

# Lesson Planning

## Course Title: Structured Programming

Course No.: CSE-141      Credit: 3.0      Course Hours: 03      Total Marks: 300

### Rationale

A programming paradigm aimed at improving the clarity, quality, and development time of a computer program. Structured programming addresses and to a great extent solves the problem of complexity in computer programming.

### Objectives

The objectives of this course are

- To familiarize with basic concepts of structured programming.
- To explain the fundamental properties of the C language.
- The student should be able to combine the elements of the C language in developing structured programs.
- Able to demonstrate the skills necessary to correctly compile, debug, and test programs in C.
- To allow the students to write their own programs using standard language infrastructure regardless of the hardware or software platform.
- To prepare the students for Competitive Programming

### Course Teacher(s)

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## Lesson Learning Outcomes(LLOs)

Lesson No	Course Content	Learning Outcome	Teaching Strategy/ Learning Experience	Assessment Strategy
Lesson-01	❖ Overview, and Importance of course CSE-141	❖ To know the learning outcome of this course. ❖ To realize the necessity of this course.	Multimedia Presentation, Question, and Answer	Not Applicable
Lesson-02	❖ Introduction to structured programming	❖ Be able to explain the differences between programming languages, and programming paradigms. ❖ Be able to differentiate between low-level, and high-level programming languages, and their associated advantages, and disadvantages	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.

		❖ Be able to list four programming paradigms, and describe their strengths, and weaknesses.		
Lesson-03	❖ Overview of C Programming	❖ To know about the structure of the C programming language. ❖ To know about the basic features of C. ❖ To understand a simple C program. ❖ To understand header files and the main function.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-04	❖ Data types, Variables, Constants, Keywords	❖ To know about the declaration, initialization of variables. ❖ To know about the data types.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-05	❖ Arithmetic, Logical operator, the precedence of operator	❖ To know how to use the operators of C. ❖ To know about statements.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-06	❖ Library functions (scanf, printf), format specifier.	❖ To know about library functions. ❖ To know about the basic input-output functions. ❖ How to get input and display output.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-07	❖ Decisions Making (if, if-else)	❖ To know about the logical expressions. ❖ To know about if, if-else statement	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-08	❖ Decisions Making (switch structures)	❖ To know about the logical expressions. ❖ To know about switch structures	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-09	❖ Decisions Making (Conditional Operator)	❖ To know the working procedure of Conditional Operator	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
		<b>Class Test # 01</b>		
Lesson-10	❖ Looping (Introduction)	❖ To know the basic of looping ❖ To introduce the categories of the loop statement ❖ To understand the application of loop	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-11	❖ Looping (Definition, and Declaration of for loop)	❖ To know to declare, and define a for loop ❖ Code with for loop	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-12	❖ Looping (Definition, and Declaration of while, and do while loop)	❖ To know to declare and define a while, and do while loop ❖ Code with while and do while loop	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.

Lesson-13	❖ Loop (Continue)	❖ Practice code with loop	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-14	❖ Nested for, while, do while loop.	❖ To know about nesting loops.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-15	❖ Looping (break, continue, and goto statements)	❖ To know about the program control flow.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
		<b>Class Test # 02</b>		
Lesson-16	❖ Array declaration, initialization, One-dimensional array.	❖ To understand the use of arrays in C. ❖ To know how to declare, and initialize a one-dimensional array.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-17	❖ Two-dimensional array	❖ To know how to declare and initialize a two-dimensional array. ❖ To understand how two-dimensional array can be used in the C program.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-18	❖ Multi-dimensional array	❖ To understand how multi-dimensional array can be used in the C program.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
<b>Inter-Term-Break (Tentative)</b>				
Lesson-19	❖ String, char array.	❖ To know about string. ❖ To understand how to and initialize string variables.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-20	❖ String Handling Operations (1)	❖ How to get the length of a string. ❖ How to copy a string ❖ How to use some library functions ❖ To know the use of strlen(), strcpy() functions	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-21	❖ String Handling Operations (2)	❖ How to concatenate strings. ❖ How to compare two string. ❖ To know the use of strcat(), strcmp() functions	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
		<b>Class Test # 03</b>		
Lesson-22	❖ A user-defined function, function prototype, calling and called function, and function parameter	❖ To know about user-defined functions in C. ❖ To define function prototype and global variables. ❖ To understand calling function, and called function. ❖ To understand passing values between functions	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-23	❖ Return type functions, Call by value, call by reference.	❖ To understand different return types of function values.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.

		❖ To understand the concept of the call by value, and call by reference.		
Lesson-24	❖ Recursive function.	❖ To understand a recursive function.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-25	❖ Pointers, pointer with array	❖ To understand pointers, and pointer notations. ❖ How to work with pointer and array.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-26	❖ Functions with array.	❖ How to pass an entire array to a function.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-27	❖ Functions with array pointers.	❖ How to work with pointers, and functions.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson 28	❖ Linked List introduction	❖ To know the basic structure of the Linked List ❖ To learn linked list operations (Insert, delete and sort element)	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-29	❖ Structure declaration, initialization, ❖ Elements of structure	❖ To understand the concept of structure in C. ❖ How to declare a structure in a program. ❖ Accessing the elements of a structure. ❖ To understand the arrays of a structure.	Multimedia Presentation, and Answer	Test, Exam, Quiz etc.
Lesson-30	❖ Union declaration, accessing elements.	❖ To understand the concept of a union. ❖ Accessing the elements of union.	Multimedia Presentation, Question , and Answer	Test, Exam, Quiz etc.
Lesson-31	❖ Structure , and union as a function parameter ❖ Structure vs union ❖ Bit fields in structure.	❖ How to pass an entire structure to a function. ❖ How to pass an entire union to a function. ❖ To understand the difference between structure and union. ❖ To underst, and bit fields. ❖ How bit fields saves memory.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
		<b>Class Test # 04</b>		
Lesson-32	❖ Accessing files in C.	❖ To know about the file in C. ❖ How to create, to read, and to close a file.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-33	❖ File operations.	❖ To know about different types of operations in the file.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-34	❖ Memory allocation during runtime,	❖ To understand Dynamic memory allocation (DMA)	Multimedia Presentation,	Test, Exam, Quiz etc.

	malloc(),calloc(), realloc(), , and free() functions	❖ To understand the use of memory allocation functions.	Question, and Answer	
Lesson-35	❖ Graphics in C.	❖ To know about different graphical use of the C program.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-36	❖ Compiling, debugging, comm, and line interpreter.	❖ To understand error handling, debugging, comm, and line interpreter.	Multimedia Presentation, Question, and Answer	Test, Exam, Quiz etc.
Lesson-37	❖ Review the whole course.	❖ To know the summary of the course.	Discussion	Test, Exam, Quiz, assignment.
Lesson-38	❖ Review the whole course.	❖ To know the summary of the course.	Discussion	Test, Exam, Quiz, assignment.
Lesson-39	❖ Review the whole course.	❖ To know the summary of the course.	Discussion	Test, Exam, Quiz, assignment.

## RECOMMENDED BOOKS, and PERIODICALS

### Text Books:

1. Programming in ANSI C by E BALAGURUSAMY (5<sup>th</sup> Edition).
2. C in Depth: Deepali Srivastava, S. K. Srivastava
3. Teach Yourself C by Herbert Schildt (3<sup>rd</sup> Edition).

### Reference Books:

1. C Programming Language Brian Kernighan; Dennis Ritchie
2. Deitel & Deitel, C: How to Program, Pearson
3. Let Us C, Yashwant Kanetkar
4. Programming With C by Byron S. Gottfried, Jitender Kumar Chhabra (Editor)