Meerut Institute of Engineering and Technology, Meerut			
CO-wise Syllabus			
1	CO-1	Statement	Translate the algorithms to programs & perform its execution in C language.
		Syllabus	***Introduction to Components of a Computer System:*** Memory, Processor, I/O Devices, Storage, Operating System, Concept of Assembler, Compiler, Interpreter, Loader and Linker. ***Idea of Algorithm:*** Representation of Algorithm, Flowchart, Pseudo Code with Examples, From Algorithms to Programs, Source Code. ***Programming Basics:*** Structure of C Program, Writing and Executing the First C Program, Syntax and Logical Errors in Compilation, Object and Executable Code. Components of C Language. Standard I/O in C , Fundamental Data types, Variables and Memory Locations, Storage Classes.
2	CO-2	Statement	Implement conditional branching, instructions along with operators.
		Syllabus	***Arithmetic Expressions and Precedence :*** Operators and Expression Using Numeric and Relational Operators, Mixed Operands, Type Conversion, Logical Operators, Bit Operations, Assignment Operator, Operator precedence and Associatively. ***Conditional Branching:*** Applying if and Switch Statements, Nesting if and Else and Switch.
3	CO-3	Statement	Use looping control instructions, arrays and structures to develop programs.
		Syllabus	***Iteration and Loops:*** Use of While, do While and for Loops, Multiple Loop Variables, Use of Break , Goto and Continue Statements. ***Arrays:*** Array Notation and Representation, Manipulating Array Elements, using Multi Dimensional Arrays. Character Arrays and Strings, Structure, union, Enumerated Data types, Array of Structures, Passing Arrays to Functions.
4	CO-4	Statement	Decompose a problem into functions and synthesize a complete program.
		Syllabus	***Functions:*** Introduction, Types of Functions, Functions with Array, Passing Parameters to Functions, Call by Value, Call by Reference, Recursive Functions. ***Basic of searching and Sorting Algorithms:*** Searching & Sorting Algorithms (Linear Search , Binary search , Bubble Sort, Insertion and Selection Sort)
5	CO-5	Statement	Utilize pointer, file handling, dynamic memory allocation to solve problems.
		Syllabus	***Pointers:*** Introduction, Declaration, Applications, Introduction to Dynamic Memory Allocation (Malloc, Calloc, Realloc, Free), String and String functions , Use of Pointers in Self-Referential Structures, Notion of Linked List (No Implementation) ***File Handling:*** File I/O Functions, Standard C Preprocessors, Defining and Calling Macros and Command-Line Arguments.

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Subject Name/Code	Programming for Problem Solving (BCS101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
1	Introduction to computer system:	Block diagram of digital computer & its components, operating system and it's type	1
		Introduction to low level & high level languages, role of assembler, compiler, Interpreter	2
	Idea of Algorithm:	Representation of algorithm, flowchart, pseudo code with examples	3
	Programming Basics:	Concept of programming, compilation & execution process, type of errors, concept of editor, linker & loader	4
		Structure of C program, component of C language (C Tokens)	5
		Concept of primitive datatypes: keyword, format string, storage & range	6
		Standard I/O fuction in C, escape sequence & Basic C programs	7
2	Arithmetic expressions	Introduction of operators & its type based on operand, type conversion, concept of arithematic & relational operator	8
		Concept of logical, bitwise etc operator, Operator precedence and associativity	9
	Conditional Branching:	Concept of simple if & if else & related programs	10
		Concept of nested if else & related programs	11
		Concept of else if ladder & related programs	12
		Switch statements, use of break and default with switch.	13
		Programs related to conditional branching instructions for practice	14
3	Iteration and Loops	Use of for statement & related programs	15
		Use of while statement & related programs	16
		Concept of do while loop, break and continue	17
		Nested Loop and multiple loop variables & related programs	18
	Introduction to Arrays:	Array notation and representation, one dimensional arrays & related programs	19
		Using multi dimensional arrays & related programs	20
		Character arrays and strings, string handling library functions	21
		Programs related to string for practice	22
		Concept of structure, array of structure & related programs	23
		Difference between structure & union, enumerated data types	24

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Subject Name/Code	Programming for Problem Solving (BCS101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
4	**Concept of Functions:**	Introduction to function and types of functions	25
		Difference between call by value and call by reference	26
		Concept of storage class	27
		Role of recursive functions & related programs	28
	Basic of searching and sorting Algorithms:	Searching : linear search & binary search	29
		Basic sorting algorithms : bubble Sort	30
		Other sorting algorithms : selection & insertion sort	31
		Passing array to function & other application of functions	32
5	**Pointers**	Introduction, declaration, applications of pointer	33
		Introduction to dynamic memory allocation:- malloc, calloc, realloc and free	34
		Program related to pointers & dynamic memory allocation	35
		Linked List: Use of pointers in self-referential structures notion of linked list (no implementation)	36
	File handling:	Introdution to file, file handling library functions	37
		Practice of file related programs	38
		Standard C preprocessors, types of preprocessor directives	39
		Command-line arguments & related programs	40