications
   4. Fundamental of Computers – By P.K. Sinha
   5. Computer Today- By Suresh Basandra
   6. Computer Networks- By Andrew S. Tanenbaum

  List of e-Learning Resources:

   1. https://nptel.ac.in/
   2. https://www.coursera.org/
   3. https://www.edx.org/

Prepared By	**Academic Coordinator**	**HOD**	**Senior Faculty nominated by DOAA**

Mandsaur University
Department Of Allied Science

Syllabus for BCA (Computer Applications : BCA- CC & SACS)
Semester-I

L-4,T-0,P-0,C-4

25ALS060T : Mathematics and Statistics

Course Objective:
- To give understanding of the theoretical and practical aspects of the use of trigonometric function and Matrices.
- To develop analytical ability to solve real-world problems using system of linear equations.
- To study the basics of logic set theory concepts with their application.
- To study the basics of set theory concepts with their application.
- To apply statistical concepts to real-world problems in computer application.

Course Outcomes (COs)
1. Understand the concept of sequence and series.
2. Apply quadratic formula to solve quadratic equation.
3. Analyze mean, median and mode for finding central value of a given data set.
4. Evaluate logical Connectives and truth table for solving computer models.
5. Evaluate some set inclusion and exclusion problem using computational method.

Articulation Matrix
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CO/PO/PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
CO1	3	2	1	1	1	1	-	-	-	1	1	1
CO2	3	2	1	-	1	-	-	-	-	1	1	1
CO3	1	2	2	1	2	-	-	-	-	1	1	1
CO4	1	3	2	1	2	1	-	-	-	1	2	1
CO5	1	2	2	1	1	-	-	-	-	1	2	2

High-3 Medium-2 Low-1

Unit- I: Sequence and series
12 Hours

Sequences, Arithmetic progression, Arithmetic means, Geometric Progression, Sum to infinity of a G.P., Arithmetico–geometric sequence, Sum to n terms of special Sequences. The Binomial Theorem, Some applications of Binomial theorem, Binomial theorem for any index. Exponential Series, Logarithmic Series.

Unit- II: Trigonometry , Matrices and Quadratic Equations
12 Hours

Angles & their Measurement, Values of Trigonometric Ratios, Height and Distances. Elementary Matrices and types of matrices. Solution of quadratic equations, Symmetric functions of roots, Graph of a quadratic polynomial, Applications.

Unit- III: Statistics
12 Hours

Frequency Distribution, Measure of Central Tendency: Mean, Mode, Median, Measures of variation: Mean deviation, Standard Deviation.

Mandsaur University
Department Of Allied Science

Unit- IV: Mathematical Logic   **12 Hours**

Statements and notations, Connectives: Negation, Conjunction, And Disjunction. Statement formulas and truth tables. Tautologies, Tautological implications, contradiction contingency.

Unit- V: Set Theory   **12 Hours**

Basic concepts of set theory, notation, inclusion and equality of sets, the power set, types of sets, operations on set, Venn diagrams.

Total: 60 Hours

Reference Books:
1. Sarkar, S. K. (2008). *A Textbook of Discrete Mathematics*. S. Chand Publishing.
2. Rangachari, M. S. (1993). Mathematics education—some remedies. *Current Science*, 64(4), 218-220.
3. Kolman, B., Busby, R. C., & Ross, S. (1995). *Discrete mathematical structures*. Prentice-Hall, Inc..
4. Gupta, S. C., & Kapoor, V. K. (2020). *Fundamentals of mathematical statistics*. Sultan Chand & Sons.
5. *Mathematics by M. S. Rangachari.*

List of e-Learning Resources:
1. https://nptel.ac.in/
2. https://www.coursera.org/
3. https://www.edx.org/course/advanced-algorithmics-and-graph-theory-with-python?index=product&queryID=106bd43f975a7c909005bc27e62f3c98&position=3&v=1&linked_from=autocomplete&c=autocomplete

HOD
Department of Mathematics
Mandsaur University, Mandsaur (458001)

Basic English

Applicable for BA/BBA/BCA/BSc First Year students

B.A., BCA, BBA, B.com. BSc. I Year Semester　　　　　　**L　T　P　C**

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Course Description:

This paper is especially designed for vernacular medium background learners. The syllabus is structured to build foundational English skills in Grammar, Vocabulary, Reading, Writing, Listening, and Speaking considering NEP guidelines under Aility Enhancement Course.

