



GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI
STATE PROJECT COORDINATION UNIT
(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	Programming through C language
Course Code	CSE/2020/010
Course Duration	80 Hours
Minimum Eligibility Criteria and Pre-requisites(if any)	ITI/10 th /+2/Diploma/Graduates Basic knowledge of computers concepts
Course Objectives	<p>The main objectives of the course are:</p> <ul style="list-style-type: none"> ➤ To train the students define a program, algorithm, and flow chart ➤ To train to know how to explain various program development steps including the concepts of constants, variables, data types, operators, various i/o operations, different looping and branching statements, arrays, user defined functions, string handling functions, structure, union and pointers. ➤ To develop logic using C which help the Students to create Programs and Applications in C.
Course Outcomes	<p>After course completion, the students will have the following learning outcomes:</p> <ul style="list-style-type: none"> • Understanding a functional hierarchical code organization • Ability to work with textual information, characters and strings, arrays • Understanding a defensive programming concept. • Ability to handle possible errors during program execution
Expected Job Roles	C Programmer

TEACHING AND SCHEME OF EXAMINATION						
Course Code	Course Name	Hours		Assessment Marks		Duration of Examination
				Min	Max	
CSE/2020/010	Programming through C language	Theory	30	10	20	3 Hours
		Practical	50	40	80	
		Total	80	50	100	

CSE/2020/010 - PROGRAMMING THROUGH C LANGUAGE
DETAILED SYLLABUS

UNIT NO	MODULES	NO.OF.HOURS THEORY
I	OVERVIEW OF C PROGRAMMING	
1.1	Introduction to C: Algorithm – Flow Chart symbols-Features of C –Structure of a C Program.	6
1.2	Character set – Keywords – identifiers – Constants – Types -Data types – Data type modifiers .	
1.3	Variables – Declaration of a variable- Initialization of a variables – Scope of variables – auto, extern, static, register - Comments – Header files, compiling and running a C Program.	
II	OPERATORS AND I/O FUNCTIONS	
2.1	Operators and Expressions: Introduction – Arithmetic, Relational, Logical, Assignment, Short hand assignment, Increment, Decrement, Conditional, Comma, Bitwise operators –Hierarchy of operations	6
2.2	Expressions – Integer, real and mixed expressions – Type casting –formatted I/O functions-printf() and scanf() functions – unformatted I/O functions-getchar() and putchar() functions.	
III	CONTROL STRUCTURES AND ARRAYS:	
3.1	Simple if statement – if-else, else-if-ladder statements-Nested if – switch statement – go to, continue and break statements.	6
3.2	Looping Statements – while, do.. while and for loops	
3.3	Arrays – Definition – Declaration of 1-D array – Initialization of 1-D array- array elements - Two dimensional array-Declaration-initialization- array elements.	
IV	STRINGS, FUNCTIONS	
4.1	Strings: Introduction – Declaring and Initializing string variables - Reading strings – Writing strings – String handling functions – strlen() , strcpy() , strcmp() , strcat() and strrev() functions .	6
4.2	.Functions: Declaration and definition of function – function call – passing arguments –returning values – return statement - recursion.	
V	TRODUCTION TO STRUCTURES AND UNIONS, POINTERS AND GRAPHIC FUNCTIONS	
5.1	Structures and Unions: Structure Definition – initialization – Arrays of structures –arrays within Structures-Structures within structures – Unions – Declaration – initialization.	6
5.2	Introduction – Advantages of pointers – Accessing the address of a variable – Declaring and Initializing pointers – Accessing a variable through its pointer, Pointers and structures.	
5.3	Graphics Functions : arc(),line(),rectangle(),circle().	
Total Theory Hours		30
Total Practical Hours		50
Total Hours		80

PRACTICAL (50 HOURS)

1. Write a 'c' program to execute a sample C program to study the basic structure of C program
2. Write a 'c' program to illustrate the use of variables in expressions and their evaluation.
3. Write a 'c' program using Arithmetic, Relational, Logical and Assignment operators.
4. Write a 'c' program to find the greatest between two numbers using conditional operator.
5. Write a 'c' program to find the roots of a quadratic equation.
6. Write a 'c' program to find the greatest of three numbers using if –else and if -else if statements.
7. Write a 'c' program to test whether the given character is vowel or not, using nested if – else statement and switch case statement.
8. Write a 'c' program to find sum of first n natural number using 'goto' statement
9. Write a 'c' program to find the sum of all Fibonacci numbers in between 1 to n using 'for' loop.
10. Write a 'c' program to find G.C.D and L.C.M of two numbers using looping structure.
11. Write a 'c' program to count the number of digits.
12. Write a program to insert 5 elements into an array and print the elements of the array.
13. Write a 'c' program to accept 10 numbers, store them in a single dimensional array and to make the average of the numbers.
14. To write a program to accept a string and to count the no of vowels present in this string.
15. To write programs on matrix addition.
16. To write some programs to utilize different string handling functions and to create an array to store the names of 10 students arranging them alphabetically.
17. To write a program to find the sum of the digits of a given number using function.
18. To write a program to assign the address of an integer array to a pointer variable 'p' and add all the array elements through 'p'.
19. To write a program to define and accessing structure members
20. To write a program to draw an arc and circle.

HARDWARE AND SOFTWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS/SOFTWARE
1	Desktop /Laptop computers
2	C editor, Compiler

REFERENCE BOOKS

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1.	Programming in ANSI C 4E	Prof. E. Balagurusamy	McGRAWHILL publications.
2.	The C Programming Language Practical C Programming by Steve Oualline, published by O'Reilly & Associates, Inc.	Brian Kernighan and Dennis Ritchie,	Prentice Hall
3.	C Interfaces and Implementations	David Hanson,	Addison-Wesley

ASSESSMENT AND CERTIFICATION

S.No	Criteria for assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training , Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnic.

END EXAMINATION

ALLOCATION OF MARKS

S.No	Description	Max.Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Procedure	10
	b)Execution	30
	c)Output	20
	d)Record	20
Total Marks		100

THEORY MODEL QUESTION PAPER

CSE/2020/010 - PROGRAMMING THROUGH C LANGUAGE

(Maximum Marks : 20)

(N.B: Answer any **twenty** questions)

20 x 1 = 20 Marks

1. What is algorithm?
2. What is flow chart?
3. What is identifier?
4. What is a data type modifier?
5. What is a conditional operator?
6. What is the use of type cast?
7. What is a local variable?
8. Write the syntax of for statement?
9. What is the use of goto statement?
10. Write the syntax for declaring one dimensional array?
11. What is increment operator?
12. What is the break statement?
13. When use the continue statement used in c language?
14. What is string.h?
15. What is use of strrev()?
16. What is the function call?
17. What is call by value?
18. What is the use of scanf() function?
19. What you mean by void()?
20. What is the structure?
21. What is the advantage of union?
22. What is need of nested if?
23. What is pointer?
24. What is a command line argument?
25. What header file is included using graphic function ?