Community College of Skill Development

Lesson Plan: Fundamentals of Computers and C Programming

Program: B.Voc Web Development **Semester:** 1st **Course Code:** WDD-103 V

Credits:

L	T	P
3	0	0

Course Objectives: The course aims to provide foundational knowledge of computer systems, problem-solving techniques, C programming fundamentals, arrays, functions, pointers, structures, unions, and file handling. Emphasize practical skills, programming logic, and understanding of computer impacts on society, including addressing ethical concerns like computer crimes and viruses.

Course Outcomes:

After the successful completion of the course, students will be able to:

CO1: Understand the fundamental concepts of computer systems, including hardware components, types of software, programming languages, and the social implications of computer technology.

CO2: Develop problem-solving skills using pseudocode, flowcharts, and decision tables; and gain proficiency in C programming fundamentals including control statements and basic operators.

CO3: Implement and manipulate arrays, functions, pointers, and dynamic memory allocation in C, and differentiate between macros and functions.

CO4: Define and utilize structures and unions, manage file operations in C, and effectively debug programs while understanding different types of errors.

Equipment required in Classroom/ Laboratory/ Workshop

i. LCD/Projector
ii. Whiteboard/ Black Marker

Assessment Scheme

S.No.	Criteria	Marks
1	End Term Examination	75
2	Internal Evaluation Scheme	25
2a	Class Tests	15
2a (i)	Class Test-I	7.5
2a (ii)	Class Test-II	7.5
2(b)	Teacher Assessment (Continuous Evaluation)	10

2b (i)	Attendance	5
2b (ii)	Assignment / Presentation	5

Lect. No	Content to be covered	Pedagogy	Date of Implementation	Course Outcomes Covered	Faculty Sign
Unit-1					
L1	Concept of data and information; Components of Computer: Hardware Input Device, Output Device. CPU: Components of CPU; Memory and Storage Devices	- **Lecture-cum-discussion** using charts and diagrams to explain computer components.. - **Hands-on activity**: Identifying parts of a computer and types of software.	**5-8-2025**	Understand the fundamental concepts of computer systems, including hardware components, types of software, programming languages, and the social implications of computer technology.	
L2	Computer Software: System Software and Application Software; Functions of Operating System.	- **Demonstration** of actual hardware components and software interfaces	**7-8-2025**		
L3	Programming Languages: Machine, Assembly, High Level Language, 4GL; Language Translator; Linker, Loader	- **Use of multimedia presentations** and short videos to show real-world applications.	**7-8-2025**		
L4	Classification of Computers: Micro, Mini, Mainframe, Supercomputer. Advantages of Computer, Limitations of Computer	- **Question-answer sessions** and quizzes for concept clarity- **Question-answer sessions** and quizzes for concept clarity	**12-8-2025**		
L5	Range of Applications of Computer, Social Concerns of Computer Technology: Positive and Negative Impacts,	- **Group discussion** on social and ethical issues of computer use (e.g., data privacy, cybercrime)..	**14-08-2025**		
L6	Computer Crimes, Viruses and their remedial solutions	- **Case studies** on computer misuse and virus prevention	**14-8-2025**		
Unit-2					
L7	pseudocode, Problem Identification, Analysis, Flowcharts, Decision Tables, Pseudo codes and algorithms,	Use classroom discussion to analyze problems and define input-output. .	**19-8-2025**	Develop problem-solving skills	

