SILVER OAK UNIVERSITY

Computer Application

Master of Computer Applications(MCA)

Subject Name:Fundamentals of Programming

Subject Code:

Semester: 1

Prerequisite: Need to know about what computer program and programming language is. This reference has beenprepared for the beginners to help them understand the basic to advanced concepts related to CProgramming languages.

Objective: This course aims to introduce problem-solving techniques to help the students to develop analytical skills. Topics includeproblem-solving techniques, flow charts, decision tables and programming using C. By the completion of this course, students will be able to be able to implement Algorithm and flowchart for any given procedure.Be able to implement, test, debug, and document programs in, Understand low-level input and output routines , usage ofpre-processor, Be able to write programs that display output in various form, Understand how to write and use control statement,conditional, Jumps and break.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Evaluation Scheme				Total Marks
L	T	P	C	Internal		External		
				Th	Pr	Th	Pr	
4	0	2	5	40	20	60	30	150

Content:

Unit No.	Course Contents	Teaching Hours	Weightage %
1	**Introduction to computer and programming :** Computer Languages, Programming Paradigm and Classification, Programming Process: Problem Understanding, Planning, Coding, Translation,Pseudo Code Statements, Software Types and Hardware, Assembly level and high level programming.	4	8
2	**Fundamental of Algorithms and Flowchart:** Introduction AND importance, Algorithm Development Method. Develop Algorithm and Flow chart for: Exchanging the values of two variables, Summation of a set of numbers, Reversing the digits of given integer, to check number is prime or not, Factorial computation	5	10
3	**Introduction to C Programming** : History of C, Importance of C , Basic Structure of C Programs, Executing 'C' Program, Constants, Variables and Data Types:	8	15

	Character set, C tokens,keywords, identifiers AND constants,variables, rules and scope, declaration and assigning value to variables, Local and Global Variables, symbolic constantsand data types.		
4	**Operators and Expression**: Arithmetic, relational, logical, assignment, increment-decrement, conditional, bitwiseand special. Arithmetic expressions, evaluation of expressions, precedence of arithmeticoperators, Type conversions in expressions, operator precedence and associatively,mathematical functions, Managing Input and Output Operators: Reading and writing a character formattedinput-output.	8	15
5	**Decision Making, branching and debugging:** Simple IF statement, IF-ELSE statement,Nesting of IF ... ELSE statements, ELSE IF ladder, Switch Case, turnery (? :) operator and goto statement.	8	15
6	**Repetitions:** Control and Nested Loops, Common Mistakes and Advantages of Looping,For, Do While and Whiles Loops, Break and Continue.	8	15
7	**Arrays:** Array Declaration and Initialization, Types of Array. String : Introduction to String, String OperationFunction	6	12
8	**Function in C** : Function creation with single and multiple parameters , Return value,Function Call By value and Call By reference, Categories of Function,Passing array in function,Recursion	5	10

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Building strong foundations in computers.	1
CO-2	Developing analytical skills to deal with day-to-day situations.	2
CO-3	Describe the basic concepts of programming.	3
CO-4	Solve problems through program development life cycle.	4
CO-5	Design and develop programs using conditional and loop control statements.	5 & 6
CO-6	Get knowledge about array and able to solve problem using function.	7& 8

Teaching & Learning Methodology:-

- ❖ Demonstrate programming Environment and Program Testing and debugging.
- ❖ Discussion of Compilation, Linking and Loading and Program execution process.
- ➢ ***The course content shall be delivered by following pattern, wherein teacher shall spare 35% hour for demonstration/hands-on regarding supported tool and technology. Rest 65% hours*** *shall be exclusively meant for imparting conceptual knowledge.*

List of Experiments/Tutorials:

- There should be Step-form Algorithm, Flow-Chart, Program Source Code and Output in file for each program.

1. Write a program to print "Hello World!".
2. Write a program to print sum of two numbers.
3. Write a program for exchanging values of two variables.
4. Write a program to display simple arithmetic calculator in the following format: X =_____ Y =_____
Sum(X+Y) =_____ Difference(X-Y) =_____ Product (X*Y) =_____ Division (X/Y) =_____
5. Write a program to find volume of a cylinder. (=PI * R * R * Height).
6. Write a program to print percentage and class of given Marks. (Using IF .. Else IF or Switch statement)
7. Write a program to print "SOU-MSCIT" ten times using loops.
8. Write a program to print sum of numbers between 1 to 100 numbers.
9. Write a program to print sum of odd numbers between 1 to N numbers.
10. Write a program to calculate the average of a set of N numbers.
11. Write a program to print sum of the series 2 + 4 + 8 + 16… up to N Numbers.
12. Write a program to print reverse number of given integer number.
13. Write a program to read three numbers from keyboard and find out maximum out of these three. (nested if else)
14. Write a program to check given year is leap year or not.
15. Write a program to print factorial value of given number.
16. Write a program to check given number is prime or not.
17. Write a program to print largest value among three values.
18. Write a program to print Fibonacci series between 1 to 100 numbers like 1,1,2,3,5,8,13 …
19. Write a program to find the numbers of and sum of all the integers greater than 100 and less than 200 that are divisible by 7.
20. Write a program to calculate the sum of digit of given number. Ex. 1321 = 1+3+2+1 = 7
21. Write a program to find and print first N Positive integers whose squares are Palindromes.
22. Write a program to find area of triangle(a=h*b*.5)
a = area
h = height
b = base
23.
24. Write a program to to solve quadratic equation. root1 = (-b + sqrt(b2 – 4ac))/2a
root2 = (-b -sqrt(b2 – 4ac))/2a
25. Write a program to print interest calculation table. (eg. Amount 5000.00 , Year 10, Int. Rate 11%)

26. Write a program to print a table of conversion from Fahrenheit to Centigrade.
C=(F-32)/1.8
27. Write a program to print this pattern.
*
* *
* * *
* * * *
28. Write a program to print Floyd's triangle.
1
2 3
4 5 6
7 8 9 10
29. Write a program to print the following digit Pyramids.
1
2 2
3 3 3
30.Write a program to print the following digit Pyramids.
1
1 2 1
1 2 3 2 1
31.Write a C program to read and store the roll no and marks of 20 students using array.
32.Write a program to find out which number is even or odd from list of 10 numbers using array
33.Write a program to find minimum and maximum element from 1-Dimensional array.
34.Write a program to find a character from given string.
35.Write a program to reverse string.
36.Write a program to convert string into upper case
37.Write a program that defines a function to add first n numbers.
38.Write a function in the program to return 1 if number is prime otherwise return 0
39.Write a function Exchange to interchange the values of two variables, say x and y. illustrate the use of this function in a calling function.
40.Write a program to find factorial of a number using recursion.
41.Write a C program using global variable, Local variable

Books Recommended-

Text Books

1.Programming in ANSI-C by E. Balaguruswami, Tata McGraw-Hill Publication
2. Programming Logic and Design byJoyce Farrell-Cengage Learning Publication

Reference Books

1. Let us C by Yashwant Kanetkar, BPB Publication
2.C Programming language By Kernighan, Brian, W, Ritchie, Dennis PHI publication
3.Programming in C By Pradip dey and Manash Ghosh

List of Open Source Software/learning website:

Open Source Software:
1. Turbo C++
2. Visual Studio Code
3. CodeLite

Learning WebSite:
1. https://www.learn-c.org/
2. https://www.programiz.com/c-programming/
3. https://www.w3resource.com/c-programming-exercises/