SRI VENKATESWARA UNIVERSITY::TIRUPATI

COMPUTER SCIENCE: MINOR

W.E.F 2023-24 onwards

COURSE STRUCTURE

YEAR	SEMESTER	COURSE	TITLE	No. Hrs./ Week	No. of Cred
I	II	1	Problem Solving using C - (T)	3	3
			Problem Solving using C - (P)	2	1

Theory   **Credits: 3**   **3 hrs/week**

COURSE OBJECTIVES

1. To explore basic knowledge on computers
2. Learn how to solve common types of computing problems.
3. Learn to map problems to programming features of C.
4. Learn to write good portable C programs.

COURSE OUTCOMES

Upon successful completion of the course, a student will be able to:

1. Understand the working of a digital computer and Fundamental constructs of Programming
2. Analyze and develop a solution to a given problem with suitable control structures
3. Apply the derived data types in program solutions
4. Use the 'C' language constructs in the right way
5. Apply the Dynamic Memory Management for effective memory utilization

UNIT-I

Introduction to computer and programming: Introduction, Block diagram and functions of various components of computer, Concepts of Hardware and software, Types of software, Compiler and interpreter, Concepts of Machine level, Assembly level and high-level programming, Flowcharts and Algorithms.

Fundamentals of C: History of C, Features of C, Structure of 'C' Program, C Tokens, Data types & Operators, Variable declaration and initialization, Input /output statements in C(Formatted and Unformatted I/O).

UNIT-II

Control statements: Decision making statements: if, if else, else if ladder, switch statements. Loop control statements: while loop, for loop and do-while loop. Jump Control statements: break, continue and goto.

UNIT-III
Derived data types in C: Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation.
Strings: Declaring & initializing string variables; String handling functions, Character handling functions.

UNIT-IV

Functions: Function Prototype, definition and calling, return statement, categories of functions, recursion, parameter passing by address & by value, local and global variables, storage classes.

Pointers: Pointer data type, Pointer declaration, initialization, accessing values using pointers. Pointer arithmetic. Pointers and arrays, pointers and functions.

Dynamic Memory Management: Introduction, Functions-malloc, calloc, realloc, free.

UNIT-V

Structures: Basics of structure, structure members, accessing structure members, nested structures, array of structures. **Unions** - Union definition, declaration, initialization and accessing members; difference between Structures and Unions.

Files: Introduction, file operations, file handling functions, reading and writing data into a file.

TEXT BOOKS:

- E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, 6th Edn, ISBN-13: 978- 1-25- 90046-2.
- Herbert Schildt, ―Complete Reference with C, Tata McGraw Hill, 4th Edn., ISBN- 13: 9780070411838, 2000.
- Computer fundamentals and programming in C, REEMA THAREJA, OXFORD UNIVERSITY PRESS.

REFERENCE BOOKS

- E Balagurusamy, COMPUTING FUNDAMENTALS & C PROGRAMMING – Tata McGraw-Hill, Second Reprint 2008, ISBN 978-0-07-066909-3.
- Ashok N Kamthane, Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.
- Henry Mullish&Huubert L.Cooper: The Spirit of C An Introduction to modern Programming, Jaico Pub. House,1996.
- Y kanithkar, let us C BPB, 13 th edition-2013, ISBN:978-8183331630,656 pages.

SUGGESTED CO-CURRICULAR ACTIVITIES & EVALUATION METHODS:

Unit 1: Activity: Quiz on computer hardware and software concepts
    Evaluation Method: Objective-based quiz assessing knowledge and understanding

Unit 2: Activity: Problem-solving using Decision-Making Statements
    Evaluation Method: Correctness of decision-making logic

Unit 3: Activity: Array and String Program Debugging
    Evaluation Method: Identification and correction of errors in code

Unit 4: Activity: Pair Programming Exercise on Functions
    Evaluation Method: Collaboration and Code Quality

Unit 5: Activity: Structured Programming Assignment
    Evaluation Method: Appropriate use of structures and nested structures

SRI VENKATESWARA UNIVERSITY::TIRUPATI

COMPUTER SCIENCE

W.E.F 2023-24 onwards
II Semester

Course 1: Problem Solving using C

Practicals   **Credits: 1**   **2 hrs/week**

List of Experiments

1. A. Write a program to calculate simple & compound interest
   B. Write a C program to interchange two numbers with and without using a temporary variable..
2. Find the biggest of three numbers using C using the conditional/ternary operator..
3. Write a c program to find the sum of individual digits of a positive integer.
4. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1 Subsequent terms are found by adding the preceding two terms in the sequence.
5. Write a c program to check whether a number is Armstrong or not.
6. Write a c program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
7. Write a c program that implements searching of given item in given list
8. Write a c program that uses functions to perform the following: Addition of two matrices. Multiplication of two matrices.
9. Write a program for concatenation of two strings.
10. Write a program for length of a string with and without String Handling functions
11. Write a program to demonstrate Call by Value and Call by Reference mechanism
12. Write a Program to find GCD of Two numbers using Recursion
13. Write a c program to perform various operations using pointers.
14. Write a Program to demonstrate dynamic arrays using Dynamic Memory Management functions
15. Write a c program to read data of 10 employees with a structure of 1.employee id 2.aadar no, 3.title, 4.joined date, 5.salary, 6.date of birth, 7.gender, 8.department.
16. Write a C program to demonstrate read and write data into a file.

SRI VENKATESWARA UNIVERSITY::TIRUPATI
B.Sc. Computer Science Minor
I year II Semester
Course 1: Problem Solving using C
MODEL QUESTION PAPER

Time: **3 Hours**
Max. Marks: **75**

PART-A
Answer any **FIVE** of the following. Each Question Carries 5 marks.
(5X5=25)

1.
2.
3.
4.
5.
6.
7.
8.

PART-B
Answer any **FIVE** of the following. Each Question Carries 10 marks.
(5X10=50)

9.
10.
11.
12.
13.
14.
15.
16.
17.
18.