Course Objectives:

1. To develop basic proficiency in English language skills: listening, speaking, reading, and writing.

2. To strengthen grammar and vocabulary knowledge for academic and everyday use.

3. To help students communicate confidently in social and academic settings.

Course Outcomes:

By the end of the course, students will be able to:

1. Understand and use basic grammar structures accurately.

2. Communicate simple ideas effectively in spoken and written English.

3. Participate in basic conversations and listening tasks with improved confidence.

Articulation Matrix

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CO / PO / PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 10	PSO 1	PSO 2	PSO 3
CO1	-	3	-	-	-	-	-	1	2	-	-	-	-
CO2	-	3	-	-	-	-	-	1	2	-	-	-	-
CO3	-	3	-	-	-	-	-	1	2	-	-	-	-
CO4	-	3	-	-	-	-	-	1	2	-	-	-	-
CO5	-	3	-	-	-	-	-	1	2	-	-	-	-

SYLLABUS

UNIT 1: (15 Hours)

My Boyhood Days by Rabindranath Tagore

Grammar:

Parts of Speech (Noun, Pronoun, Verb, Adjective, Adverb, Preposition, Conjunction, Interjection)

Articles (A, an, The)

Vocabulary:

Everyday vocabulary: Days, months, colors, numbers, common objects Synonyms & Antonyms (basic)

Word formation (prefixes/suffixes)

Reading:

Reading short stories, newspaper snippets, and messages

Writing:

Sentence construction: Simple and compound sentences

Activities:

Fill-in-the-blanks, sentence making

Vocabulary crossword / flashcards

Listening Skills

Listening Practice:

Listening to short conversations and announcements

Speaking Skills

Speaking Practice:

Introducing oneself and others

Activities:

True/False based on audio clips

Fill in the blanks while listening

Story-based comprehension

exercises

Tools: Use of recorded dialogues, YouTube education channels, English audio stories

UNIT 2: (15 Hours)

Wings of Fire (chapter-1) by APJ Abdul Kalam

Grammar:

Sentence structure: Subject + Verb + Object

Types of Sentences: Affirmative, Negative, Interrogative

Vocabulary:

Words from texts (context-based learning)

Homophones and commonly confused words

Reading:

Skimming and scanning techniques

Understanding main ideas and details

Comprehension Practice

Writing

Paragraph writing: Descriptive and narrative

Activities:

Jumbled sentences/paragraphs for reordering

Listen and answer questions

Listening Skills

Listening for specific information (names, dates, directions)

Speaking Skills

Introducing oneself and others

Asking and answering simple questions

Expressing likes, dislikes, opinions

Tools: conversation videos, peer dialogues, speaking module

UNIT 3:   (15 Hours)

The Last Leaf by O' Henry

Grammar:

Tenses: Present Simple, Past Simple

Subject-Verb Agreement

Vocabulary:

Descriptive adjectives

Action verbs

Reading:

Answering WH-questions (who, what, where, etc.)

