Syllabi of Computer Science DSM Courses

Semester   : I
Course Type   : DSM
Course Code   : CSCDSM101
Name of the Course   : Programming with C
Learning level   : Foundation or Introductory Course
Credits   : 3
Contact Hours   : 45
Total Marks   : 100
End Semester Marks   : 70
Internal Marks   : 30

Course objectives:

1. *To introduce the concepts of programming and programming language C.*
2. *To explain the concepts of functions and programme structure in C*
3. *To explain how to write and implement C programs*
4. *To explain the concept and working of pointers and files in C*
5. *To introduce the low level programming in C*

UNIT-I

Fundamentals of computer programming with C – Data Types, Expressions, Operations – input, output; Writing simple C programs; Control structures (WHILE, DO-WHILE, FOR, IF-ELSE, SWITCH, BREAK, CONTINUE, GOTO STATEMENTS, nested loops etc.) and writing programs using control structures; solving elementary programming problems from various areas of applications including mathematics and statistics.

UNIT-II

Functions and program structure – Defining and accessing functions in C, passing arguments to a function, specifying argument data types – Illustration with example programs and problem solving through programs; Function prototypes, Functions returning non integers; Storage classes – Automatic, External, Static and Register variables, Scope rules, Header files, Block structure; Recursion in C – writing recursive programs and problem solving, The C Preprocessor

UNIT-III

Definition and array processing, passing arrays to a function, multidimensional arrays, Arrays and Strings; POINTERS – pointers and addresses, pointer declaration, pointers and function arguments – passing pointers to a function, Pointers and one dimensional arrays; Address arithmetic – operations on pointers, character pointers and functions; Pointer arrays/arrays of pointers, pointers to pointers, initialization of pointer arrays, pointers and multidimensional arrays; Command line arguments, Pointers to functions, passing functions to other functions.

UNIT-IV

Structures and Unions – Basics of structures, processing of structures, user defined data types (typedef), Structures and Pointers, Structures and functions – passing structures to a function, Arrays of structures, Pointers to structures, Self-referential structures, Table lookup, UNIONS. writing programs and problem solving with structure and union

UNIT-V

Input and output – Standard input and output, Formatted output – printf, Variable length argument, Formatted input - scanf; Data files – opening and closing data file, creating a data file, processing a data file, file access, unformatted data files, miscellaneous function in C; Low Level programming – Register variables, Bitwise operations, Bit fields, Enumeration, Commands Line arguments/parameters, Library functions, Macros, The C preprocessor.

Course outcomes: *After successful completion of the course, the students will be able to*
  1. *Learn the concepts of Programming in C*
  2. *Learn thoroughly the building blocks of C programming language*
  3. *Write and implement C programs and solve problems through programming*
  4. *Learn the Concept of pointers and files in C & Programming with C.*
  5. *Design and implement programs using pointers and files in C.*

Text Books:

1. Brian W. Kernighan and Denis M. Ritchie, **The C Programming Language**, Pearson Education India; 2nd edition, 2015.
2. Byron S Gottfried, **Programming with C**, McGraw Hill Education; 4th Edition, 2018.
3. E Balagurusamy, **Programming in ANSI C**, McGraw Hill Education; Eighth edition, 2019
4. V. Rajaraman, **Computer Programming in C**, PHI Learning Private Limited; Second edition, 2019

Reference Books:

1. Yashavant P. Kanetkar, **Let Us C**, BPB; 16th edition, 2017.
2. Kamthane, **Programming in C**, Pearson Education India; 3rd edition, 2015.

Semester	**: II**
Course Type	**: DSM**
Course Code	**: CSCDSM151**
Name of the Course	**: Programming with C**
Learning level	**: Foundation or Introductory Course**
Credits	**: 3**
Contact Hours	**: 45**
Total Marks	**: 100**
End Semester Marks	**: 70**
Internal Marks	**: 30**