Branch Name:	IMCA
ProgramCode:	**CS301**
CourseName:	Fundamental of Programming-II
CourseCode:	**1CS3010201T**
Pre-requisite Course:	Basic knowledge of C Programming

Course Objectives:

1. To be able to understand and use pointers in C Programs.
2. To be able to create user defined data types in C
3. To be able to write C applications which can do input/output on files.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
				Theory (Marks)		Practical (Marks)		Total (Marks)
Lecture (L)	Tutorial (T)	Practical (P)	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	-	4	60	40	-	-	100

Course Contents:

Unit No	Topic	Total Hours	Weightage (%)
1	**Call By Value, Call by Reference, Recursion** **Pointers** Introduction, Understanding Memory Addresses, Address Operator (&), Pointers (Declaring a Pointer, Initializing Pointers, Indirection Operator and Dereferencing, void Pointer, Null Pointer, Use of Pointers), Arrays and Pointers (One-dimensional Arrays and Pointers, Passing an Array to a Function, Differences between Array Name and Pointer), Pointer and String, Pointer Arithmetic (Assignment, Addition or Subtraction on Integer, Subtraction of Pointers, Comparing Pointers), Pointers to Pointers, Array of Pointers, Pointers to an Array, Two-dimensional Arrays and Pointers (Passing Two-dimensional Array to a Function), Three-dimensional Arrays, Pointers to Functions (Declaration of a Pointer to a Function, Initialization of Function Pointers, Calling a Function using a Function Pointer, Passing a Function to Another Function, How to Return a Function Pointer,Arrays of Function Pointers).	12	25

2	**Dynamic Memory Allocation & Advanced Pointer Programming** Dynamic Memory Allocation (Dynamic Allocation of Arrays, Freeing Memory, Reallocating Memory Blocks, Implementing Multidimensional Arrays using Pointers), Offsetting a Pointer, Memory Leak and Memory Corruption, Pointer and Const Qualifier (Pointer to Constant, Constant Pointers, Constant Parameters)	10	20
3	**User-defined Data Types and Variables: Structures, Unions, Enumerations, Bit-fields.** Structures (Declaring Structures and Structure Variables, Accessing the Members of a Structure, Initialization of Structures, Copying and Comparing Structures, typedef and its Use in Structure Declarations), Nesting of Structures, Arrays of Structures, Initializing Arrays of Structures, Arrays within the Structure, Structures and Pointers, Structures and Functions, Union (Declaring a Union and its Members, Accessing and Initializing Members of a Union), Structure Versus Union, Enumeration Types, Bitfields	10	20
4	**Files** Files in C (Using Files in C, Declaration of a File Pointer, Opening a File, Closing and Flushing Files) Working with Text Files (Character Input and Output, End of File (EOF), Detecting the End of a File using feof() Function), Working with Binary Files, Direct File Input and Output (Sequential Versus Random File Access), Files of Records (Working with Files of Records) Random Access to Files of Records, Other File Management Functions (Deleting a File, Renaming a File)	10	20
5	**Bitwise Operators & Pre-Processors** Bitwise Operator (Bitwise AND, Bitwise OR, Bitwise Exclusive-OR, Bitwise NOT, Bitwise Shift Operator),Command-line Arguments, The C Preprocessor (The C Preprocessor Directives, Predefined Identifiers), Type Qualifier (const Qualifier, volatile Qualifier, restrict Qualifier) Variable Length Argument List	06	15

Text Books:

1. Programming in ANSI C, Balagurusamy, Tata McGraw-Hill

Reference Books:

1. Programming in ANSI C, By E Balaguruswami, Tata McGraw-Hill Publishing Company Limited.
2. Programming with C, By Bayron Gottfried, Tata McGraw-Hill Edition.
3. Let Us C, By Yashavant Kanetkar, BPB Publications.
4. Working with C, By Yashavant Kanetkar, BPB Publications.

List of Open Source Software/learning website:

1. www.w3school.com
3. www.tutorialspoint.com
4. www.geeksforgeeks.org
5. www.javatpoint.com

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	To have fundamental knowledge on User define function	2 Understanding
CLO2	To Develop modular applications using the C programming language.	1 Remembering 2 Understanding
CLO3	Demonstrate the ability to write C programs using pointers, structures, unions and arrays.	2 Understanding, 3 Applying, 4 Analyze
CLO4	Implements different operation using file management and command line argument	3 Applying 4 Analyze 5 Evaluate 6 Creating
CLO5	Implement user defined function and pointer	3 Applying 4 Analyze 5 Evaluate 6 Creating
CLO6	Enable effective use of structure and pointer	3 Applying 4 Analyze 5 Evaluate 6 Creating

Mapping of CLOs with POs & PSOs

FACULTY OF COMPUTER SCIENCE
Master Of Computer Application (Integrated) (Sem-II)
In Effect from Academic Year 2023-24

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	H	M	L		H	M		M	L		L	M	M	M
CLO2	M		H		M		H		L		M		M	M
CLO3		L	M	M		L		L	H	M	L	M	M	L
CLO4		M	M		M			L		L	M		M	
CLO5	M		H		M			L	M		M	L	L	M
CLO6	M	M	L		L		M		L		L	H	L	L

H: High, M: Medium, L: Low