Sentence completion and paragraph sequencing

Writing

Informal writing: Email, message, diary entry

Activities:

Guided writing tasks

Picture-based paragraph writing

Functional English:

Greetings, apologies, thanks, requests

Daily conversation starters

Activities:

Role-play (at shop, college, bus stop, etc.)   **Total: 45 Hours**

Tools: conversation videos, peer dialogues, speaking modules

Text Books

Students' Handbook, Basic English (Prescribed Text, Exercises & Worksheets)
References:

1. Board of Editors. Using English a Course book for Undergraduate Engineers and Technologists. Orient Black Swan Limited, Hyderabad: 2015

2. Richards, C. Jack. Interchange Students' Book-2 New Delhi: CUP, 2015.

3. Bailey, Stephen. Academic Writing: A practical guide for students. New York: Rutledge, 2011.

4. Means,L. Thomas and Elaine Lang Lois. English & Communication for Colleges. Cengage Learning, USA: 2007

5. Redston, Chris &Gillies Cunningham Face2Face (Pre-intermediate Student's Book& Workbook) Cambridge University Press, New Delhi: 2005

6. Comfort, Jeremy, et al. Speaking Effectively: Developing Speaking Skills for Business English. Cambridge University Press, Cambridge: Reprint 2011

7. Dutt P. Kiranmai and Rajeevan Geeta. Basic Communication Skills, Foundation Books: 2013

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25BCA010P: Office Automation

Course Objectives

- Learn to use MS Office applications for creating and formatting professional documents, spreadsheets, and presentations.
- Gain hands-on experience with common spreadsheet operations including formulas, functions, and data visualization.
- Understand how to compose emails, schedule meetings, and organize digital communications effectively.
- Develop skills to collaborate using cloud-based tools like Google Drive, Docs, Sheets, and Forms.
- Apply formatting and design principles to create polished reports, resumes, and presentation decks.

Course Outcomes

1. Create and format professional documents using MS Word and Google Docs.
2. Develop and manage spreadsheets using formulas, functions, and data analysis tools in Excel/Google Sheets.
3. Design visually appealing presentations using MS PowerPoint or Google Slides with multimedia elements.
4. Use email platforms and calendar tools effectively for communication and scheduling in a professional environment.
5. Demonstrate collaboration and automation techniques using Google Drive, Google Forms, and introductory macros.

Articulation Matrix

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CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	1	3	-	-	2	-	-	-	-	-	-	-
CO2	-	1	3	2	-	-	-	-	-	-	-	-
CO3	-	1	2	3	-	-	-	-	-	-	-	-
CO4	2	-	1	-	3	-	-	-	-	-	2	1
CO5	-	1	-	2	-	3	-	-	-	-	1	2

High-3 Medium-2 Low-1

Unit I: Word Processing (MS Word / Google Docs)   **18 Hours**
Creating, formatting, and saving a professional letter/document, Inserting tables, images, headers, footers, and page numbers, Using styles, themes, bullets, numbering, and templates, Creating mail merge for personalized letters, Spell-check, grammar, thesaurus, word count, and review tools.

Unit II: Spreadsheet Applications (MS Excel / Google Sheets)   **18 Hours**
Creating and formatting spreadsheets with formulas, Using functions: SUM, AVERAGE, IF, VLOOKUP, COUNTIF, etc., Creating charts: Pie, Bar, Line, and Combo Charts, Data sorting, filtering, and conditional formatting, Using pivot tables and data validation.

Unit III: Presentation Software (MS PowerPoint / Google Slides)   **18 Hours**

Creating a new presentation with themes and layouts, Inserting images, audio, video, SmartArt, and animations, Creating slide transitions and custom slide shows, Embedding charts and graphs from Excel, Printing and sharing presentations.

Unit IV: Email and Scheduling (MS Outlook / Gmail + Google Calendar)   18 Hours

Composing and formatting emails with attachments, Using CC, BCC, Reply All, and Filters, Managing inbox with labels/folders, Scheduling appointments and creating calendar invites, Creating contact groups/distribution lists.

Unit V: Google Tools   18 Hours
Creating and organizing folders on desktop/cloud, Uploading/sharing files using OneDrive/Google Drive, Using file conversion tools (e.g., Word to PDF), Working with document collaboration and version control.

