

# SYLLABUS

## FIRST SEMESTER

### BCA- S101: Introduction to Information Technology

#### UNIT-I

**Computer Basics:** Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem-solving Using Computers.

**Data Representation:** Representation of Characters in computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error-detecting codes.

**Input & Output Devices:** Description of Computer Input Units, Other Input Methods, Computer Output Units (Printers, Plotters)

#### UNIT-II

**Computer Memory:** Memory Cell, Memory Organization, Read Only Memory, Serial Access Memory, Physical Devices Used to Construct Memories, Magnetic Hard Disk, floppy Disk Drives, Compact Disk Read Only Memory, Magnetic Tape Drives.

**Processor:** Structure of Instructions, Description of a Processor, Machine Language and Instruction set. Processors used in desktops and lap tops.

Specification of a desktop and Lap top computer currently available in the market (Specifications of processor, motherboard & chipset, memory, interface & capacity of hard disk & DVD drives, I/O ports)

#### UNIT-III

**Computer Architecture:** Interconnection of Units, Processor to Memory communication, I/O to Processor Communication, Interrupt Structures, Multiprogramming, Processor Features, Reduced Instruction Set Computers (RISC), Virtual Memory.

**Software Concepts:** Types of Software, Programming Languages, Software (Its Nature & Qualities), Programming Languages.

#### UNIT-IV

**Operating Systems:** History and Evolution. Main functions of OS Multitasking, Multiprocessing, Time Sharing, and Real Time OS with Examples

**Database Management System:** Purpose and Organization of Database, Introduction to Data Models

**Computer Generation & Classifications:** First Generation of Computers, The Second Generation, The Third Generation, The Fourth Generation, The Fifth Generation, Moore's Law, Classification of computers, Distributed Computer System, parallel computers.

## UNIT- V

**Computers & Communications:** Introduction to Computer Communications, Introduction to Computer Networks, Types of Networks, OSI/TCP Model, LAN technologies (fast Ethernet & Gigabit Ethernet), How LAN works, Brief survey of active and passive LAN components.

**Internet:** Network, Client and Servers, Host & Terminals, TCP/IP, World Wide Web, Hypertext, Uniform Resource Locator, Web Browsers, IP Address, Domain Name, Internet Services Providers, Internet Security, Internet Requirements, Web Search Engine, Net Surfing, Internet Services, Case Study, Intranet.

**Cyber Laws:** Introduction to Cyber Laws, Cyber crime, Cyber contract, Cyber privacy, IT Act

### Recommended Books

1. P.K. Sinha, Fundamentals of Computers, BPB Publications
2. I.V. Rajaraman, Fundamentals of Computers, 3rd Edition, PHI Publications

**BCA-S102: PC Software Packages**  
(This paper must be taught in the Lab using PC software)

**UNIT-I**

DOS: Introduction, history & versions of DOS, DOS basics- Physical structure of disk, drive name, FAT, file & directory structure and naming rules, booting process, DOS system files, DOS commands- internal & external,

**UNIT-II**

Windows Operating System : Windows concepts, Features, Windows Structure, Desktop, Taskbar, Start Menu, My Computer, Recycle Bin, Windows Accessories- Calculator, Notepad, Paint, Wordpad, Character Map, Windows Explorer, Entertainment, Managing Hardware & Software- Installation of Hardware & Software, Using Scanner, System Tools, Communication, Sharing Information between programs.

**UNIT-III**

Word Processing; MS-Word: Features, Creating, Saving and Opening Documents in Word, Interface, Toolbars, Ruler, Menus, Keyboard Shortcut, Editing, Previewing, Printing,& Formatting a Document, Advanced Features of MS Word, Find & Replace, Using Thesaurus, Using Auto- Multiple Functions, Mail Merge, Handling Graphics, Tables & Charts, Converting a word document into various formats like- Text, Rich Text format, Word perfect, HTML etc.

**UNIT-IV**

Worksheet- MS-Excel: Worksheet basics, creating worksheet, entering into worksheet, heading information, data, text, dates, alphanumeric values, saving & quitting worksheet, Opening and moving around in an existing worksheet, Toolbars and Menus, Keyboard shortcuts, Working with single and multiple workbook, working with formulae & cell referencing, Auto sum, Copying formulae, Absolute & relative addressing, Worksheet with ranges, formatting of worksheet, Previewing & Printing worksheet, Graphs and charts, Database, Creating and Using macros, Multiple worksheets- concepts, creating and using.

**UNIT-V**

Introduction to Power Point: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Other packages: DTP software: Brief survey of MS Publisher, Pagemaker, Coreldraw. Adobe Photoshop

Recommended Books:

1. PC Software for Windows – R.K. Taxali
2. Unix Concepts and Applications – Sumitabha Das

**BCA -S103:**  
**Business Data Processing**

**UNIT-I**

**Introduction to Data Processing**

Introduction to Data and Information, Logical and Physical Concept of Data, File organization, Different Systems of Data Processing, Business Data Processing (Identification Data, Classification of Business Data File, Data Security, Data Integrity and Type of Checking, Basic Task in Business Data Processing, File Generation, File Backup).

