

Core Course
CC-112 *CC-108 Practical

Course Introduction :

Students will be provided with practical knowledge of advanced C programming language which includes functions, structures, files, pointers, dynamic memory allocation & preprocessors.

Objectives:

1. The objective of this subject is to get in-depth practical knowledge of C language.
2. To know the advanced concepts of C Programming Language.

No. of Credits: 3

Practical Sessions per week: 3

Teaching Hours: 40 hours

The students are expected to write program in 'C' language unit wise as given below. The list in each unit is **indicative only and may or may not be asked in the examination.**

UNIT	TOPICS / SUBTOPICS	TEACHING HOURS
1	Using Functions	10 hrs
1	Write a program to calculate average temperature of five days. Create temp() function.	
2	Write a program that uses recursive function fibo() that generates a Fibonacci series containing N elements.	
3	Write a program that uses a recursive function fact() that finds the factorial of a given number N.	
4	Program to find if the given no. is prime or not. The function should accept the number as argument and return if the no. is prime or not.	
5	Write a function which accepts a character array as argument from the user. The function should print the ASCII equivalent of all the characters in the string.	
6	Write a function which accepts a character array as argument from the user. The function should convert all the lowercase characters into uppercase case	
7	Write a function that accepts an array of integer values. The function should find the number which divides all the other numbers.	
8	Write a program that uses function digit(N,k) that return the value of the k th digit from the right of the number N. For eg. The function call digit (254693,2) should return 9.	
9	Write a user-defined function to perform <ol style="list-style-type: none"> a) Square of a number b) Area of a square c) Reverse the number 	

	10	Write a program that uses a function to check whether an entered three digit number is palindrome or not.	
2		Using Structures	10 hrs
	1	Write a program to define structure with tag state with fields state name, number of districts and total population. Read and display the data.	
	2	Write a program to create a list of books details. The details of a book include title, author, publisher, publishing year, number of pages, and price.	
	3	Define a structure called Item with members : Item_code, Item_name, Price. Create an array of five Items. Create a function which accepts the Item array and modifies each element with an increase of 10% in the price.	
	4	Define a structure to represent a date. Use your structures that accept two different dates in the format mm dd of the same year. Write a C program to display the month names of both dates.	
	5	Define a structure that can describe a Hotel. It should have members that include name, address, grade, room charges, grade and no of rooms. Write a function to print out all hotel details with room charges less than a given value.	
	6	Write a program to accept records of different states using array of structures. The structure should contain char state and number of int engineering colleges, int medical colleges, int management colleges and int universities. Calculate total colleges and display the state, which is having highest number of colleges.	
	7	Define a structure by name time with members seconds, minutes and hours of int type. A variable of the structure would thus represent time. If time1 and time2 are two variables of the structure type, write a program to find the difference of two times using a function.	
	8	Write a program to accept records of different states using array of structures. The structure should contain char state, int population, int literacy rate and int per capita income. Assume suitable data. Display the state whose literacy rate is highest and whose per capita income is highest.	
	9	Define a structure employee with members employee name, basic pay, dearness allowance, house rent, net salary. Declare an array of 5 employees. Write a function which calculates the net salary of employees and prints all employee details in descending order of their net salary.	
	10	Define a structure with tag population with fields Men and Women. Create structure with in structure using state and population structure. Read and display the data.	
3		Pointers, Implementation of singly link list using pointers (create, display, insert at first, insert at last, delete at first, delete at last)	10 hrs
	1	Write a program to create and display singly link list using pointers.	

	2	Write a program to insert new record at last position in the singly link list.	
	3	Write a program to insert new record at the beginning in the singly link list.	
	4	Write a program to delete a record from last position in the singly link list.	
	5	Write a program to delete a record from the beginning in the singly link list.	
	6	Write a program to find the largest element within an integer array using pointers.	
	7	Write a program to accept string using character pointer and display it.	
	8	Write a program to calculate the length of the string using pointers.	
	9	Write a program to calculate the square and cube of an entered number using pointer of a variable containing the entered number.	
	10	Write functions to add, multiply, subtract two numbers and call the functions from the main program using a function pointer.	
4		Using Files	10 hrs
	1	Write a program to display contents of file on the screen. The program should ask for file name. Display the contents in capital case.	
	2	Write a program to find size of the file.	
	3	Write a program to combine contents of two files in a third file. Add line number at the beginning of each line.	
	4	Write a program to display number 1 to 100. Redirect the output of the program to text file.	
	5	Write a program to write contents of one file in reverse into another file.	
	6	Write a program to count number of lines, words and characters in a file.	
	7	Write a program to create a file called dictionary.dat that contains the information such as Name, Surname, City and Phone number. Write a program to accept a City from user and list details of persons having the given city.	
	8	Write a program to copy one file to another. While doing so, all extra spaces in a file should be squeezed to one. For eg. If a file contains line "I am learning C", it should be converted to "I am learning C".	
	9	Write a program that counts the frequency of a word from a text file. The program should accept file name as command-line argument. Program should continue to ask word and display its frequency in a file till the Enter key is pressed without entering any word.	

10	<p>Write a Program to insert the following contents in a file named "File1".</p> <table style="margin-left: 40px;"> <thead> <tr> <th style="text-align: left;">Customer No.</th> <th style="text-align: left;">Account Type</th> <th style="text-align: left;">Balance</th> </tr> </thead> <tbody> <tr> <td>101</td> <td>Savings</td> <td>2000</td> </tr> <tr> <td>102</td> <td>Current</td> <td>5000</td> </tr> <tr> <td>103</td> <td>Savings</td> <td>3000</td> </tr> <tr> <td>104</td> <td>Current</td> <td>10000</td> </tr> </tbody> </table> <p>Append the contents of "File1" in another file "File2". Also display the contents of File2 on screen.</p>	Customer No.	Account Type	Balance	101	Savings	2000	102	Current	5000	103	Savings	3000	104	Current	10000	
Customer No.	Account Type	Balance															
101	Savings	2000															
102	Current	5000															
103	Savings	3000															
104	Current	10000															

Note : The students should maintain the record of typical (not simple ones) programs in their file which duly certified, should be presented at the time of final examination.

Textbook:

Programming In C (Second Edition)
 Publication : Pearson Education
 by Ashok N. Kamthane

Reference Book :

1. Simplifying C (First Edition 2010)
 Publication : Dreamtech
 by Harshal Arolkar and Sonal Jain

2. Programming in ANSI C (Fifth Edition 2011)
 Publication : Mc Graw Hill
 by Balagurusamy

3. Programming in C (First Edition 2011)
 Publication : Oxford Higher Education
 by Reema Thareja