SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Information Technology	LP: IT18101
	Rev. No: 00

B.E/B.Tech : AE/BT/CE/ECE/ME	Regulation: R2018	Date: 18/01/19
PG Specialisation : _____		
Sub. Code / Sub. Name : IT18101 Programming for Problem Solving		
Unit : I		

Unit Syllabus:

Simple model of a Computer – Hardware – Software – Data Representation, Introduction to Computer Networks and Internet, Problem Solving Techniques – Bottom up design and top down design - applications, Introduction to Algorithms and Flow Chart.

Objective:

- Learn the organization of a digital computer.
- Learn to think logically and write algorithms or draw flow charts for problems.

Session No *	Topics to be covered	Ref	Teaching Aids
1	Simple model of a Computer - Input Devices, Central Processing Unit, Output Devices, Memory, Data Representation	1-Ch 1;pg 4-10	PPT/BB
2	Software – System software, Application software ,Introduction to operating system	1- Ch 1;pg10 -11,15-17	PPT/BB
3	Introduction to Computer Networks - Basic elements of communication system, Transmission models, speed, asynchronous and synchronous transmission, network topologies, network types, NIC, Routers ,bridges, switches	Internet	PPT/BB
4	Introduction to Internet - Basic services provided by internet, www, browsers, Uses of internet	Internet	PPT/BB
5	Problem Solving Techniques – Overview, Bottom up design - top down design - applications	1- Ch 2;pg 31-33	PPT/BB
6	Algorithm – Key features of an Algorithm, Different ways of stating Algorithms Writing algorithms for simple problems: • finding sum of two numbers • remainder of a division operation • Comparing two numbers • check whether the number is odd or even.	1- Ch 2;pg 33 - 45	PPT/BB
7	Writing algorithms for simple problems: • sum of n numbers • check whether the number is prime or not, • largest among list of n numbers.	1-Ch 2;pg 33 - 45	PPT/BB
8	Flowcharts – Standards for flowcharts, Guidelines for drawing flowcharts. Advantages and Limitations of using flowchart. Drawing flowchart for simple problems: • largest of three numbers, • Calculating simple interest, • calculating bonus for an employee, • sum of even numbers.	1-Ch 2;pp 45 - 49	PPT/BB
9	Strategy for designing algorithms, Tracing an algorithm to depict logic, Specification for converting algorithms to code.	1-Ch 2;pp 49 - 52	PPT/BB

Content beyond syllabus covered (if any):

* Session duration: 50 minutes

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: IT18101 Programming for Problem Solving

Unit : II

Unit Syllabus :

Introduction to 'C' programming – structure of a 'C' program – compilation and linking processes. Conversion of simple algorithm to program.
Constants, Variables – Data Types – Expressions using operators in 'C' – Managing Input and Output operations – Decision Making and Branching – Looping statements – solving simple scientific and statistical problems.

Objective:

- Be exposed to the syntax of C.
- Be familiar with programming in C.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Introduction to 'C' programming, structure of a 'C' program, compilation and linking processes	1- Ch 3;pg 58-68 2- Ch 2;pg 2.1-2.11 4- Ch 1;pp 1-5,18-21	BB/LCD
11	Conversion of simple algorithm to program • Perform 4 arithmetic operations on two integers and print answers • Print ASCII value of a character • Swapping of 2 integers with and without using temporary storage	1- Ch 2;pg 51-52	BB/LCD
12	Constants, Variables – Data Types • Find the size of int, long, float, double and char variables using sizeof() • Calculate area and perimeter of circle using constants • Convert temperature from Fahrenheit to Celsius and vice versa • Calculate simple interest • Multiply 2 floating point numbers and round off the result up to 2 decimal points	1- Ch 3;pg 68-84 2 -Ch 2;pg 2.11-2.22 3- Ch 2; pg 36-40 4- Ch 1; pg 5-18	BB/LCD
13	Expressions using operators in 'C' • Program to illustrate the use of various arithmetic operators • Program to illustrate the use of increment and decrement operators • Find greatest among three numbers using conditional operator • Program to implement the effect of all six bitwise operators • Program to illustrate the use of logical operators	1- Ch 3;pg 84-106 2- Ch 2;pp 2.25-2.29 2- Ch 3;pp 3.1-3.18 3- Ch 2;pp 41-51 4- Ch 1;pp 21-35	BB/LCD
14	Managing Input and Output operations • Accept a given character and display the next character from ASCII table • Convert alphabets from lowercase letters to capital letters • Write a program to show the usefulness of getche() • Illustrate the printf() returns a number that is equal to number of characters printed • Printing value in Decimal, Octal, Hexadecimal using printf	1- Ch 4; pg 113-130 2 - Ch 4;pg 4.1-4.27	BB/LCD
15	Decision Making and Branching • Leap year or not • Check whether a person is eligible for voting or not • Make a Simple calculator using switch-case • Check whether a character is Alphabet, Vowel, Consonant or Digit • Find roots of quadratic equation • Read a Coordinate Point in a XY Coordinate System and Determine its Quadrant	1- Ch 5;pg136-155 2 -Ch 6;pg 6.1-6.8 4 -Ch 2;pg 47-74	BB/LCD