Reference Books:

1. *Mastering MS Office* by Bittu Kumar, Latest Edition, V&S (Reference)

2. *Microsoft Office 2010 Introductory* (Textbook)

3. *Microsoft Office 2013 Professional Step By Step* by Beth Melton, Andrew Couch, Echo Swinford, Mark Dodge, Latest Edition, Pearson (Textbook)

List of e-Learning Resources:

1. https://www.coursera.org/
2. https://udemy.com/
3. https://edx.org

List of Experiments

Word Processing (MS Word / Google Docs):

1. Create a formal letter (e.g., job application) using headers, footers, and page borders.

2. Design a multi-page document with a table of contents, styles, and section breaks.

3. Use mail merge to generate invitation letters for a conference.

4. Create a resume using a professional template and formatting tools.

Spreadsheet Applications (MS Excel / Google Sheets):

5. Create a monthly expense sheet using basic formulas (SUM, AVERAGE, MAX, MIN).

6. Use conditional formatting to highlight sales figures above a target threshold.

7. Prepare a student mark sheet and calculate total, percentage, and grade using IF and VLOOKUP.

8. Create a pivot table to summarize sales data from a dataset.

9. Generate bar and pie charts from the provided sales or survey data.

Presentation Software (MS PowerPoint / Google Slides):

10. Design a presentation on "Digital India" with at least 6 slides, using themes and transitions.

11. Insert multimedia elements (video/audio), SmartArt, and hyperlinks in a presentation.

12. Create a business proposal pitch deck using visual design principles.

13. Embed an Excel chart in a presentation and explain the underlying data.

Email and Scheduling Tasks:

14. Compose and send an email with proper subject, CC/BCC, attachment, and signature.

15. Create a meeting invitation in Google Calendar or Outlook with participants and agenda.

16. Organize and label emails using rules or filters in Gmail or folders in Outlook.

Cloud Tools & Collaboration (Google Workspace):

17. Share a Google Doc or Sheet with collaborators and use comment/suggestion mode.

18. Create a Google Form for event registration, link it with a Google Sheet, and analyze responses.

19. Use Google Drive to create a folder, upload files, set sharing permissions, and manage version history.

Total Hours: 90

Prepared By	Academic Coordinator	HOD	Senior Faculty nominated by DOAA

B. C. A.

Semester-I

L-0 T-0 P-6 C-3

25BCA030P: Fundamentals of Programming Lab

Course Objectives

- Learn the basics of programming, including algorithms, coding conventions.
- Learn the basics of C programming, including variables, data types etc.
- Master control structures (if-else, loops) for effective program flow and decision-making.
- Understand functions, parameter passing, and recursion, enabling you to write modular and efficient code.
- Learn the string and string manipulation.

Course Outcomes

1. Understand principles of modularization and apply them to design programs efficiently.
2. Apply the basic C programming constructs effectively.
3. Analyze control constructs and type casting techniques proficiently in C programming.
4. Evaluate functions with appropriate parameter passing and return values.
5. Create efficient solutions using string manipulation functions in C programming.

(Program Articulation Matrix is formed by the strength of the correlation of COs with POs and PSOs. The strength of correlation is indicated as 3 for substantial (high), 2 for moderate (medium) correlation, and 1 for slight (low) correlation)

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	-	3	1	-	2	-	-	-	-	-	-	-
CO2	1	2	3	-	-	-	-	-	2	-	-	-
CO3	2	-	-	3	1	-	1	-	-	-	-	-
CO4	1	-	2	-	3	-	-	-	-	-	2	1
CO5	-	1	-	-	2	3	-	-	-	-	1	2

High-3 Medium-2 Low-1

Unit 1   **18 Hours**
Basic Input and Output Operations: Input and Output Operations,Data Conversion,Basic Mathematical Formulas.

Unit 2   **18 Hours**
Control Structures and Decision Making: Conditional Statements,Logical Operators,

Unit 3   **18 Hours**
Loops and Iterative Statements: Operators,Loops (while,do while,for),Printing Patterns.

Unit 4   **18 Hours**
Loops and Iterative Statements: Functions,Function Prototypes,Function Call and Return,Function Call and Return,Modular Programming.

