

VIKRAMA SIMHAPURI UNIVERSITY::NELLORE
I YEAR OF FOUR YEAR B.TECH DEGREE COURSE
(COMMON TO ALL BRANCHES)

(With effect from the Academic Year 2010-2011)

10CS101-C & Data Structures

Hours /week : 3 Hrs
Credits : 6

Sessional Marks : 40
End Examination Marks : 60

UNIT – I

Introduction to computer systems: Generations of computers, Input and output devices , CPU and memory, Number Systems.

Software programming and development: Problem solving steps and program development, problem understanding, constructing a model, development of algorithm, design presentation, flow chart and pseudocode, Introduction to algorithm complexity.

Introduction to C: The structure of a C program, C tokens, Basic Data types, Storage classes, operators, expressions, type conversion, precedence and order of evaluation.

Input and output statements: Reading and writing characters and other types of data, format specifiers.

UNIT – II

Conditional statements: if, if-else and switch.

Iterative statements: while, do-while and for.

Control transfer statements: break and continue

Arrays: Single dimensional and multi dimensional arrays, applications of arrays, character strings- user defined and predefined string handling functions.

UNIT – III

Functions: Parameter passing , scope rules, block structure, user defined functions, standard library functions, recursive functions, header files, C preprocessors.

Structures: Declaration, Initialisation and accessing structures, Nested Structures, Array of structures, unions.

UNIT-IV

Pointers: Concepts, initialization of pointers, address arithmetic, creating dynamic variables using pointer, Command line arguments, pointers to structures, self referential structures.

File input and output: Concepts of a file, types of files, Operations on files, Formatted I/O, Error handling.

Introduction to Data Structures: Overview of Data structures, Representation of Stack and Queue, Stack and Queue related terms, operations and applications.

Linked Lists: Types of linked lists, single linked lists and operations on single linked lists, representing stacks and queues using arrays and linked lists.

UNIT-V

Binary Trees: Introduction, representation, traversals.

Graphs: Introduction, representation, traversals.

Searching & Sorting: Linear and binary search, bubble sort, selection sort, insertion sort, quick sort.

Text Books:

1. Introduction to Computers: Peter Norton
2. C programming and Data Structures : Balaguruswamy E
3. Classic Data structures: Samanta D

Reference Books:

1. Introduction to Information Technology: ITL Education solution Ltd.
2. Let us C : Kanetkar Y
3. The C programming language: Kernighan B W and Ritchie D M
4. programming in C: Kochan S G
5. Fundamentals of Data structures in C:Horowitz E, Sahani S
6. An Introduction to Data structures with applications: Tremblay J P and Sorenson P G
7. C: the Complete Reference: Schildt