SILVER OAK UNIVERSITY

College of Technology (01)

Bachelor of Technology in AE/CH/CE/IT/EC/CL/EE/ME Engineering

Subject Name: Programming for Problem solving

Subject Code: 1010083111

Semester: 1 year

Prerequisite:

1. N.A.

Objective:

1. To Provide the Knowledge of Basic Fundamental of Programming.

Teaching and Examination Scheme:

Teaching Scheme					Evaluation Scheme				Total Marks
L	T	P	Contact Hours	C	Theory		Practical		
					CIE (TH)	ESE (TH)	CIE (PR)	ESE (PR)	
3	0	2	5	4	40	60	20	30	150

Content:

Unit No.	Course Contents	Teaching Hours	Weightage %
1	**Introduction to computer and programming:** Introduction, Basic block diagram and functions of various components of computer, Concepts of Hardware and software, Computer Peripherals, Compiler and interpreter, Concepts of Machine level, Assembly level and high level programming, Flowcharts and Algorithms	5	10
2	**Fundamentals of C:** Features of C language, structure of C Program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions	4	10
3	**Control structure in C:** Simple statements, Decision making statements, Looping statements, Nesting of control structures, break and continue, goto statement	5	10
4	**Array & String:** Concepts of array, one and two dimensional arrays, declaration and initialization of arrays, string, string storage, Built-in string functions	6	15

5	**Functions:** Concepts of user defined functions, prototypes, definition of function, parameters, parameter passing, calling a function, recursive function, Macros, Pre-processing	5	12
6	**Recursion:** Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibonacci series, Ackerman function etc. Quick sort or Merge sort.	4	10
7	**Pointers:** Basics of pointers, pointer to pointer, pointer and array, pointer to array, array to pointer, function returning pointer	4	9
8	**Structure:** Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers	4	8
9	**Dynamic memory allocation:** Introduction to Dynamic memory allocation, malloc, calloc, free, realloc	4	8
10	**File management:** Introduction to file management and its functions	4	8

Course Outcome:

Sr. No.	CO statement	Unit No
CO-1	Formulate algorithm/flowchart for given arithmetic and logical problem	1
CO-2	Translate algorithm/flowchart into C program using correct syntax and execute it	2,3
CO-3	Write programs using conditional, branching, iteration, and recursion	3,6
CO-4	Decompose a problem into function	5
CO-5	Develop an application using the concepts of array, pointer, structure, and file management to solve engineering and/or scientific problems	7,8,9,10

Teaching & Learning Methodology:-

- The course includes a laboratory, where students have an opportunity to build an appreciation for the concepts being taught in lectures.
- Lectures with live practical example using Projector and Computer
- Experiments shall be performed in the laboratory related to course contents

List of Experiments/Tutorials:

1. Write a Program to print a message given in laboratory.
2. Write a Program to calculate Addition, Subtraction, Multiplication and Division of given two numbers using arithmetic operator
3. Write a program to calculate the income tax of total yearly income,(use current tax slab for calculation)
4. Write a Program of swapping two values.
5. Write a Program to convert time from given seconds to total hours, minutes and seconds.
6. Write a Program to find ascii value of given character.
7. Write a Program to display 3 students student name , roll_number and marks of 4 subjects also display the total marks and percentage of each student.
8. Write a C program to find factorial of a given number.
9. Write a program to check whether the given number is prime or not.
10. Write a program to print following patterns :
    a.
    ```
        *
       * *
      * * *
     * * * *
    * * * * *
    ```
    b.
    ```
        1
       12
      123
    12345
    ```
    c.
    ```
    12345
    1234
    123
    12
    1
    ```
    d.
    ```
    5 5 5 5 5
     4 4 4 4
      3 3 3
       2 2
        1
    ```
11. Write a Program to store roll number of 5 students using array.
12. Write a Program to display table of given value by user.
13. Write a Program to addition of 2X2 dimensional array.
14. Write a function in the program to return 1 if number is prime otherwise return 0
15. Write a Program of multiplication using with argument of user define function.
16. Write a Program to display table of given value by user using concept of recursion.
17. Define a structure type struct personal that would contain person name, Date of birth and age using this structure to read this information of 4 people and display the same.
18. Write a program to print address of variable using pointer.
19. Write a C program to add the two values using pointers.

20. Write a Program which stores the addressof pointer variable.

Major Equipment (Hardware/ Software):

1. Computer System
2. Compiler for C Program
3. Projector

Books Recommended:-

1. Programming in ANCI C, Seventh edition, by Balagarusamy E, Tata McGraw-Hill Publishing Company Limited
2. Programming with C, Second edition, by Gottfried, Tata McGraw-Hill Publishing Company Limited
3. C Programming language, Second edition, by Kernighan B W and Ritchie D M Prentice Hall.
4. "Computer programming", Pearson Education, 2007 by Ashok N. Kamthane.

List of Open Source Software/learning website:

1. NPTEL tutorials
2. http://silveroakuni.ac.in/video-lecture
3. **http://www.coursera.org/**