Fundamentals of Computer and Programming		L	T	P	Credit
CS 109 S1 CS 109 S2	Scheme	3	0	2	04

- **INTRODUCTION TO COMPUTER AND ITS ARCHITECTURE (02 Hours)**
  Introduction and Characteristics, Computer Architecture, Generations, Classifications, Applications, Central Processing Unit and Memory, Communication between various units, Processor speed, Multiprocessor system, Peripheral Buses, Motherboard Demonstration

- **MEMORY AND VARIOUS INPUT AND OUTPUT DEVICES (02 Hours)**
  Introduction to Memory, Input and Output Devices, Memory hierarchy, Primary memory and its types, Secondary Memory, Classification of Secondary memory, Various secondary storage devices and their functioning

- **NUMBER SYSTEMS (01 Hours)**
  Introduction and type of Number system, Conversion between number system, Arithmetic operations in different number system, Signed and unsigned number system

- **INTRODUCTION TO SYSTEM SOFTWARES AND PROGRAMMING LANGUAGES (04 Hours)**
  Classification of Computer Languages, Introduction of operating system, Evolution, type and function of OS, Unix commands, Evolution and classification 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

- **WINDOWS OPERATING SYSTEM AND ITS ENVIRONMENT (02 Hours)**
  Introduction to GUI based OS, Configuration, Setup, Services, Network Configuration

- **LINUX OPERATING SYSTEM AND ITS ENVIRONMENT (02 Hours)**
  Introduction to Unix based OS, Configuration, Setup, Services, Scripting, Network Configuration

- **DEBUGGING TOOLS AND COMPILER OPTION (04 Hours)**
  Different debugging tools, Commands, Memory dump, Register and Variable Tracking, Instruction and Function level debugging, Compiler Options, Profile Generation

- **DATA COMMUNICATION, COMPUTER NETWORK AND INTERNET BASICS (02Hours)**
  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 – INTRODUCTION (06 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, Formatted input and output statements

- **PROGRAMMING USING 'C' LANGUAGE – CONTROL STATEMENT, DATA STRUCTURES, POINTERS (06 Hours)**
  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

- **PROGRAMMING USING 'C' LANGUAGE – FUNCTIONS (06 Hours)**
  Functions, Passing the arguments, Return values from functions, Recursion, Header Files Design, File handling operations, Read and Write to Secondary Devices, Read and Write to Input and Output Ports

- **PROGRAMMING USING 'C' LANGUAGE – GRAPHICS, DEBUGGING (05 Hours)**
  Include Graphics Library, Debugging, Linking, Compilation Option for Optimization, Make file

(Total Lecture Hours: 42)

Practicals will be based on the coverage of the above topics. (28 Hours)

BOOKS RECOMMENDED

1. "Introduction to Computer Science", ITL Education Solutions Limited, Pearson Education, Fourth Impression, 2009.
2. "Programming with C Schaum's outline Series", Gottfried B.S., Outline Series, 2/E, Tata McGraw-Hill, 2006.
3. "The C Programming language", Brian W. Kernighan, Dennis M. Ritchie, 2/E, Prentice Hall PTR publication, 1988.
4. "Programming in ANSI C", E. Balagurusamy, 6/E, Tata Mc-Graw Hill, 2012.
5. "Programming in C", Pradip Dey, 2/E, Oxford University Press, 2012.