Subject Name: Computer Fundamentals and Programming Methodology Using 'C' **Subject Code:** TMC 101

Course Name: Master of Computer Applications (MCA)

1 Contact Hours: 55 **L** 3 **T** 1 **P** 0

2 Examination Duration(Hours): **Theory** 0 3 **Practical** 0 0

3 Relative Weightage: **CWE:** 25 **MTE:** 25 **ETE:** 50

4 Credits: 0 | 4

5 Semester: [*] **Autumn** [ ] **Spring** [ ] **Both**

6 Pre-Requisite: Fundamentals of computers and logic development.

7 Subject Area: Programming Language

8 Objective: To familiarize students with basics of information technology and programming methodologies.

9 Course Outcome:

CO 1 Understanding the fundamental concept of information technology like; database management system, operating system, networking etc. and working on computers to learn about components.

CO 2 Solving computation problems using algorithms and flowcharts.

CO 3 Understanding efficient use of datatypes and other programming constructs to propose optimal solution.

CO 4 Breaking down a complex problem into less complex sub problems and develop modular application.

CO 5 Make use of pointers, string, arrays, structure and derived data types.

CO 6 Working with files to show input and output of files in C language.

10 Details of the Course:

Unit No.	CONTENT	CONTACT HOURS
1	**Fundamentals of Information Technology:** Introduction of information technology, computer and its characteristics, input/output devices, introduction of software**,** number system, introduction of communication and network, operating system, database management systems. **Basic Programming Concepts:** Basics of problem-solving tools, program design methodology; Pseudo code, Flowcharts, Algorithms,	10

	Translators, Programming Paradigms, Programming languages and their characteristics.	
2	**Introduction to C Language:** History of C and its characteristics, Character Set, Identifiers, Variables, Assigning a Name to a Variable, Variable Declarations, Keywords, Tokens, Data Types, Constants, String Constant, Numeric Constant, Structure of C Program, Comment styles in 'C', Storage classes, type conversion.	10
3	**Operators and Input/output:** Instruction and its Types, Operators and Hierarchy of Operations, Bitwise operators, Expressions in C, Formatted and unformatted Input/output. **Flow Control:** Control and Repetitive Statements, break, continue, Local and Global Variables.	12
4	**Function and Arrays:** User defined functions and library functions, Recursion and Recursive Function, Call by Value Versus Call by Reference, parameter passing, arrays and functions, **Pointers,** dynamic memory management, A**rrays:** 1D and 2D arrays.	12
5	**Strings**: Declaring and initialing string variables, reading and writing of string, string handling functions. **Structure and Union**: self-referential structures, pointer to structures. **File**: Types of files, various modes to open a file. Writing and Reading data, random access of files, command line arguments. **Preprocessor Directives.**	11
	TOTAL	**5**

11 Suggested Books:

SL. NO.	NAME OF AUTHERS/BOOKS/PUBLISHERS	YEAR OF PUBLICATION
1	B.S. Gottfried, Schaum's Outline of Theory and Problems of Programming with C, McGraw-Hill.	1996
2	Balaguruswamy: Programming in ANSI C, 8th Edition, Tata McGrew Hill.	2019
3	Greg Perry, Dean Miller, C Programming Absolute Beginner's Guide, 3rd Edition, QUE Publications.	2013
4	Yashwant Kanetkar, "Let Us C", 15th Edition. BPB Publications	2018
5	B. W. Kernighan and D. M. Ritchie, "ANSI C: The C Programming Language", 2nd Edition, Pearson Publication.	2015