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

16	Looping statements • Display the Factors of a given positive Integer • Find the sum of natural numbers • Display first N Fibonacci numbers in Fibonacci series • Check the given integer is Prime or not • Print Armstrong numbers from 1 to 1000 • Check the given integer is Palindrome or not	1 Ch-5; pg 156-182 2 Ch-6; pg 6.8-6.48 3 Ch-3; pg 60-66 4 Ch-3; pg 96-121	BB/LCD
17,18	Solving simple scientific and statistical problems • Find the GCD and LCM of two numbers • Convert the given number from Decimal to Binary and Vice versa • Print Half, Full, Incremented and Decremented **Star/Pyramid series** • Calculate the sum of cos(x) series • Calculate the value of nCr • Find Sum of the Series 1/1! + 2/2! + 3/3! + ...1/N!	Internet	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: IT18101 Programming for Problem Solving

Unit : III

Unit Syllabus :

Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays - String- String operations –Arrays of strings.

Objective:

- Learn to use arrays and strings.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Arrays – initialization at compile time, initialization at run time • Get the input of 5 integer elements and print the array elements. • Linear Search	1– Ch 1;pg 188 2-Ch 9;pg 9.1-9.6 3-Ch 1;pg 22-24	BB/LCD
20	Declaration of one dimensional array and Accessing array elements • Sum of the elements of the array • Reverse the elements of the array • Bubble sort	1– Ch 1;pg 189-192	BB/LCD
21	Declaration – two dimensional array • Matrix Addition & Matrix Subtraction • Transpose of a matrix	1– Ch 1;pg 218-220	BB/LCD
22	Strings- Declaration of a string – string initialization – printing strings • Counting the vowels • Reading a line of text	1– Ch 1; pg 198-200 2-Ch10; pg 10.1-10.3	BB/LCD
23	String input – using scanf – gets-getchar-getch()-getche • Use getchar(),gets(),scanf() to read a line of text.	1– Ch 1; pg 200-204 2-Ch 10; pg 10.3-10.6	BB/ LCD
24	String operations:,strcpy,strlen, • Compute the length of a string ,copy the string to another variable without using built in function.	1– Ch 1;pg 200-204 2-Ch 10;pg 10.3-10.7	BB/LCD
25	String operations:,strcmp,strcat • Compare two strings and print equal or not • Get the input of two strings and concatenate using strcat.	2-Ch 10;pg 10.7-10.8	BB/LCD
26	String operations: strrev,strstr • Get the input of a string and reverse the string. • Get the input of string and find the first and last occurrence of a character	Internet	BB/LCD
27	Array of strings- Two- Dimensional Character Array – initialization . • Print array of strings. • Arrange in alphabetical order	1– Ch 1;pg 222- 223	BB/LCD
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: IT18101 Programming for Problem Solving

Unit : IV

Unit Syllabus :

Function – definition of function – Declaration of function – Pass by value - Pass by reference– Recursion - Enumerators - Structures - Unions.

Objective:

Learn to use functions, recursion, enumerators, structures and unions.

