

Subject Code : 1CS2020101	Subject Title: FUNDAMENTALS OF COMPUTER PROGRAMMING
Pre-requisite :	-

Course Objective:

This course is intended to develop problem solving skills in students with basics of programming using logic. Student is expected to learn problem solving using algorithm & flowchart techniques and implementation of problem using 'C' programming. The course aims to make the students formulate a problem in a programming language and solve it.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Total
Lecture	Tutorial	Practical	Credit	Theory		Practical		
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	3	7	60	40	30	20	150

Subject Contents

Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to Programming, Overview of C	9	20
	<p>Introduction to Programming: Concepts of Algorithm and Flowcharts, problem solving examples using algorithm and flowchart, Types of Programming languages, Characteristics of higher level language, Compiler, Interpreter, Assembler.</p> <p>Overview of C: Introduction and History of C, Importance of C, Sample C programs, Basic Structure of C programs, Programming style, Executing of C program.</p>		
2	Constants, Variables and Data Types, Operators and Expression	9	20
	<p>Constants, Variables and Data Types: Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants.</p> <p>Operators and Expression : Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associativity, Mathematical functions. Turnery/Conditional Operator</p>		
3	Managing Input and Output Operators, Decision Making Branching	9	20
	<p>Managing Input and Output Operators : Introduction, Reading a character/number, Writing a character/number, Formatting Input and Output.</p> <p>Decision Making Branching: Introduction, Decision making with <i>if</i> statement, Simple <i>if</i> statement, the <i>if-else</i> statement, Nesting of <i>if-else</i> statements, the <i>else-if</i> ladder, the <i>switch-case</i> statement, <i>goto</i> statement.</p>		

4	Loop Structures and Arrays	9	20
	<p>Loop Structures: Introduction, <i>while</i>, <i>do-while</i> and <i>for</i> statement. <i>break</i> and <i>continue</i> statements in loop. Nesting of loops.</p> <p>Arrays: Introduction, One-dimensional arrays, Two-dimensional arrays, Initialization, Sorting and Searching using arrays, Concept of Multidimensional arrays.</p>		
5	String	9	20
	<p>Handling strings : Introduction, Declaring and initializing string (group of characters), reading/printing string, Handling multiple strings.</p> <p>String Operations: String Copy, String Compare, String Concatenation, String Length and others.</p>		

Course outcomes:

At the end of this course, the student would be able

- To have fundamental knowledge on flowcharts and algorithms
- To formulate the problem and express the same using flowcharts and algorithms
- To understand the basic terminology used in computer programming using C
- To study, analyze and understand logical structure of a computer program, and different construct to develop a program in 'C' language
- To write, compile and debug programs in C language
- To design programs involving decision structures, loops and functions

List of References:

1. Programming in ANSI C, By E Balagurusamy, Tata McGraw-Hill Publishing Company Limited.
2. Programming with C, By Bayron Gottfried, Tata McGraw-Hill Edition.
3. Let Us C, By Yashavant Kanetkar, BPB Publications.
4. Working with C, By Yashavant Kanetkar, BPB Publications.
5. C in Depth, By Suresh K. Srivastava, BPB Publications .
6. Programming in C, by Reema Thareja, Publisher – Oxford.

E-Resources / Web Links:

- <http://www.cprogramming.com/>

List of Experiments:

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

Practical List

1. Write a C program to display "hello computer" on the screen.
2. Write a C program to print your Personal Details (name, address, city, state, gender, Etc...)
3. Write a C program to find the area of circle using the formula $\text{Area} = \pi * r * r$.
4. Write a C program to find the area of rectangle, cube and triangle.
(Formula are: Rectangle= $L*W$, Triangle = $(h * b)/2$, Cube = $L*L*L$)
5. Write a C program to find the area and volume of sphere. Formulas are $\text{Area} = 4*\pi*R*R$
 $\text{Volume} = 4/3*\pi*R*R*R$.
6. Write a C program to evaluate simple interest $I = P*R*T / 100$.
7. Write a C program to enter a distance into K.M and Convert it in to Meter, Feet, Inches and Centimeter
8. Write a C program to interchange two numbers.
9. Write a C program to convert Fahrenheit into centigrade Formula: $C = (F-32)/1.8$
10. Write a C program for summation, subtraction, multiplication, division of two numbers using Arithmetic operator
11. Write a C program to enter days and convert into years, month and remainder days.
12. Write a C program to find out the largest value from given three numbers using conditional Operator
13. Write a C program to find the maximum number from given three numbers.
14. Write a C program to find that the enter number is Negative, or Positive or Zero.
15. Write a C program to Checked whether entered char is capital, small, digit or any special Character
16. Write a C program to read number 1 to 7 and print relatively day Sunday to Saturday.
17. Write a C program to find out the maximum and minimum number from given 10 numbers.
18. Write a C program to find the sum of digit of accepted number.
19. Write a C program to find the sum of first 100 odd numbers. And even numbers.
20. Write a C program to display first 25 Fibonacci nos.
21. Write a C program to check the accepted number is prime number or not.
22. Write a C program to display first' 100 prime numbers.
23. Write a C program to find factorial of accepted numbers.
24. Write a C program to print accepted no and its reverse number.
25. Write a C program to find whether the accepted number is palindrome or not.
26. Write a C program to convert decimal numbers into equivalent binary number.
27. Write a C program to convert decimal numbers into equivalent to octal number.
28. Write a C program to convert decimal numbers into equivalent hexadecimal number.
29. Write a C program to display first 5 Armstrong number.
30. Write a C program to arrange the accepted numbers in ascending order and descending order.
31. Write a C program to find whether the accepted string is palindrome or not.
32. Write a C program to convert given line into upper case or lower case.
33. Write a C program to count no of word, character, line and space from given text.
34. Write a C program to sort given string in ascending order.
35. Write a C program to prepare pay slip using following data.
DA = 10% of basic, HRA = 7.50% of basic, MA = 300,
PF = 12.50% of basic, Gross = basic + DA + HRA + MA, Nt = Gross – PF.
36. Write a C program to read marks and your program will display grade.
Marks Grade
100 – 80 Dist
60 – 79 First

50 – 59 Second

35 – 49 Pass

0 – 34 Fail

37. Write a C program to find $1+1/2+1/3+1/4+....+1/n$.

38. Write a C program to display following output on the screen.

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1          1      1          1          A          *
12         22     0 1        2  2        B C         **
123        333    1 0 1      3 3 3       D E F        ***
1234       4444   0 1 0 1    4 4 4 4     G H I J       ****
                                     5 5 5 5 5 *****

          1          C
         2 3         CP
        4 5 6        CPR
       7 8 9 10      CPRO
      11 12 13 14 15 :
                    CPROGRAMMING
                    :
                   CPRO
                   CPR
                   CP
                   C

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39. Write a C program to find maximum & minimum value from the given array.

40. Write a c program to input N and find out the sum, average, max, min, total even no and Total odd no.
[Without use of array]

41. Write a c program to input N no and find out the sum, average, max, min, total even no and total odd no. [Using Array]

42. Write a c program to display the two matrixes on screen and perform the addition of two matrix and print on screen.

43. Write a c program to display the two matrixes on screen and perform the multiplication of two matrix and print on Screen.

44. Write a C program to sort a list of numbers given in an array.

45. Write a C program to search for a particular number from a list of numbers in an array.