

CP151: INTRODUCTION TO COMPUTER TECHNOLOGY		
CREDITS = 6 (L=4, T=0, P=2)		
1	Introduction to Computer: Various number systems, i.e. binary, octal, hexadecimal, base n, and their mutual conversions. Introduction, Basic block Diagram and functions of various components of computer. Concept of Hardware and Software. Concept of basic types of software. Introduction to web technology, Email systems, browsers, search engines, Internet etc	4 Hours
2	Introduction To Programming: Developing logic of program through flowcharts and Algorithm. Various types of programming languages. Introduction to 'C' programming language. Introduction to OS and its basic commands.	4 Hours
3	Fundamentals of 'C': Basic data types in 'C'. Basic operators and their hierarchy. Writing simple program using 'C'. Concept of header files. Basic I/O functions.	5 Hours
4	Control Structure in 'C': If – else statement and its use in programming. Variations in usage of if – else statement. Introduction and usage of Switch, break , continue and goto Statements.	4 Hours
5	Looping structures: Application and implementation of various looping structures (i.e. for, while, do - while) in 'C'.	6 Hours
6	Arrays and strings: Introduction to one dimensional and multidimensional arrays and implementation of these concepts in 'C'. Introduction to strings and related functions.	5 Hours
7	Functions and recursion: Concepts of functions with various types of parameters. Various types of parameter passing mechanisms. Recursive functions and implementation of these concepts in 'C'.	4 Hours
8	Pointers and structures: Concepts of pointers and simple programs using pointers. Introduction to simple structure and its implementations.	5 Hours
9	Supplementary studies: Introduction to word processor. Documentation and presentation using MS Office. Introduction to graphics in 'C' and multimedia. Concepts of computer viruses and E-commerce. Computer applications in engineering. Social impact of computer technology.	3 Hours
REFERENCE BOOKS:		
Title:	Introduction to Computers and Communications	
Author:	Ravichandran D	
Publisher:	Tata Mc Grawhill Publishing Company Limited.	
Title:	Programming in ANCI C	
Author:	Balagaruswami E	
Publisher:	Tata Mc Grawhill Publishing Company Limited.	
Title:	"Let us C"	
Author:	Kanetkar. Y.P.	
Publisher:	BPB Publication	

LIST OF PRACTICALS:

1	Introduction to various components of Computer. DOS commands and Windows system Introduction to Internet, our Intranet and email (creating an account and using it)
2	Study of Basic printf() and scanf() functions, Operators and their hierarchy <ul style="list-style-type: none">• Write a C program to print HELLO on to the screen.• Write a C program to print G. H. Patel College Of Engineering and Technology• Write a C program to print. "G. H. Patel College Of Engineering and Technology"• Write a C program to read a number from keyboard and display.• Write a C program to convert temperature Fahrenheit into Celsius and Kelvin.• Write a C program to read distance D in meter with two decimal places and convert it in meter and centimeter. (If 1.82 is input then 1 meter and 82 centimeter is the output)• Write a C program that accepts a number of seconds and convert it into days, hours, minutes and seconds.(use integer arithmetic and remainder operator)
3	Study of Control Structures: if, if –else, if-else ladder, switch statements <ul style="list-style-type: none">• Write a C program to read three values and find maximum among them.• Write a program to check if a given year is leap year or not. A year is a leap year if it is evenly divisible by 4 and not with 100, but also divisible by 400, it is.• Write a program to find roots of a quadratic equation, $ax^2 + bx + c=0$.
4	Study of Looping Structures : For, while <ul style="list-style-type: none">• Write a C program to read n real numbers and find maximum and minimum among them.• Write a C program to read n real numbers and find maximum and minimum among them.• Write a C program to read n real numbers and find maximum and minimum even numbers among them.• Write a C program to print all integer numbers from n1 to n2 ($n1 < n2$). Which are divisible by 3 but not divisible by 6. Count such numbers. Print six numbers in one output line. Also print the count.
5	Study of Looping Structures: for, do-while <ul style="list-style-type: none">• Write a C program to read a positive integer number n and generate output as follows: If n=5 output: 5 4 3 2 1 0 1 2 3 4 5 If n=6 output: 6 5 4 3 2 1 0 1 2 3 4 5 6• Write a C program to read a positive integer number n and generate output as follows: If n=5 output: 5 4 3 2 1 0 1 2 3 4 5 If n=6 output: 6 5 4 3 2 1 0 1 2 3 4 5 6• Write a C program to print the following pyramids for n numbers of lines. 1 2 3 3 4 5 6 * * * * * *
6	Study of 1-D and 2-D Arrays <ul style="list-style-type: none">• Write a C program to find minimum and maximum element of a 1D-Array.• Write a C program to insert an element at k^{th} location in an array having n elements.• Write a C program to merge two sorted arrays.

7	<p>Study of Strings</p> <ul style="list-style-type: none"> • Write a C program to find length of given string without using strlen() library function. • Write a C program to reverse the string. • Write a C program to check if the given word is palindrome or not. e.g. Malayalam
8	<p>Study of Functions</p> <ul style="list-style-type: none"> • Write a function to convert ° F in to ° C Perform conversion operation in main(). • Write a C function to find out distance between two points given by (x₁,y₁) and (x₂,y₂). Use x₁, y₁, x₂ and y₂ as arguments. Distance D is given by $D = \sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$
9	<p>Study of Functions and Recursion</p> <ul style="list-style-type: none"> • Write a C function to find area of a triangle specified by co-ordinates as above. An area of a triangle with sides as a,b and c is given by, $\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$ <p>Where $s = (a + b + c) / 2$</p> <ul style="list-style-type: none"> • Write a C function to check if given number is prime or not. Using this function find out 1st n pairs of twin prime numbers. Twin prime numbers are defined as two consecutive odd prime numbers. • Write a C recursive function to find nth term of a Fibonacci series. Use this function to print first k terms of the series
10	<p>Study of Structure and Union</p> <ul style="list-style-type: none"> • Define a structure "cricket" that will describe the following information. Players name Team name Batting average <p>Using this structure declare an array 'player' with 20 elements and Write a C program to read this information at out all player them team-wise with ordered batting average.</p> <ul style="list-style-type: none"> • The time at given instance has three elements hours, minutes and second. Write a C program to find duration between two times. Use a function to add these times and return duration in form of times.
11	<p>Study of Pointers</p> <ul style="list-style-type: none"> • Swap values of two variable using function and arguments passed by reference. • Write a C function to receive the address of a sorted array. The number of elements and new element should be arguments of the function. Place this new element at appropriate location. • Write a C program to read n elements of an array and print a table indicating element number, element value and element address.
12	<p>Use of Word Processor for documentation and presentation</p>