Gayatri Vidya Parishad College of Engineering (Autonomous), Madhurawada, Visakhapatnam- 530048

Department of Computer Science and Engineering
2022 - 23

SCHEME OF COURSE WORK

Course Details:

Course Title	Programming for Problem Solving using C		
Course Code	**22CT1101**	**L T P C**	3 1 0 4
Program:	B.Tech.		
Specialization:	Computer Science and Engineering		
Semester	II		
Prerequisites	Basic Mathematical Foundation		
Courses to which it is a prerequisite	Data Structures , Any other programming languages		

Course Outcomes (Cos):

At the end of the course, a student will be able to

1	Analyze the problem and choose appropriate algorithm to solve it.
2	Design modular programs involving input output operations, decision making and looping constructs by choosing the appropriate data types for writing programs in C language.
3	Apply the concept of arrays and string handling in problem solving.
4	Apply the concept of pointers for dynamic memory management.
5	Design programs to store data in structures and files.

Programme Outcomes (POs):

1	Apply the knowledge of mathematics, science, engineering fundamentals and principles of Information Technology to solve problems in different domains.
2	Analyze a problem, identify and formulate the computing requirements appropriate to its solution.
3	Design and develop software components, patterns, processes, Frameworks and applications that meet specifications within the realistic constraints including societal, legal and economic to serve the needs of the society
4	Design and conduct experiments, as well as analyze and interpret data
5	Use appropriate techniques and tools to solve engineering problems.
6	Understand the impact of Information technology on environment and the evolution and importance of green computing.
7	Analyze the local and global impact of computing on individual as well as on society and incorporate the results in to engineering practice.
8	Demonstrate professional ethical practices and social responsibilities in global and societal contexts.
9	Function effectively as an individual, and as a member or leader in diverse and multidisciplinary teams.
10	Communicate effectively with the engineering community and with society at large.
11	Understand engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects.
12	Recognize the need for updating the knowledge in the chosen field and imbibing learning to learn skills

Course Outcome versus **Program Outcomes** versus**: Program Specific Outcomes**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	3														3
CO-2	3	2	2	2	2										3
CO-3	2	2	2	2	3										3
CO-4	2	3	2	2	3										3
CO-5	2	2	3	2	3										3

3 - Strongly correlated, *2* - *Moderately* correlated, *Blank* - *No correlation*

Assessment Methods:		Assignment / Quiz / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Introduction to computer based problem solving, Program design and implementation issues	CO1	1) Explain in detail the programming rules, process of compilation. 2) Write the program design and implementation issues.	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1 MID-1
2	Algorithms for problem solving: Simple problems based on number theory	CO1	1) Define algorithm? Mention the properties or characteristics of an algorithm. 2) Write algorithm, Flow Chart & a C program to calculate Area of a Circle, Rectangle.	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
3	An Overview of C, Basic Data types, Modifying the Basic Data Types, Identifier Names, Variables, Type Qualifiers	CO2	1) Explain about Data types in C? 2) Give the rules for naming an identifier.	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
4	Constants, Operators, Expressions, Selection statements	CO2	1) Explain about Operators in C? 2) Evaluate the expression (x=1,y=2) x-2*y+1/y-x 3) Explain nested if structure	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
5	Iteration and Jump Statements, Designing Structured Programs, Functions Basics, Standard Library Functions	CO2	1) Explain iterative statements 2) Write a program in C to generate all prime no's between 1 to 100	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
6	User Defined Functions, Categories of Functions , Parameter Passing Techniques	CO2	1) List various categories of functions and explain. 2) Explain the difference between call by value and call by reference.	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
7	Scope, Scope Rules, Storage Classes and Type Qualifiers, Recursion: Recursive Functions, Preprocessor Directives	CO2	1) Give pros and cons of using recursion. 2) Write a program to find factorial of a no using recursive function	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1
8	Array Concepts, Using Arrays in C, Inter-Function Communication using Arrays, Array Applications, Two-Dimensional Arrays, Introduction to Multidimensional Arrays	CO3	1) Write a program to search an element in a list using binary search method. 2) Write a program to generate multiplication table of a given number.	Lecture PPT Program writing	QUIZ-1 ASSIGNMENT-1

9	**Mid-Test 1**				
10	String Concepts, C Strings, String Input / Output Functions, Arrays of Strings, String Manipulation Functions	CO3	1) List and explain various string functions. 2) Write a program to check whether a given string is palindrome or not.	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
11	Introduction to pointers, Pointer Arithmetic, Pointers for Inter-Function Communication, Pointers to Pointers, Array of Pointers	CO4	1) List the rules for pointer operations. 2) Write a program to calculate the area of triangle by using call by value function.	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
12	Pointer to Array, Pointers to void, Pointers to Functions, Command Line Arguments	CO4	1) Explain Pointer to an array with an example. 2) Explain how to pass an address to function	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
13	Dynamic Memory Allocation Functions, Programming Applications, Type Definition (typedef), Enumerated Types	CO4	1) Explain Dynamic memory allocation concept. 2) Explain Enumerated data type in C.	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
14	definition and Initialization of Structures, Accessing Structures, Nested Structures, Arrays of Structures, Structures and Functions, Pointers to Structures,	CO5	1) Define Structure and explain how its members can be accessed. 2) Write a c program using array of structures	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
15	Self-Referential Structures, Unions, Introduction to Files, Modes of File operations, Text and Binary Files	CO5	1) Differentiate between structure and Union. 2) List and explain various modes of File operations.	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
16	file I/O Operations	CO5	1) Mention any four predefined file handling functions in 'C' with their purpose and syntax 2) Write a program to print the text of a file on screen and displaying the line no's before the text in each line (use command line arguments to enter text).	Lecture PPT Program Execution	QUIZ-2 ASSIGNMENT-2
17	**Mid Test 2**				
18	**External Examination**				