

MCA 101. PROBLEM SOLVING AND PROGRAMMING USING C

Module 1 (10 hours)

Introduction to Computers: Basic Organization of a Computer, Number System, Conversion.
Programming Basics: Algorithm, Flowchart, Structured Programming Approach, Structure of a C Program, Compiling, Linking and Executing Programs.

C Language Fundamentals: Character Set, Key Words, Identifiers, Data Types, Variables and Constants, Operators, Expressions, Type Conversions, Statements, Managing Console Input and Output Operations.

Control Structures: Decision Making and Branching - If and Switch, Loop Structures - While, Do While and For, Unconditional Jumps - Continue, Break and Go To.

Module 2 (10 hours)

Arrays: Concept, Declaration and Manipulation of Arrays, One Dimensional, Multidimensional Array and their Applications.

Strings: Concept of Strings, String Handling Functions, Array of Strings.

Pointers: Pointer Variable and its Importance, Dereferencing, Pointer Arithmetic and Scale Factor, Pointers and Arrays, Pointer and Strings, Array of Pointers, Pointers to Pointers.

Functions: Designing Structured Programs, User Defined and Standard Functions, Formal and Actual Arguments, Function Prototype, Parameter Passing, Functions Returning Multiple Values, Functions Returning Pointers, Pointers to Functions, Nesting of Functions, Recursion, Passing Arrays to Functions.

Scope and Extent: Scope Rules, Storage Classes - Auto, Extern, Register and Static.

Module 3 (10 hours)

Structures, Unions and Enumerations: Declaration and Initialization of Structures, Structure as Function Parameters, Structure Pointers, Unions, Enumerations.

Module 4 (10 Hours)

File Input and Output: Defining, Opening a File and Closing a File, Input/output Operations in Files, Random Access to Files, Error Handling.

Command Line Arguments, Dynamic Memory Management, Pre-Processor Directives.

Graphics using C programming.

Module 5 (6 Hours)(as per choice of faculty) Graphics using C.

Portion covered can be tested through Internal evaluation only not to be included in University examination)

Text Book:

1. PradipDey, ManasGhosh, "Programming in C", First Edition, Oxford University Press, 2011.
2. E. Balagurusamy, "Programming in ANSI C", 4th edition, 2007, McGraw-Hill Publication, New Delhi.
3. Brian W. Kernighan, Dennis Ritchie, "The C Programming Language" (2nd Edition), 1988, Prentice Hall.
4. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.

Reference Books:

1. K.R. Venugopal, S.R. Prasad, "Mastering C", McGraw-Hill Education India.
2. Byron S Gottfried, "Programming with C", Schaum's Outlines, Second Edition, Tata McGrawHill, 2006.
3. Anita Goel and Ajay Mittal, "Computer Fundamentals and Programming in C", Dorling Kindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.