Unit 5   **18 Hours**
Loops and Iterative Statements: Advanced Numerical Algorithms, Data Representation,
Recursive Functions,Array Manipulations.

List of Experiments

1. Write a C program to enter the length and breadth of a rectangle and find its perimeter.
2. Write a C program to enter the radius of a circle and find its diameter, circumference, and area.
3. Write a C program to enter temperature in Fahrenheit and convert to Celsius.
4. Write a C program to enter marks of five subjects and calculate total, average, and percentage.
5. Write a C program to find the maximum between two numbers.
6. Write a C program to find the maximum between three numbers using the conditional operator.
7. Write a C program to check whether a number is even or odd using a conditional operator.
8. Write a C program to check whether a number is negative, positive, or zero.
9. Write a C program to check whether a character is a vowel or consonant.
10. Write a C program to print all natural numbers from 1 to n using a while loop.
11. Write a C program to print all natural numbers in reverse (from n to 1) using a while loop.
12. Write a C program to print all even numbers between 1 to 100 using a while loop.
13. Write a C program to print all odd numbers between 1 to 100 using a while loop.
14. Write a C program to print a multiplication table of any number.
15. Write a C program to calculate the sum of digits of a number.
16. Write a C program to enter a number and print its reverse.
17. Write a C program to check whether a number is palindrome or not.
18. Write a C program to check whether a number is an Armstrong number or not.
19. Write a C program to find all factors of a number.
20. Write a C program to calculate the factorial of a number.
21. Write a C program to check whether a number is Prime or not.
22. Write a C program to print all Prime numbers between 1 to n.
23. Write a C program to find the sum of all Prime numbers between 1 to n.
24. Write a C program to find all Prime factors of a number.
25. Write a C program to find the frequency of each digit in a given integer.
26. Write a C program to enter a number and print it in words.
27. Write a C program to check whether a number is a perfect number or not.
28. Write a C program to print all perfect numbers between 1 to n.
29. Write a C program to check whether a number is a strong number or not.
30. Write a C program to print Fibonacci series up to n terms.
31. Write a C program to check whether a number is in Fibonacci series or not.
32. Write a C program to calculate the power of a number using a loop.
33. Write a C program to find the LCM of two numbers.
34. Write a C program to find the HCF (GCD) of two numbers.
35. Write a C program to swap two numbers using a temporary variable.
36. Write a C program to swap two numbers without using a temporary variable.
37. Write a C program to count the number of vowels, consonants, digits, and spaces in a string.
38. Write a C program to reverse a string.3

39. Write a C program to check whether a string is palindrome or not.
40. Write a C program to compare two strings without using the strcmp function.
41. Write a C program to copy one string to another without using the strcpy function.
42. Write a C program to find the length of a string without using strlen function.
43. Write a C program to sort an array in ascending order.
44. Write a C program to find the second largest element in an array.
45. Write a C program to insert an element in an array at a specific position.

Total Hours: 90

Reference Books:

1. Kerninghan& Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.

List of e-Learning Resources:

1. https://nptel.ac.in/
2. https://www.coursera.org/
3. https://www.edx.org/

| **Prepared By** | **Academic Coordinator** | **HOD** | **Senior Faculty nominated by DOAA** |

L-0 T-0 P-4 C-2

25BCA020P: Fundamentals of Computer Lab

Course Objectives
- To study different components of computers.
- To study motherboard and its components.
- To assemble and disassemble computers.
- Installation of Windows, Linux Operating system and other utility software.
- To connect computers via LAN.

Course Outcomes
1. Understand the concepts of hardware and software.
2. Install, configure and update Operating Systems, device drivers and software.
3. Analyze and troubleshoot various components in the computer system.
4. Evaluate computer networks and troubleshoot.
5. Create local area networks and virtual machines.

