SCHEME OF COURSE WORK

Course Details:

Course Title	**Computer Programming Through C**			
Course Code	**15CT1102**		**L T P C**	**: 3 0 0 3**
Program:	**B. Tech.**			
Specialization:	**Information Technology**			
Semester	**II**			
Prerequisites	**Basics Mathematical Computation**			
Courses to which it is a prerequisite	**Data Structures, Object Oriented Programming Through JAVA**			

Course Outcomes (COs):

1	Design Algorithms and draw Flowcharts...
2	Develop Programs using functions
3	Develop Programs for Arrays and String manipulations.
4	Use pointers in programs
5	Discuss structures, unions, files

Program Outcomes (POs):

A graduate of Electrical and Electronics Engineering will be able to

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 & develop software applications that meet the desired specifications within the realistic constraints to serve the needs of the society.
4	Design and conduct experiments, as well as to analyze and interpret data
5	Use appropriate techniques & tools to solve engineering problems.
6	Apply the knowledge to analyze and understand societal, health, safety, legal, and cultural issues relevant to the Information Technology practices.
7	Analyze the local and global impact of computing on individual as well as on society.
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:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	3			3									3		
CO-2	3	3		3									3		
CO-3	3	3		2	2								3		
CO-4	3	2											3		
CO-5	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 Computers , Algorithm/ Pseudo code, Flow chart, Program Development steps	CO-1	1) Explain in detail the programming rules, process of compilation and execution of program using a flowchart.	Lecture Program Writing	Assignment 1
2	Basic structure of C Program, Input and Output statements (printf() & scanf()), A Simple C Program, Identifiers	CO-1	1) Explain Basic Structure of C Program. 2) Write algorithm, Flow Chart & a C program to calculate Area of a Circle, Rectangle ,Triangle	Lecture Program Writing	Quiz 1
3	Basic data types and sizes, constants , Variables, Operators, Type Conversion, Expression Evaluation, Precedence & Associativity of operators	CO-1	1) Explain about Data types in C? 2) Evaluate arithmetic expression (sample expression with data)	Lecture Program Writing	Assignment 1
4	If, switch, for, while and do- while statements, break, continue and goto statements. Sample programs covering all the above topics	CO-1	1) Explain iterative statements. 2) Write a C program to find prime numbers between 1 to 100.	Lecture Program Writing	Assignment 1
5	Definition, Advantages, types of functions- user defined and standard library functions	CO-2	1) What is an user defined function? Explain with a suitable example. 2) Write a C program to perform arithmetic operations using user defined functions	Lecture Program Writing	Assignment 1
6	Categories of functions, scope rules, recursion, storage classes. Sample programs covering all the above topics.	CO-2	1) Explain the difference between call by value and call by reference. 2) Write a C program to find factorial of a number using a recursive and non-recursive concepts.	Lecture Program Writing	Quiz 1
7	Introduction to arrays, 1 D Arrays: Definition, Declaration, Initialization, Accessing & storing the elements	CO-3	1) What is an array? Explain in detail about one dimensional l arrays. 2) Write a C program to print the binary equivalent of a decimal	Lecture Program Writing	Quiz 1

			number using one dimensional array?		
8	2D Arrays: Definition, Declaration, Initialization, Accessing & storing the elements C Pre processors	CO-3	1) Explain in detail about two dimensional arrays 2) Write a C program to multiply two matrices	Lecture Program Writing	Quiz 1

9	**Mid-Test 1**				
10	String- Declaration, Initialization, pointers and strings, standard library string functions, array of pointers to strings. Sample programs covering all the above topics.	CO-3	1. What is NULL character? Why is it important? 2. Write a C program to check whether a string is palindrome or not.	Lecture Program Writing	Assignment 2
11	Definition, Declaration of Pointer variables, the & and * operators, Pointer Expressions, Char, int, and float pointers, Sample -programs covering all the above topics	CO-4	1. What is pointer? Declaration of a pointer with an example. 2. Write a program to display address of a variable with and without pointer.	Lecture Program Writing	Quiz 2
12	Pointer arithmetic, Passing addresses to functions, Functions returning pointers, Sample programs covering all the above topics	CO-4	1. Explain how to pass an address to function 2. Explain functions returning pointers with an example	Lecture Program Writing	Assignment 2
13	Pointers & Arrays: Passing array elements to functions, pointer to pointer, array of pointers, Sample programs covering all the above topics	CO-4	1. Explain Pointer to pointer with an example. 2. Explain how an array can be passed to function with an example	Lecture Program Writing	Assignment 2
14	Dynamic memory allocation functions, STRUCTURES **& UNIONS:** Structures: Definition, Initialization, Accessing structures, nested structures, Sample programs covering all the above topics.	CO-5	1. Explain malloc, calloc, free functions ? Mention the different allocation functions. 2. Differentiate between Unions and Structures.	Lecture Program Writing	Assignment 2
15	Array of structures, additional features of structures, self referential structures, Sample programs covering all the above topics.	CO-5	1. Explain Self Referential Structures with an example 2. Write a c program using array of structures	Lecture Program Writing	Quiz 2
16	Unions, type-def, bit fields, enum data type. Sample programs covering all the above topics. **FILES**: Concept of a file, Text and Binary files	CO-5	1.Explain type-def and enum with an example 2. What is file? Differences between text files and binary files.	Lecture Program Writing	Quiz 2
17	File I/O operations, Command line arguments. Sample programs covering all the above topics.	CO-5	1. Mention any four predefined file handling functions in 'C' with their purpose and syntax. 2. Write a 'C' program to copy the contents from one file another	Lecture Program Writing	Quiz 2
18	**Mid-Test 2**				
19/20	**END EXAM**				