

Introduction to Information Technology

Course Title: Introduction to Information Technology

Course No: BIT101

Nature of the Course: Theory + Lab

Semester: I

Full Marks: 60 + 20 + 20

Pass Marks: 24 + 8 + 8

Credit Hrs: 3

Course Description:

This course covers basic concepts of computers, computer hardware, memory, input/output devices, computer software, data representation, database, computer networks, internet, computer security and applications of IT.

Course Objectives:

The main objective of this course is to provide basic knowledge of fundamental concepts of computer system and Information Technology.

Course Contents:

Unit 1: Introduction to Computer (4 Hrs.)

Introduction of Computer; Characteristics of Computer; History of Computer; Generations of Computer; Digital and Analog Computers; Classification of Computer based on size; The Computer System; Application of Computers

Unit 2: Computer Hardware (8 Hrs.)

Introduction; Central Processing Unit; Components of CPU, Instruction Format; Instruction Set; Instruction Cycle; Microprocessor; Computer Bus, Components of Computer Cabinet(power supply, motherboard, memory chips, expansion slots, ports and interface, processor, cables and storage devices)

Computer Memory: Memory Representation; Memory Hierarchy; CPU Registers; Cache Memory; Primary Memory(RAM, ROM); Secondary Memory (Magnetic Tape; Magnetic Disk; Optical Disk; Magneto-Optical Disk, Flash Memory Device), Access Types of Storage Devices (sequential and direct)

Input and Output Devices: Input-Output Unit; Input Devices; Human Data Entry Devices; Source Data Entry Devices; Output Devices; I/O Port; I/O System

Unit 3: Computer Software (6 Hrs.)

Introduction; Types of Software; System Software; Application Software; 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); Device Drivers and Utility Software; Programming Languages, Language Translators: assembler, compiler; Software Licensing, Open Source Software; Case study: Unix Vs Windows

Unit 4: Data Representation (5 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

Unit 5: Computer Networks and Internet Services (10 Hrs.)

Introduction; Importance of Networking; Data Transmission Media (Twisted pair, coaxial cable, optical fiber, RF transmission, microwave transmission, satellite transmission); Data Transmission across Media; Data Transmission and Data Networking; Computer Network; Network Types; Network Topology; Communication Protocol; Network Devices; Wireless Networking

Internet; History of Internet; Internetworking Protocol; The Internet Architecture; Managing the Internet; Internet Connections; Internet Address; WWW, Domain Name System, Internet Services; E-mail and its working principle; E-commerce and E-governance; Web 2.0; Internet of Things (IoT); Wearable Computing; Cloud Computing; Smart City; Case Study: ISP in Nepal and their services

Unit 6: Database Systems (5 Hrs.)

Introduction; Database; Database System; Database Management System; Database System Architectures; Data Models, Database Applications; Introduction to Data Warehousing, Data mining, and BigData

Unit 7: Computer Security (4 Hrs.)

Introduction; Security Threat and Security Attack; Malicious Software; Security Mechanisms (Cryptography, Digital Signature, Firewall, Users Authentication, Intrusion Detection Systems); Security Awareness; Security Policy

Unit 8: Application and Impact of IT (3 Hrs.)

Applications of IT; Impact of IT on Organization and individuals; Societal Impacts of IT, IT Strategic Planning, IT and Business Alignment

Laboratory Works:

The laboratory work includes realizing hardware components of computer, using 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. Fundamentals of Information Technology, Leon and Leon
3. Computer Fundamental, Pradeep K. Sinha and Priti Sinha
4. Introduction to Information Technology, E. Turban
5. Information Technology for Management, E.Turban, C. Pollard, G. Wood, Wiley Publication
6. Information Technology for Management, Henry C. Lucas, Jr.