Course: BTech **Semester:** 1

Prerequisite:

Rationale: -

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	-	2	-	4.00	20	20	20	60	30	150

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to C language :**History of C language, Program Development Steps, Structure of C program	10	3
2	**Data Types, User I/O and OperatorsData Types**: Primitive , Extended and Derived Data types, Variables **User I/O :** Formatted,predefined Functions of stdio.h header file **Operators:** Types of operators, Precedence, Associativity	10	6
3	**Conditional Flow Statements, Iterative Statements, Jumping Statements and Pointors:Conditional Flow Statements:** Simple if,if-else,else-if ladder,switch case Decision Making using conditional statements **Iterative Statements**: Control Entry and Control Exit Loops **Jumping Statements:** break,continue , forward and backward goto. **Pointers:** Typed:single double,triple..wild,NULL,Const,untyped:void	15	9
4	**Functions :** **Functions :** Call by value, call by references, Types of Functions. **Pointer Functions:** Calling A function through function pointer, Passing A function's address as an Argument to other function, Types of Pointer function Creation. **Recursion** : Types of Recursions : Direct Recursion,Indirect Recursion,Tail Recursion, No tail/Head Recursion, Tree Recursion, Nested Recursion. **Storage classes :** Auto,register,static and Extern	30	10
5	**Arrays:** **Arrays:** Types of arrays, Declaration and Defining an array **Pointer and Arrays:** Types of Accessing Array elements Subscripting pointer variables Pointer to an array, Array of pointers, Pointers and two dimensional arrays Subscripting pointer To an array **Array of Functions :** **Strings:** Strings v/s character arrays, Initializing strings, Reading and Displaying string Types of string format Specifiers. puts() functions, MultiLine string Input String pointers, Two-dimensional character arrays or array of string Array of pointers to strings, String handling functions	35	14

Reference Books

1.	**C programing by Bala Guru Swamy (TextBook)**
2.	**C for all by s.Thammarai Selvi ,R Murugesan, Anuradha Publications**
3.	**Programing in c Ajay Mittal, Pearson**

Course Outcome

After Learning the Course the students shall be able to:
1. Demonstrate the basic Knowledge of computer hardware and software. 2. Ability to apply solving and logical skills to programming in c language and also in other languages. 3. Apply Decision Making and Looping to solve real time problems. 4. Understand the concept of functions for adaptive programming.

List of Practical

1.	Installation C IDE, Basic Structure of C program.Format Specifiers, Escape Character. Run time input/Output Programs.
2.	1. Write a c program to calculate Area of Rectangle,Perimeter of a Rectangle and Diagonal of a Rectangle. 2. Write a c program to calculate Area of square,Perimeter of a square and Diagonal of a square. 3. Write a c program to calculate total area ofCylinder and volume of a cylinder.
3.	1. The total distance traveled by vehicle in 't seconds is given by distance s = ut+1/2at? where 'u' and 'a' are the initial velocity (m/sec.) and acceleration(m/sec?). Write a C program to find the distance traveled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations fordifferent values of 'u' and 'a'. 2. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,", /, % and use Switch Statement)
4.	1. Write a C program to find the sum of individual digits of a positive integer. 2. A Fibonacci sequence is defined as follows: the first and second terms in the sequences are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence. 3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
5.	1. Write a C program to calculate the following Sum: Sum=1-x^2/2! +x^4/4!-x^6/6!+x^8/8!-x^10/10!. 2. Write a C program to find the roots of a quadratic equation.
6.	Write C programs that use both recursive and non-recursive functions. 1. To find the factorial of a given integer. 2. To find the GCD (greatest common divisor) of two given integers.
7.	1. Write a C program to find the largest integer in a list of integers, 2. Write a C program that uses functions to perform the following: 1. Addition of Two Matrices 2. Multiplication of Two Matrices
8.	1. Write a C program that uses functions to perform the following operation; 1. To insert a sub-string into a given main string from a given position. 2. To delete n Characters from a given position in a given string, 2. Write a C program to determine if the given string is a palindrome or not.
9.	1. Write a C program that displays the position or index in the string S where the string T begins, or -1 if S doesn't contain T.

	2. Write a C program to count the lines, words and characters in a given text.
10.	1. Write a C program to generate Pascal's triangle. 2. Write a C program to construct a pyramid of numbers.
11.	Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: 1+x+x^2+x^3+... x^n. For example: if n is 3 and x is 5, then the program computes 1+5+25+125.Print x, n, the sum. Perform error checking. For example, the formula does not make sense for negative exponents — if n is less than 0. Have your program print an error - message if n<0, then go back and read in the next pair of numbers without computing the sum. Are any values of x also illegal? If so, test for them too.
12.	1. 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number. 2. Write a C program to convert a Roman numeral to its decimal Equivalent.
13.	1. Write a c program on Given an unsorted array arr[] of size N. Rotate the array to the left (counter-clockwise direction) by D steps, where D is a positive integer. 2. Write a c Program on given two sorted arrays arr1 and arr2 of size N and M respectively and an element K. The task is to find the element that would be at the k'th position of the final sorted array.Explanation: Input : Array 1 - 1 4 2 3 5 Array 2 - 7 8 6 k = 5 Output : 5 Because The final sorted array would be -1, 2, 3, 4, 5, 6, 7, 8, The 5th element of this array is 6.
14.	1. Write a c program to take multiline string input and print individual string length . 2. Write a c program to reverse the individual word of a given string Explanation:input : Welcome To Bytexl output: emocleW oT lxetyB.