

**Fundamentals of Computer Programming (CSC-102)**  
**Tribhuvan University**  
**Soch College of Information Technology**  
**Bachelor of Science in Computer Science and Information Technology**

**Course Title:** Fundamentals of Computer Programming

**Course no:** CSC-102 Full Marks: 60+20+20

**Credit hours:** 3 Pass Marks: 24+8+8

**Nature of course:** Theory (3 Hrs.) + Lab (3 Hrs.)

**Course Synopsis:** This course contains the concepts of programming methodology using C.

**Goal:** This course is designed to familiarize students to the techniques of programming in C.

**Course Contents:**

**Unit 1. Problem Solving with Computer** ----- 2 Hrs.

Problem analysis, Algorithms and Flowchart, Coding, Compilation and Execution, History of C, Structure of C program, Debugging, Testing and Documentation

**Unit 2. Elements of C** ----- 4 Hrs.

C Tokens, Escape sequence, Delimiters, Variables, Data types, Constants/ Literals, Expressions, Statements and Comments

**Unit 3. Input and Output** ----- 2 Hrs.

Conversion specification, I/O operation, Formatted I/O

**Unit 4. Operators and Expression** ----- 4 Hrs.

Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bitwise operator, Increment or Decrement operator, Comma operator.

**Unit 5. Control Statement** ----- 4 Hrs.

Branching, Looping, Conditional Statement, Exit function, Difference between break and exit

**Unit 6. Arrays** ----- 6 Hrs.

Introduction, Declaration of array, Initialization of array, Sorting, Multidimensional array

**Unit 7. Functions** ----- 5 Hrs.

Library Functions, User defined functions, Recursion, Function declaration, Local and global variables, Use of array in function, Passing by Value, Passing by Address

**Unit 8. Pointers** ----- 6 Hrs.

Introduction, The & and \* operator, Declaration of pointer, Pointer to pointer, Pointer arithmetic, Array and Pointer, Pointer and array, Pointer with multidimensional array, Pointer and strings, Array of pointer with string, Dynamic memory allocation

**Unit 9. Structure and Union** ----- 5 Hrs.

Introduction, Array of structure, Passing structure to function, Passing array of structure to function, Structure within structure ( Nested Structure), Union, Pointer to structure

**Unit 10. Files and file handling in C** ----- 4 Hrs.

Concept of file, Opening and closing of file, Modes, Input/ output function, Random access in file, Printing a file

## **Unit 11. Introduction to Graphics ----- 3 Hrs.**

Modes, Initialization, Graphics Function

### **Laboratory works:**

This course requires a lot of programming practices. Each topic must be followed by a practical session. Some practical sessions include programming to:

Create, compile and run simple C programs, handle different data types available in C, perform arithmetic operations in C, perform formatted input and out put operations, perform character input and output operations.

Perform logical operations, create decision making programs, create loops to repeat task, sue different looping method.

Create user-defined factions, create recursive functions, work with automatic, global and static variables, create, manipulate arrays and matrices (single and multi-dimensional), work with pointers, dynamically allocate de-allocate storage space during runtime, manipulate strings (character arrays) using various string handling functions.

Create and use structures and files to keep record of students, employees etc

**References:** Deitel, C.: How to Program, 2/e (With CD), Pearson Education.

Al Kelley, Ira Pohl: "A Book on C", Pearson Education.

Brian W. Keringhan & Dennis M. Ritchie: "The C programming Language", PHI

Bryons S. Gotterfried: "Programming with C," TMH

Stephen G. Kochan: "Programming in C", CBS publishers & distributors.

Yashavant Kanetkar: "Let us C", BPB Publications