Department of Computer Science & Engineering

Subject Name: Programming In C **Semester: Third**

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UNIT	HOURS	TOPICS	COURSE CONTENT
1	4	Basics of C	1.1 History of C, Advantages of Structured Program, Files (source, header, object, binary executable) used in C, Characteristics of C. 1.2 C character set, Tokens, Constants, Variables, Keywords, Data types used in C. 1.3 C operators (arithmetic, logical, assignment, relational, unary, binary, increment and decrement, conditional, bit wise, special, comma, sizeof, postfix, prefix etc.), Operator precedence, Associativity of operators, Type conversion, Typecasting. 1.4 Formatted input, Formatted output.
2	4	Decision Control and Looping Statements	2.1 Decision making and branching statements, if statement (if, if-else, else-if ladder, nested if-else), Switch case statement. 2.2 Iterative/Loop statement, Entry controlled & exit controlled loop structure & differences, while, dowhile, and for loop structure, Break and continue statement, Conditional and unconditional Goto statement, nested loop structure.
3	6	Arrays and Strings	3.1. Advantages of subscripted variables/ arrays, Declaration and initialization of one dimensional, two dimensional and character arrays, Accessing array elements. 3.2. Declaration and initialization of string variables, String handling functions from standard library (strlen (), strcpy (), strcat (), strcmp ()), String operations to extract substring from left, right, middle of a string, Replacement of string characters, Concatenation of two strings.
4	10	Functions	4.1 Functions, Need of functions, Prototype declaration, Scope and lifetime of variables, Defining functions, Passing parameter types, Function call (call by value, call by reference), Return values. 4.2 Storage classes, Category of function (No argument No return value, No argument with return value, Argument with return value), Recursion and use of memory stack, Types of recursion.
5	10	Pointers	5.1. Understanding pointers, Declaring and accessing pointers, Null Pointers, Generic Pointers, Pointers arithmetic and expressions. 5.2. Passing arguments to function using pointers, Pointers and arrays, Passing an array to a function, Array name and Pointer.

			5.3. Pointers and Strings, Array of pointers, Function pointers, Pointers to pointers. 5.4 Memory usage, Dynamic memory allocation, Drawbacks of pointer.
6	8	Structures, Union and Enumerated Data types	6.1 Structures, Defining structure, Declaring and accessing structure members, Typedef declaration, Initialization of structure, Arrays of structure, Nested structure, Structures and functions, Pointer to a structure, Selfreferential structure. 6.2 Unions, Defining union, Declaring and accessing union members, Initialization of union, Arrays of union variables, Nested union, Union under structure, Differences between structure and union. 6.3 Enumerated data, Assigning and accessing enumerated variables, Enumeration type conversion, comparing and I/O operations on enumerated types.
7	2	Pre-processor Directives	Introduction, Types of pre-processor directives, Macros, Rules for using macros, Distinction between functions and macros.
8	6	User defined Files	Introduction to files, Different modes for opening files, Using formatted and unformatted files in C, Read data from files, Writing data to files, Different functions for random selection of records.