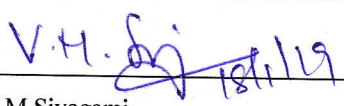| Session No *	Topics to be covered	Ref	Teaching Aids
28	Functions-Introduction, Need for functions, Function Prototype	1- Ch 7; pg 230-233	LCD/BB
29	Function Definition, Declaration of Function • Function for converting Fahrenheit to Celsius • To perform calculator operation • Function to compute X^n	1- Ch 7; pg 234-235	LCD/BB
30	Types-- Pass by Value, Pass by reference • Swap two variables using pass by value and pass by reference • Accepts an integer between 1 and 12 to represent the month number and displays the corresponding month of the year using pass by reference • Reverse a string using pass by reference	1- Ch 7; pg 235-240	LCD/BB
31	Recursion Definition, Usage • Compute Tower of Hanoi • Fibonacci series using Recursion • To search an element in array • Factorial of a number	1- Ch 7; pg 251-260	LCD/BB
32	Enumerators-Sample program to display days of a week	1- Ch 7; pg 393-395	LCD/BB
33	Structures- Features, initialization, Declaration-need of structure data type • To store and print the address of a person • To read, display, add and subtract two complex numbers • To add and subtract two distances given in terms of km, m, cm.	1- Ch 7; pg 370-381	LCD/BB
34	Structures- structure within structure, array of structures, • Generate Student Mark list using Structures	1- Ch 7; pg 383-389	LCD/BB
35	Structures and functions • Generate Railway ticket that uses array of structures • Generate Employee payroll	Internet	LCD/BB
36	Unions- Features, initialization, Declaration • Calculate area of a circle ,square using union	1- Ch 7; pg 390-393	LCD/BB
	Content beyond syllabus covered (if any):		

* Session duration: 50 mins

SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: IT18101 Programming for Problem Solving

Unit : V

Unit Syllabus :

Macros - storage classes - Pointers- Definition – Initialization – Pointers arithmetic – Double Pointers, Basic file operations-Example problems.

Objective:

Learn to use Macros, storage classes, pointers, files.

Session No *	Topics to be covered	Ref	Teaching Aids
37	Macros - Macro Expansion & Macros with Arguments • Area of circle by defining PI value in macro • Find the square of a number using function macro • Check whether the given number is +ve or -ve using #ifdef • Converting a number to its string literal using function macro	4- Ch 7; pg 244-252	LCD/BB
38	storage classes – Auto, Register, Static, Extern	4 - Ch 6;pg 223-232 5 - Ch 5;pg 161-166	LCD/BB
39,40	Pointers - Definition & Initialization, Indirection operator & dereferencing, void pointer, null pointer, Use of pointers • To display the number and the address where the number is stored using pointers • Find the area of a circle • Convert a floating point number into an integer • To check whether the given input is a character or a number	1-Ch 7;pg 272-276	LCD/BB
41,42	Arrays and pointers, Pointers and strings,Pointers arithmetic • To display an array of given numbers • To find the mean of n numbers. • To display a string using pointers • Accept a string using pointers, delete all the occurrence of a given character and display the modified string	1-Ch 7;pg 289-299	LCD/BB
43	Pointers - Double Pointers • Illustrate the use of pointers to pointers	1- Ch 7;pg 300-302	LCD/BB
44,45	Basic file operations – Opening & closing a File, Reading a file, Writing into a file, append a file. • To read some text from the keyboard and store it in a file • To read a file character by character and display it simultaneously on the screen. • To read a file line by line and display it simultaneously on the screen • To read a file and encrypt it using the formula ch=ch-2 and store it in another file.	2-Ch 12;pg 417-422	LCD/BB
Content beyond syllabus covered (if any):			

* Session duration: 50 mins

Sub Code / Sub Name: IT18101 Programming for Problem Solving

REFERENCES:

1. Pradip Dey, Manas Ghosh, " Programming in C ", First Edition, Oxford University Press, 2018.
2. Byron S Gottfried, "Programming with C", Schaum's Outlines, Third Edition, Tata McGraw-Hill, 2010.
3. Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2015.
4. Yashavant P. Kanetkar. "Let Us C", BPB Publications, 2011.
5. Paul J Deitel,Dr.Harvey M.Deitel,"C How to Program", Seventh Edition, Pearson Education, 2016.

	Prepared by	Approved by
Signature	*V.H.*	*V*
Name	V.M.Sivagami	Dr.V.Vidhya
Designation	Associate Professor	Head i/c, Department of Information Technology
Date	18/01/19	18/01/19
Remarks *:		

* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD

As the Syllabus is same for the subject Programming for Problem Solving(IT18101), the same lesson plan is followed .