Course Title: IT Infrastructure and Management

Semester - I

1. Electrical & Electronics Components and Circuits
2. Basics of Systems Software
3. Fundamentals of IT Infrastructure
4. Fundamentals of Networking
5. Project/Seminar/Self Study

Subject 1: Electrical & Electronics Components and Circuits

Elementary Concepts: Prerequisite: Concept of Potential difference. Current and resistance. Ohm's law, effect of temperature on resistance.

D. C. Circuits (Only Independent sources) Kirchhoff's law, ideal and practical voltage and current sources. Mesh and Nodal analysis.

A.C. Fundamentals: Sinusoidal voltage and currents, their mathematical and graphical representation, concept of cycle period, frequency, instantaneous, peak, average, r. m. s. values, peak factor, and form factor, phase difference, lagging, leading and in phase quantities and phasor representation.

Electronic Components: P-N Junction Diode: P-N Junction Diode, Working of Diode, V-I characteristic of PN junction Diode. DC load line, Important terms such as Ideal Diode, Knee voltage, Junctions break down, Zener breakdown, Avalanche breakdown, P-N Diode clipping Circuit, P-N Diode clamping Circuit, Transistor: Introduction, modes of operation, Transistor circuit configuration & its characteristics: CB Configuration, CE Configuration, CC Configuration.

Semiconductor Devices: Introduction, Thermistors, Sensors & barretters, Zener Diode, Diodes.

Subject 2: Basics of Systems Software

Introduction: System Software Vs. Application Software, Different System Software- Assembler, Linker, Loader, Macro 2 Processor, Text Editor, Debugger, Device Driver, Compiler, Interpreter, Operating System, Addressing modes, Assembler Directives and Programming.

Device drivers: Anatomy of a device driver, Character and block device drivers, General design of device drivers, Text Editors: MS Word, Notepad, WordPad, Relationship with other parts of the system, Debugging Methods- By Induction, Deduction and Backtracking.

System Applications: Operating System: Windows, Linux, DOS, Web Browser: Internet Explorer, Mozilla Firefox, Google Chrome, MS Office: MS Word, MS Excel, MS PowerPoint, MS Access, MS Outlook, Programming Language: C, C++, Java (Introduction), Data Storage: Storage devices & DBMS (Introduction).

Subject 3: Fundamentals of IT Infrastructure

Introduction about Computer: Basics of computer, Parts of Computer: CPU, Motherboard, RAM, Hard drive, Video Card, Organization of computer, Types of memory in computer:

RAM: SRAM & DRAM and ROM: PROM, EPROM, EEPROM; Introduction of Software and hardware, Introduction of Input/output devices.

Input/output devices: Introduction of Input and Output Devices, Difference between Input and Output Devices; Input Devices: Keyboard, Mouse: Scroll Mouse, Cordless, Optical, Joystick & Gamepad, Output Devices: Monitor & its types, Printer & its Types.

Storage Devices: Introduction to storage: primary and secondary storage; Hard disk drive(HDD) : Introduction, Benefits, Drawbacks, Applications; Solid State Drive(SSD) : Introduction, Benefits, Drawbacks, Applications; RAM: Introduction, Benefits, Drawbacks, Applications, Types: DRAM & SRAM; ROM: Introduction, Benefits, Drawbacks, Applications, Types: PROM, EPROM, EEPROM, Recordable Optical Media :CD, DVD& Blu-ray Discs, CD-ROM, DVD-ROM, Blu-Ray-ROM, Flash Memory Devices: USB Flash Drive; Magnetic storage devices :Floppy Disk, Hard Disk Drive, Tape.

Subject 4: Fundamentals of Networking

Basic networking concepts: Network: Introduction & types: LAN, WAN, MAN, PAN, CAN; Networking Model- The OSI model, TCP/ IP Model, Network adapters, Types of servers: Files servers, Email Servers, Proxy servers; Basics of Internet and Intranet, WWW, Emails, Search Engines.

Introduction to various networking devices: Routers, Switches, Modems., Hubs etc. Wired and Wireless technology. Transmission Modes in Computer Networks (Simplex, Half-Duplex and Full-Duplex), Types of Transmission Media: Guided Media and Unguided media, Types of Network Topology- Point to point, Mesh, Star, Bus, Ring, Tree.