Government PG College, Ambala Cantt

# Course File(Session 2023-24) Name of Professor: Sangharsh Saini

**Class: BSc (CS)-I/1st Semester**

# Subject code and Name: B23-CSE-101 Problem Solving through C

## SYLLABUS

**Maximum Marks: 100 External: 70**

## Minimum Pass Marks: 35 Internal: 30

**Time: 3 hours**

**Note:** Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. A candidate will be required to answer five questions in all, selecting one question from each unit in addition to compulsory Question No. 1. All questions will carry equal marks.

## UNIT – I

Overview of C: History, Importance, Structure of C Program,Character Set, Constants andVariables, Identifiers and Keywords,Data Types, Assignment Statement, SymbolicConstant.Input/output: Formatted I/O Function-, Input Functions viz. scanf(),getch(), getche(), getchar(), gets(),output functions viz. printf(), putch(), putchar(), puts().

## UNIT –II

Creating II Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and Special Operators Operator Hierarchy; Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion. Decision making with if statement, ifelse statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and dowhile loop, jumps in loops.

## UNIT – III

Introduction III Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation. Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions. Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring.

**UNIT – IV**

The IV Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays. User defined data types: Structures - Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, Array of Structures; Unions – Union definition; difference between Structure and Union.

**Recommended Books/e-resources/LMS:**

**Gottfried, Byron S., Programming with C, Tata McGraw Hill.**

**Balagurusamy, E., Programming in ANSI C, Tata McGraw-Hill.**

**Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison**

**Wesley.**

**Yashwant Kanetker, Let us C, BPB.**

**Rajaraman, V., Computer Programming in C, PHI.**

**Yashwant Kanetker, Working with C, BPB.**

**Lesson Plan**

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| **Week****No** | **Scheduled Dates** | **Topics to be covered** |
| **1** | **1-5 August** | Overview of C: History, Importance, Structure of C Program |
| **2** | **7-12 August** | Character Set, Constants and Variables, Identifiers and Keywords, Data Types, Assignment Statement, Symbolic Constant.  |
| **3** |  **14-19 August** | Input/output: Formatted I/O Function-, Input Functions viz. scanf(), getch(), getche(), getchar(), gets(), output functions viz. printf(), putch(), putchar(), puts(). |
| **4** | **21-26 August** | Creating II Operators & Expression: Arithmetic, Relational, Logical, Bitwise, Unary, Assignment, Conditional Operators and Special Operators Operator Hierarchy;. |
| **5** | **28-2 September** | Arithmetic Expressions, Evaluation of Arithmetic Expression, Type Casting and Conversion.  |
| **6** | **4-9 September** | Decision making with if statement, ifelse statement, nested if statement, else-if ladder, switch and break statement, goto statement, Looping Statements: for, while, and dowhile loop, jumps in loops |
| **7** | **11-16 September** | Introduction III Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays -Declaration, Initialization and Memory representation.  |
| **8** | **18-23 September** | Functions: definition, prototype, function call, passing arguments to a function: call by value; call by reference, recursive functions.  |
| **9** | **25-30 September** | Strings: Declaration and Initialization, String I/O, Array of Strings, String Manipulation Functions: String Length, Copy, Compare, Concatenate etc., Search for a Substring. |
| **10** | **2-7 October** | The IV Pointers in C: Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays.  |
| **11** | **9-14 October** | User defined data types: Structures - Definition, Advantages of Structure,  |
| **12** | **16-21 October** | declaring structure variables, accessing structure members, Structure members initialization,  |
| **13** | **23-28 October** | Array of Structures; Unions – Union definition; difference between Structure and Union. |
| **14** | **30-4 October** | Final Test, Assignments and REVISION of Contents |
| **15** | **6-11 October** | Previous Year Question Papers Discussion |