**UNIT-II**

**Business Accounting**

Accounting, Accounting Conventions (Single and Double Entry), Basic Accounting Equation, Types of Accounts, Personal Accounts, Impersonal Accounts, Real, Nominal, Terms in Accounting, Assets, Liabilities, Capital, Goods, Debtor, Creditor, Gross Profit, Net Profit, Revenue, Expense, Types of Vouchers, Journal Entries, Final Accounts, Trading / Manufacturing Account, Profit / Loss Account, Balance Sheet,

**UNIT-III**

**Introduction to ACCESS**

Introduction to Database, DBMS, RDBMS, Feature of Access, Designing Database, Relationship (One to One, One to Many, Many to One, Many to Many)

**UNIT-IV**

Create Table (Design View, Wizard, and Datasheet View), Query (Update Query, Delete Query, Selection Query, Cross Table Query, Make Table Query).

**UNIT-V**

**Forms, Reports and Labels**

Create (Manually, Form Wizard, Auto Form), Sorting, Filtering, Report Creation (Design View and Wizards), Report using Single Tables/ Multiple Tables/Queries, Labels.

**Recommended Books**

1. O' Level Business System – V. Jain –BPB
2. An introduction to Accounting – T.S. Grewal – Sultan Chand & Co
3. 'Access 2000 Developer hand book – Gilbert – BPB

# BCA- S104: Computer Organization

## UNIT-I

### Overview of electronics:

Electronic components – Register, Capacitor and Inductors, Semiconductor devices – Diodes, Transistors (BJT and FET). Analog vs Digital electronics, Transistor as a switch. Integrated circuits, SSI, MSI, LSI, and VLSI circuits. Multivibrators – astable, bistable, monostable, counters ripple and decade, edge and level triggering.

## UNIT-II

### Building blocks of computer system:

Basic building blocks – I/O, Memory, ALU and its components, Control Unit and its functions, Instruction –word, Instruction and Execution cycle, branch, skip, jump and shift instruction, Operation of control registers; Controlling of arithmetic operations;

## UNIT-III

### Addressing techniques and registers:

Addressing techniques – Direct, Indirect, Immediate, Relative, Indexed addressing and paging. Registers – Indexed, General purpose, Special purpose, overflow, carry, shift, scratch, Memory Buffer register; accumulators; stack pointers; floating point; status information and buffer registers.

## UNIT-IV

**Memory:**Main memory, RAM, static and dynamic, ROM, EPROM, EEPROM, EAROM, Cache and Virtual memory.

## UNIT- V

### Interconnecting System components:

Buses, Interfacing buses, Bus formats – address, data and control, Interfacing keyboard, display, auxiliary storage devices and printers. I/O cards in personal computers.

Introduction to Microprocessors and Microcontrollers: introduction to 8085 microprocessor, examples of few instructions to understand addressing techniques. Difference between microprocessor and microcontrollers.

### Recommended Books

1. Andrew S. Tanenbaum , Structured Computer Organization,Printice Hall
2. William Stallings, Computer Organization and Architecture , Sixth Edition, Pearson

## **PRACTICAL**

**BCA S105:** Practical-I: Computer Hardware Laboratory

Practical based on Paper-I & paper-IV

**BCA S106:** Practical-II: ICT & Software Laboratory:

Practical based on Paper-II & paper-III

**BCA S107:** Practical-III: Language Laboratory (Audit Course)

Practical training in Spoken English using Language Lab software like Linguaphone

**BCA-S108: Seminar:** Seminar topics to be allotted in the beginning of the course by issuing schedule of seminars including faculty seminars

## BCA-S110: BASIC MATHEMATICS

(To be offered as an audit pass course by the candidates not studied mathematics at 10+2 level)

### Unit I

**Algebraic Expressions :** Term and degree

**Evaluating Algebraic Expressions:** Addition and Subtraction of Algebraic Expressions, Multiplication & Division of Algebraic Expressions, Rational Expressions, Operations with Rational Expressions

**Factoring :**

Difference of squares, quadratic trinomials, splitting middle term

### Unit II

**Linear Equations**

Translating algebraic expressions, Solving linear equations: Addition property, Solving linear equations: Multiplication property, Combining rules, Inequalities Solving linear inequalities

**Graphing Linear Equations**

The Cartesian coordinate system, The graph of a linear equation, Solve Linear equations in two variables by graph

### Unit III

**Systems of Linear Equations**

Solution of Systems of equations in two variables (addition/elimination)

**Quadratic equations**

Solution by Special methods: by square root, by Factorization of roots, completing the square, The quadratic formula.

Nature of roots, Sum and product of roots

### Unit IV

**Radical expressions and complex numbers**

Introduction to roots and radicals

Simplifying radical expressions [No variables]

Operations with radical expressions, rationalizing binomials denominators

Complex numbers [ Addition and Subtraction]

**Equation of lines**

Slope of a line, Parallel & perpendicular line, slope intercept form of equation of line, slope point form, two point form, intercept form

### Unit V

**Conic Sections:**

General quadratic equation, conic sections, circles, parabolas, ellipses, hyperbolas

**System of Real Numbers:**

Natural, whole, integer, rationals, irrationals, graphical representation of real numbers.