

COMPUTER PROGRAMMING THROUGH C

(Common to all Branches)

Course Code : 13CT1102

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Course Educational Objectives:

This course helps the student in understanding Computer Programming concepts. An individual will have ability to:

- ❖ Design Algorithmic solution for various problems and convert algorithms to C programs
- ❖ Design programs with Interactive Input and Output
- ❖ Design programs utilizing arithmetic expressions
- ❖ Design programs utilizing repetition and decision making
- ❖ Design programs utilizing arrays and structures
- ❖ Design programs using file Input and Output
- ❖ Test and verifying programs

Course Outcomes:

At the end of the course the student will be able to

- ❖ Know how to write algorithms and draw flowcharts and develop programs
- ❖ Write programs using sequential, condition, iterative control statements
- ❖ Write programs using derived data types like arrays, functions, pointers, strings, structures, unions
- ❖ Define user defined data types like type- def, enum
- ❖ Learn about files, their creation, and various operations that can be performed on files

UNIT-I**(12 Lectures)**

Introduction to Computers , Algorithm/ Pseudo code, Flow chart, Program Development steps, Basic structure of C Program, Input and Output statements (printf() & scanf()), A Simple C Program, Identifiers, Basic data types and sizes, Constants, Variables, Operators, Type Conversion, Expression Evaluation, Precedence & Associativity of operators.

CONTROL STATEMENTS:

If, switch, for, while and do- while statements, break, continue and goto statements. Sample programs covering all the above topics.

UNIT-II**(12 Lectures)****FUNCTIONS:**

Definition, Advantages, types of functions- user defined and standard library functions, categories of functions , scope rules, recursion, storage classes. Sample programs covering all the above topics.

UNIT-III**(12 Lectures)****ARRAYS:**

Introduction to arrays, 1 D Arrays: Definition, Declaration, Initialization, Accessing & storing the elements, 2 D Arrays: Definition, Declaration, Initialization, Accessing & storing the elements C Pre processors.

STRINGS:

String- Declaration, Initialization, pointers and strings, standard library string functions, array of pointers to strings. Sample programs covering all the above topics.

UNIT-IV**(12 Lectures)****POINTERS:**

Definition, Declaration of Pointer variables, the & and * operators, Pointer Expressions, Char, int, and float pointers, Pointer arithmetic, Passing addresses to functions, Functions returning pointers, Pointers & Arrays: Passing array elements to functions, pointer to pointer, array of pointers, Dynamic memory allocation functions, Sample programs covering all the above topics

UNIT-V**(12 Lectures)****STRUCTURES & UNIONS:**

Structures: Definition, Initialization, Accessing structures, nested structures, array of structures, additional features of structures, self referential structures, unions, type-def, bit fields, enum data type.

FILES:

Concept of a file, Text and Binary files, file I/O operations, Command line arguments. (Let Us C, Yashavant Kanetkar)

Sample programs covering all the above topics.

TEXT BOOKS:

1. B.A Forouzan and R.F. Gilberg, “*Computer science, A structured programming approach using C*”, 3rd Edition, Cengage Learning.
2. Yashavant Kanetkar, “*Let Us C*”, 12th Edition, BPB Publications, 2012.
3. Yashavant Kanetkar, “*Understanding pointers in C*”, 4th Edition, BPB Publications, 2009.

REFERENCES:

1. N. B. Venkateswarlu, E.V. Prasad, “*C & Data Structures*”, 1st Edition, S. Chand Publications, 2010.
2. K.R.Venugopal, S.R.Prasad, “*Mastering C*”, 1st Edition, TMH, 2007.

