Introduction to Information Technology

Course Title: Introduction to Information Technology   **Full Marks:** 60 + 20 + 20
Course No: CSC109   **Pass Marks:** 24 + 8 + 8
Nature of the Course: Theory + Lab   **Credit Hrs:** 3
Semester: I

Course Description: This course covers the basic concepts of computers and information technology including introduction, hardware, software, memory, input/output, data representation, database, networks and data communication, Internet, multimedia, and computer security.

Course Objectives: The main objective of this course is to provide students knowledge of fundamental concepts of computers and information technology.

Course Contents:
Unit 1: Introduction to Computer (3 Hrs.)
Introduction; Digital and Analog Computers; Characteristics of Computer; History of Computer; Generations of Computer; Classification of Computer; The Computer System; Application of Computers

Unit 2: The Computer System Hardware (3 Hrs.)
Introduction; Central Processing Unit; Memory Unit; Instruction Format; Instruction Set; Instruction Cycle; Microprocessor; Interconnecting the Units of a Computer; Inside a Computer Cabinet

Unit 3: Computer Memory (4 Hrs.)
Introduction; Memory Representation; Memory Hierarchy; CPU Registers; Cache Memory; Primary Memory; Secondary Memory; Access Types of Storage Devices; Magnetic Tape; Magnetic Disk; Optical Disk; Magneto-Optical Disk; How the Computer uses its memory

Unit 4: Input and Output Devices (4 Hrs.)
Introduction; Input-Output Unit; Input Devices; Human Data Entry Devices; Source Data Entry Devices; Output Devices; I/O Port; Working of I/O System

Unit 5: Data Representation (6 Hrs.)
Introduction; Number System; Conversion from Decimal to Binary, Octal, Hexadecimal; Conversion of Binary, Octal, Hexadecimal to Decimal; Conversion of Binary to Octal, Hexadecimal; Conversion of Octal, Hexadecimal to Binary; Binary Arithmetic; Signed and Unsigned Numbers; Binary Data Representation; Binary Coding Schemes; Logic Gates

Unit 6: Computer Software (6 Hrs.)
Introduction; Types of Software; System Software; Application Software; Software Acquisition; Operating System (Introduction, Objectives of Operating System, Types of OS, Functions of OS, Process Management, Memory Management, File Management, Device Management, Protection and Security, User Interface, Examples of Operating Systems)

Unit 7: Data Communication and Computer Network (5 Hrs.)
Introduction; Importance of Networking; Data Transmission Media; Data Transmission across Media; Data Transmission and Data Networking; Computer Network; Network Types; Network Topology; Communication Protocol; Network Devices; Wireless Networking

Unit 8: The Internet and Internet Services (4 Hrs.)
Introduction; History of Internet; Internetworking Protocol; The Internet Architecture; Managing the Internet; Connecting to Internet; Internet Connections; Internet Address; Internet Services; Uses of Internet; Introduction to Internet of Things (IoT), Wearable Computing, and Cloud Computing, Introduction to E-commerce, E-governance, and Smart City, and GIS

Unit 9: Fundamentals of Database (4 Hrs.)
Introduction; Database; Database System; Database Management System; Database System Architectures; Database Applications; Introduction to Data Warehousing, Data mining, and BigData

Unit 10: Multimedia (3 Hrs.)
Introduction; Multimedia - Definition; Characteristics of Multimedia; Elements of Multimedia; Multimedia Applications

Unit 11: Computer Security (3 Hrs.)
Introduction; Security Threat and Security Attack; Malicious Software; Security Services; Security Mechanisms (Cryptography, Digital Signature, Firewall, Users Identification and Authentication, Intrusion Detection Systems); Security Awareness; Security Policy

Laboratory Works:
After completing this course, students should have practical knowledge of different hardware components of computer, operating systems, Word Processors, Spreadsheets, Presentation Graphics, Database Management Systems, and Internet and its services.

Text Books:
1. Computer Fundamentals, Anita Goel, Pearson Education India

Reference Books:
1. Introduction to Computers, Peter Norton, 7th Edition, McGraw Hill Education
2. Computer Fundamental, Pradeep K. Sinha and Priti Sinha
3. Data Mining Concepts and Techniques, Third Edition, Jiawei Han, Micheline Kamber and Jian Pei
4. Cloud Computing Bible, Barrie Sosinsky, Wiley