B.Tech. I Semester - 1 and 2 **L T P C**

CO100 : Fundamentals of Computers & Programming **3 0 2 5**

COURSE OUTCOMES

After successful completion of this course, student will be able to

- Understand basic components and capabilities of a typical computing system.
- Critically think about basic problems and develop algorithms to solve, validate and verify with computing systems.
- Identify appropriate language constructs and approach to computational problems.
- Understand coding standards including documentation which are required to be used for the development of effective, efficient and maintainable programs.

COURSE CONTENT

- **Introduction to computer and its archiecture** **(01 Hours)**

Introduction and Characteristics, Generations, Classifications, Applications, Central Processing Unit and Memory, Communication between various units, Processor speed, Multiprocessor system

- **Memory and various input and output devices** **(02 Hours)**

Introduction to Memory, Memory hierarchy, Primary memory and its types, Secondary Memory, Classification of Secondary memory, Various secondary storage devices and their functioning, their Merits and demerits

- **Number System** **(01 Hours)**

Introduction and type of Number system, Conversion between number system, Arithmetic operations on number system, Signed and unsigned number system

- **Software Computer Languages and Computer Program (04 Hours)**

Classification, Examples, Introduction of operating system, Evolution, type and function of OS, Various Examples and comparison, Unix commands, Evolution and classification of programming language, Generation of programming language, Feature and selection of good programming language, Development of program, algorithm and flowchart, Program testing and debugging, Program documentation and Paradigms, Characteristics of good program

- **Data communication, Computer network and Internet Basics** **(01 Hours)**

Data communication and transmission media, Multiplexing and Switching, Computer network and network topology, Communication protocols and Network Devices, Evolution and basic internet term, Getting connected to internet and Internet application, Email and its working, Searching the web, Languages of internet, Internet and viruses

- **Programming using 'C' language (33 Hours)**

Characteristics of C language, Identifiers and keywords, Data types Constants and Variables, Declarations and Statements, Representation of expressions, Classification of Operators and Library Functions for Data input and output statements, Conditional Control Statements, Loop control statements, One dimensional array of numbers and characters, Two-dimensional array, Introduction and development of user defined functions, Different types of Variables and Parameters, Structure and union, Introduction to pointers, Pointer arithmetic, Array of pointers, Pointers and functions, Pointers and structures,

File handling operations

(Total Contact Time: 42 Hours)

PRACTICALS

1). Use of various UNIX commands.
2). Implementation in C for control statements.
3). Implementation in C for Arrays and Functions.
4). Implementation in C for Structures and Pointers.
5). Implementation in C for File handling operations

BOOKS RECOMMENDED

1). ITL Education Solutions Limited, "Introduction to Computer Science", Pearson Education, 2005
2). Gottfried B.S., "Programming with C Schaum's outline Series", 2/E, TMG, 1994
3). B. Ram, "Computer Fundamentals Architecture and Organization", 4/E, New Age International, 2007.
4). E Balagurusamy, "Programming in ANSI C", 6/E, TMG, 2007
5). Pradip Dey, "Programming in C", 2/E, Oxford Higher Education, 2007