FACULTY OF COMPUTER SCIENCE

Bachelor of Computer Application (Sem-I)

In Effect from Academic Year 2016-17

Subject Code : 1CS1010101	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)				
				Theory		Practical		
Lecture	Tutorial	Practical	Credit	University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Total
4	1	2	6	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Introduction to Programming, Overview of C	9	20
	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. 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.		
2	Constants, Variables and Data Types, Operators and Expression	9	20
	Constants, Variables and Data Types: Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, Defining symbolic constants. 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 associatively, Mathematical functions. Turnery/Conditional Operator		
3	Managing Input and Output Operators, Decision Making Branching	9	20
	Managing Input and Output Operators: Introduction, reading a character/number, writing a character/number, Formatting Input and Output. Decision Making Branching: Introduction, Decision making with *if* statement, Simple *if* statement, the *if-else* statement, Nesting of *if-else* statements, the *else-if* ladder, the *switch-case* statement, *goto* statement.		

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

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/

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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 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 Area = 4*PI*R*R
   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 reminder 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.

```
1
12
123
1234
```

```
1
22
333
4444
```

```
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1
```

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```
A
B C
D E F
G H I J
```

```
*
* *
* * *
* * * *
* * * * *
```

```
    1
  2 3
4 5 6
7 8 9 10
11 12 13 14 15
```

```
C
CP
CPR
CPRO
:
CPROGRAMMING
:
CPRO
CPR
CP
C
```

```
  *
 * *
* * *
* * * *
* * * * *
```

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.