L-8	Revision of Unit-1		**21-8-2025**	using pseudocode, flowcharts, and decision tables; and gain proficiency in C programming fundamentals including control statements and basic operators.	
L9	Program Coding, Program Testing and Execution	Explain syntax and semantics of programs using sample codes. - Use hands-on lab sessions for practice.	**26-8-2025**		
L10	C Programming Fundamentals: Keywords, Variables and Constants, Structure of a C program	Provide practice problems for variable declarations and constants.	**26-8-2025**		
L11	Operators & Expressions: Arithmetic, Unary, Logical, Break, Continue and Go to statements.	Demonstrate each operator through sample programs.	**28-8-2025**		
L12	Bit-wise, Assignment & Conditional Operators, Library Functions	Use explanatory examples to show operator working. .	**2-9-2025**		
L13	Control Statements: Looping using while, do…while	Explain logic of loops using flowcharts an dry runs.	**4-9-2025**		
L14	For statements.	Compare different looping structures with examples	**4-9-2025**		
L15	Nested loops	Practice nested loops through pattern printing problems.	**9-9-2025**		
L16	decision making using if…else, Else If Ladder	Organize lab-based exercises.	**11-9-2025**		
L17	Switch	Organize lab-based exercises.	**11-9-2025**		
L-18	Revision of Unit-2	Chalk and talk and worksheets			
Unit-3					
L19	Declaration and Initialization Arrays.	Explain the concept using real-life examples (e.g., storing marks of students.	**16-9-2025**	Implement and manipulate arrays, functions, pointers, and dynamic memory allocation in C, and differentiate between macros and functions	
L20	Multidimensional Arrays.	Use whiteboard diagrams to explain memory mapping (row-major order).	**18-9-2025**		
L21	String: Operations of Strings	Demonstrate string operations through examples and hands-on coding exercises for better conceptual understanding.	**18-9-2025**		
L22	Functions: Defining & Accessing User defined functions	Demonstrate function definition, call, and return mechanism.	**9-10-2025**		
L23	Function Prototype, Passing Arguments, Passing array as argument	Show syntax and need of function prototypes. Differentiate between call by value and call by	**9-10-2025**		

		reference with practical programs.			
L24	Recursion	Explain recursion with flowcharts and stack trace diagrams recursion and iteration for clarity.	**14-10-2025**		
L25	Use of Library Functions; Macro vs. Functions.	examples to show differences in efficiency and type safety.	**16-10-2025**		
L26	Pointers: Declarations, Operations on Pointers	Conduct programs to manipulate pointers and basic arithmetic.	**16-10-2025**		
L27	Passing to a function, Pointers & Arrays, Array of Pointers	Use examples of strings handled via array of pointers.	**28-10-2025**		
L28	Array accessing through pointers, Pointer to functions, Function returning pointers,	Demonstrate pointer-to-function syntax and practical use (like callback functions).	**30-10-2025**		
L-29	Revision of Unit-3	Chalk and talk and worksheets	**30-10-2025**		
Unit-4					
L30	Dynamic Memory Allocations.	Demonstrate with live coding examples using malloc(), calloc(), realloc(), and free().	**4-11-2025**	Define and utilize structures and unions, manage file operations in C, and effectively debug programs while understanding different types of errors.	
L31	Defining and Initializing Structure	Explain with real-life analogies and simple structure-based programs.	**7-11-2025**		
L32	Array within Structure, Array of Structure	Use examples showing student records or employee details.	**7-11-2025**		
L33	Nesting of Structure, Pointer to Structure, Passing structure and its pointer to Functions	each through step-by-step coding and memory representation diagrams.	**11-11-2025**		
L34	Unions: Introduction to Unions and its Utilities	Compare with structures through examples to highlight memory sharing.	**14-11-2025**		
L35	Files Handling: Opening and closing file in C; Create, Read and Write data to a file	Demonstrate file operations practically using text file input/output.	**14-11-2025**		

L36	Modes of Files, Operations on file using C Library Functions	Explain through examples showing different file modes (r, w, a, etc.).	**18-11-2025**		
L37	Working with Command Line Arguments.	Practice through command-li	**20-11-2025**		
L38	Program Debugging and types of errors.	Conduct lab-based exercises to identify and fix syntax, logical, and runtime errors.	**20-11-2025**		
L-39	Revision of Unit-4	Chalk and talk and worksheets	**25-11-2025**		
L-40	Revision of full syllabus	Chalk and talk and worksheets	**27-11-2025**		

Text Books:

1. Problem Solving and Program Design in C, 4th edition, by jeri R. Hanly and Elli B.Koffman.
2. Programming in C by Pradip Dey, Manas Ghosh 2nd edition Oxford University Press.

Reference Books:

1. E.Balaguruswamy, Programming in ANSI C 5th Edition McGraw-Hill
2. A first book of ANSI C by Gray J.Brosin 3rd edition Cengage Delmar Learning India P.Ltd 5. AL Kelly, Iraphol,Programming in C,4th edition Addison-Wesley – Professional