## FUNDAMENTALS OF COMPUTER (DCA-101)

**COURSE OUTLINE :**
1. Introduction
2. Basic Computer Organization
3. Processor and Memory
4. Secondary Storage Devices
5. Input-Output Devices
6. Computer Software
7. Computer Languages
8. Classification of Computers
9. Information Technology and Society

**DETAILED SYLLABUS :**

**1. INTRODUCTION:** **(5 - Marks)**
What is a Computer (Analog Computers, Digital Computers), Characteristics of Computers, The Evolution of Computers, Computer Generations [First Generation (1942-1955), Second Generation (1955-1964), Third Generation (1964-1975), Fourth Generation (1975-1989), Fifth Generation (1989-Present)].

**2. BASIC COMPUTER ORGANIZATION:** **(5 - Marks)**
Input Unit, Output Unit, Storage Unit, Arithmetic Logic Unit, Control Unit, Central Processing Unit, The System Concept.

**3. PROCESSOR AND MEMORY:** **(5 - Marks)**
Central Processing Unit (Control Unit, Arithmetic Logic Unit, Instruction Set, Registers, Processor Speed, Types of Processors), Main Memory (Storage Evaluation Criteria, Main Memory Organization, Main Memory Capacity, Types of Memory Chips, Cache Memory).

**4. SECONDARY STORAGE DEVICES:** **(5 - Marks)**
Sequential and Direct-Access Devices, Magnetic Tapes, Magnetic Disks, Optical Disks, Memory Storage Devices, Data Backup, On-line, Near-line, and Off-line Storage, Hierarchical Storage System (HSS), Flash memory**.**

**5. INPUT-OUTPUT DEVICES:** **(4 - Marks)**
Input Devices (Keyboard Devices, Point-and-Draw Devices, Data Scanning Devices, Digitizer, Electronic-card Reader, Speech Recognition Devices, Vision-Input System), Output Devices (Monitors, Printers, Plotters, Screen Image Projector, Voice Response Systems).

**6. COMPUTER SOFTWARE:** **(4 - Marks)**
What is Software, Relationship between Hardware and Software, Types of Software (System Software, Application Software), Logical System Architecture, Firmware, Middleware, Acquiring Software (Buying Pre-written Software, Ordering Customized Software, Developing Customized Software, Downloading Public-domain Software), Software Development Life Cycle (SDLC), Software Engineering (What is Software Engineering, Need for Software Engineering, Goals of Software Engineering, Principles of Software Engineering, CASE Tools).

**7. COMPUTER LANGUAGES:** **(4 - Marks)**
Machine Language, Assembly Language, High-Level Language, Object-Oriented Languages, Some High-Level Languages (FORTRAN, COBOL, BASIC, PASCAL, C and C++), Some More High-Level Languages (Java, C#, RPG, LISP, SNOBOL), Characteristics of a Good Programming Language, Slecting a Luanguage for Coding an Application, Subprogram.

**8. CLASSIFICATION OF COMPUTERS:** (4 - Marks)
Notebook Computers (Laptops), Personal Computers (PCs), Workstations, Mainframe Systems, Supercomputers, Client and Server Computers, Handheld Computers (Tablet PC, PDA/Pocket PC, Smartphone)

**9. INFORMATION TECHNOLOGY AND SOCIETY:** (4 - Marks)
Indian Information Technology (IT) Act, The Information Technology (Amendment Bill), Intellectual Property Rights (IPR) Issues, Information Technology Applications in Air Lines and Railway Ticket Reservation, Computer in Banks, Inventory Control, Financial System, Hotel Management, Computers in Education, Video Games, Telephone Exchanges, Mobile Phones, Information Kiosks, Special Effects in Movies.

**PRACTICALS:** (40 - Marks)
1. Basic Components of a Computer System
2. Scanning
3. CD/DVD Writing
4. Printing

**TEXT BOOKS:**
1. **COMPUTER FUNDAMENTALS** - First Eidtion 2003, Sixth Revised & Updated Edition 2011 - Pradeep K. Sinha & Priti Sinha, BPB Publications.
2. **IT TOOLS AND BUSINESS SYSTEMS** - First Edition 2010, Third Revised and Updated Edition 2012, BPB Publications.

**SUGGESTED FURTHER READINGS:**
**1. Fundations of Computing -** Pradeep K. Sinha & Priti Sinha, First Edition 2003, BPB publication.
**2. Fundamentals of Information Technology -** Alexis Leon & Mathews Leon, Leon TECHWorld.
**3. Fundamentals of Computers** - V. Rajaraman, Fourth Edition 2006, Prentice-Hall of India.
**4. An Introduction to Computer Science** - Savitha Balamurali, VIKAS PUBLISHING HOUSE.
**5. Elements of Computer Science** - R. Agor, Fourth Edition, BIRLA PUBLICATIONS.