

# MINOR (MI)

## MI – 1: Computer Fundamental

Credits 04 (Full Marks: 75)

### OBJECTIVE OF THE COURSE

The objective of the course "Computer Fundamentals" is to provide students with a comprehensive understanding of the basic principles, components, and operations of computers. The course aims to equip students with the necessary knowledge and skills to effectively use and work with computers in their personal and professional lives.

One of the primary objectives is to familiarize students with the fundamental concepts and terminology related to computers. This includes understanding the history and evolution of computers, different generations of computer technology, and the basic structure and functioning of a computer system. Students will learn about the essential hardware components such as the CPU, memory, storage devices, input devices, and output devices, as well as the purpose and functionality of each component.

## MI – 1T: Computer Fundamental

Credits 04

### Course contents:

#### MODULE- I: Introduction

(10 Hrs.)

Definition of computer.Characteristics of computer.Generation of computer. Classificationof computer (Micro, Mini, Mainframe, Super), Application of computer, Basic concept aboutSoftware & Hardware, Bit, Byte, Word Nibble, Computer Languages (Low, High & assembly LevelLanguage)

#### MODULE-II: Basic Components of Computer

(10 Hrs.)

Basic organization of digital computer (CPU, CU, ALU, Register set, Communication Path way, Input / Output Devices, Memory Module).CPU: Basic explanation about CU, ALU &Register set as well as all over CPU. Communication Pathway: Definition of Bus, Internal &External Bus,Control, Address & Data Bus. Input devices: Keyboard, Pointing device, handheld device, Opticaldevice, Audio visual device. Output device: Soft copy devices & hard copy devices. MemoryHierarchy (Definition, function, classification, Advantages & Disadvantages): Primary Memory, Secondary Memory, Cache Memory, Virtual Memory.

#### MODULE-III: Number System

(10 Hrs.)

Definition, Positional & non positional number system, Binary,Decimal, octal & hexadecimal number system, Conversion between them, Binary-Decimal-Octal Hexadecimal arithmetic, Signed & Unsigned number, Complement notation ( $r$ 's &  $(r-1)$ 's complement), Addition &Subtraction operation using complement notation, Floating point representation of number, Computer codes(Weighted binary codes (BCD 8421/2421,Reflective, sequential), Non-weighted binary codes(Excess-3, Gray), Error detecting & correcting codes, Alphanumeric codes(ASCII, EBCDIC, Hollerith),BCDaddition, Gray to Binary & Binary to Gray conversion.

#### MODULE-IV: Data communication and Computer network

(10 Hrs.)

Definition of data communication, Characteristics of data communication, Component of data communication, mode of data Communication, Media of data communication (guided & unguided),

Channel capacity. Computer Network: Definition, Network topology (Bus, Ring, Star, Mesh, Tree, Hybrid), Types of network (LAN, MAN, WAN, CCAN, PAN), Network devices (Hub, Repeater, Switch, Bridge, Router, Gateway), Basic idea about e-mail, Search engines, Chatting, Internet conferencing, Intranet.

**MODULE-V: Operating System**

**(10 Hrs.)**

Definition of OS, Function of OS, Need of OS, Classification of OS (CUI & GUI, Single user, Multi User), Concept of Multi Programming, Multi Tasking& Multi Processing. Booting Process), Basic Concept of Assembler, Loader, Linker, Interpreter.

**Suggested Readings:**

1. Sinha, P. K., &Sinha, P. (2017). Computer Fundamentals: Concepts, Systems & Applications. BPB Publications.
2. Rajaraman, V. (2017). Fundamentals of Computers. PHI Learning.
3. Prakash, S. (2019). Computer Fundamentals and Programming in C. Laxmi Publications.
4. Pradhan, S. (2017). Computer Fundamentals: Architecture and Organization. Oxford University Press.
5. Bharadwaj, A. S. (2017). Computer Fundamentals and Applications. Wiley India.
6. Deo, N. (2017). Fundamentals of Computers. Dreamtech Press.Acharya, S., &Kamath, M. V. (2017). Computer Fundamentals. Prentice