

# IRC-1: COMPUTER ORGANIZATION

3 Credits | 45 Minimum Class Hours | Semester I

## OBJECTIVES

- Understand the basics of computer architecture
- Understand the Truth Table.
- Identify the number of variables and their simplification importance.
- Understand different circuits for the implementation of Boolean equations.
- Identify Register Transfer, Micro-operations and Central Processing Unit
- Describe performance evaluation of computers, computer architecture and organization, computer arithmetic, Memory, and CPU design.

### Module-I: Introduction To Computer

**Structure and Working of Computer:** Functional block diagram of computer (Central Processing Unit, Arithmetic Logic Unit, Control Unit, Input/Output Unit, Memory Unit, Disk Storage Unit, Bus Structure).

**Input/Output Devices:** Input Devices (Keyboard, Mouse, Scanner, MICR, OMR), Output Devices (VDU, Printers, Plotter, Projector, Speakers).

### Module-II: Computer Memory:

Primary memory (RAM, ROM, Sequential access memory, Cache memory, Virtual memory), Secondary memory (Magnetic tape, Magnetic disk, Optical disk, Floppy disk, External hard drive, Solid state drive, USB flash drive).

### Module-III: Computer Software:

Introduction, Developing a Program, Algorithm, Flowchart, Pseudo code. Classification of Programming Languages, Generations of Programming Languages, Features of a Good Programming language. Software : Definition, Relationship between Software and Hardware, System Software, Application Software

#### **Module-IV: Digital Logic Circuits:**

Digital Computers, Logic Gates, Boolean algebra, Complement of a Function, K- Map Simplification, Don't care conditions, Combinational Circuits, Half Adder, Full Adder.

#### **Module-V:**

**Data Representation:** Binary Number System, Number Base conversion, Octal and Hexadecimal Numbers, Complements, Subtraction of Unsigned Numbers, Fixed-Point Representation, Floating-Point Representation.

#### **Text Books:**

Ram. B., "Computer Fundamentals: Architecture and Organization", 3rd Edition, New Age International Publication, New Delhi, 2000.

#### **Reference Books:**

1. Mano M., "Computer System Architecture", Prentice Hall of India, New Delhi, 1995.