Articulation Matrix
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CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
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CO2	1	2	3	-	-	-	-	-	2	-	-	-
CO3	-	1	-	3	2	-	-	1	-	-	-	-
CO4	1	-	2	-	3	-	-	-	-	-	2	1
CO5	-	1	-	2	-	3	-	-	-	-	1	2

High-3 Medium-2 Low-1

Unit I   **12 Hours**
Computer Hardware Basics and Assembly: Study of Hardware Devices,Study of Motherboard and Components,Understanding Connectors and Ports,Assembling and Disassembling a Computer.

Unit II   **12 Hours**
System Configuration and Software Installation: Study of BIOS Settings, Formatting and Partitioning Hard Disk, Operating System Installation,Installation of Device Drivers and Software.

Unit III   **12 Hours**
Networking Fundamentals and Configuration: Study of Computer Networks, IP-Addressing Schemes, Creating and Configuring LAN,Remote Access and Troubleshooting.

Unit IV   **12 Hours**
System Maintenance and Management: Creating System Image and Bootable Pen Drive,Accessing BIOS/UEFI Settings,Installing and Configuring NICs,Data Backup and Recovery.

Unit V   **12 Hours**

Advanced Topics in Computing; Creating Virtual Machines,Connecting to Remote Computers,Troubleshooting Hardware and Software Issues.

List of Experiments

Hardware Study & Setup

1. Study of Hardware devices like keyboard, Mouse, Monitor, CD-ROM etc.

2. Study of Motherboard and its components.

3. Observe various connectors, ports back and front side of the Computer (Power, PS/2 keyboard and mouse, Serial and parallel, USB, VGA, LAN, Audio & microphone), write their purpose and specifications.

4. Access and navigate the BIOS/UEFI settings of a computer motherboard and perform tasks like changing boot order, enabling/disabling hardware components.

5. Install and configure network interface cards (NICs) in a computer.

6. Installing and troubleshooting printers.

7. Formatting and partitioning Hard disk.

8. Installation of Windows Operating system.

9. Installation of Linux Operating system.

10. Installing dual-boot systems (Windows + Linux) and managing bootloaders (GRUB).

11. Installation of various device drivers like printer, scanner, webcam and motherboard etc.

12. Installation of Application software like MS-Office, Photoshop, PDF Readers.

13. Data backup and recovery.

14. Creating Image of System using Rufus-like software.

15. Creating and restoring system restore points in Windows.

16. Creating and using system restore images with tools like Acronis or Windows System Image Backup.

17. Making a bootable pen drive.

18. Study of Computer Network LAN, MAN, WAN and various networking cables and networking devices.

19. Study of IP-Addressing Schemes.

20. Creating LAN using crossover cable and straight through cable.

21. Sharing and Mapping printers, drives and folders in computer networks.

22. Connecting to a remote computer using RDP.

23. Install and configure network interface cards (NICs) in a computer. (Moved to hardware but also networking)

24. Simulating network topologies using tools like Cisco Packet Tracer.

25. Using command-line tools (like ipconfig, ping, tracert, netstat, diskpart, chkdsk, etc.) for system diagnostics and configuration

26. Creating and managing user accounts and permissions in Windows and Linux.

27. Setting up a basic local web server using XAMPP or WAMP.

28. Creating virtual machines using Hypervisors.

29. Use basic Dos commands like cd,dir, mkdir,del, etc.

30. Use Disk management in windows to manage storage.

Total Hours: 60

Reference Books:

1. "Computer Organization and Design: The Hardware/Software Interface" by David A. Patterson and John L. Hennessy.

2. "Upgrading and Repairing PCs" by Scott Mueller.

3. "CompTIA A+ Certification All-in-One Exam Guide" by Mike Meyers.

4. "The Art of Electronics" by Paul Horowitz and Winfield Hill.

5. "Modern Operating Systems" by Andrew S. Tanenbaum and Herbert Bos.

List of e-Learning Resources:

1. https://nptel.ac.in/
2. https://www.coursera.org/
3. https://www.edx.org/

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