



CS-03: COMPUTER FUNDAMENTALS AND EMERGING TECHNOLOGY		
<p>Objectives:</p> <ul style="list-style-type: none"> • Bridge the fundamental concepts of computers with the present level of knowledge of the students. • Familiarize peripheral devices, internal and external parts of computer system. • Understand Number System like binary, hexadecimal and octal number systems and their arithmetic. <p>Prerequisites:</p> <ul style="list-style-type: none"> • Basic Computer Literacy 		
Unit No.	Topics	Details
1	Introduction to Computers	<ul style="list-style-type: none"> • Basics of Computers <ul style="list-style-type: none"> ○ What is Computer? ○ Characteristics of Computer ○ Data Processing Cycle (Data → Process → information) • Classification of Computer by Data Processed <ul style="list-style-type: none"> ○ Analog, Digital and Hybrid Computers • Classification of Computer by Processing Capabilities <ul style="list-style-type: none"> ○ Micro, Mini, Mainframe and Super Computers • History and Generations of Computers <ul style="list-style-type: none"> ○ First to Fifth Generation Computers • Simple Model of Computer <ul style="list-style-type: none"> ○ Input Devices ○ CPU (Central Processing Unit) ○ Arithmetic & Logic Unit ○ Control Unit ○ Internal Memory • Output Devices • Secondary Storage Devices
	Internal/External parts used with Computer Cabinet	<ul style="list-style-type: none"> • Introduction to Mother board • Types of Processors. <ul style="list-style-type: none"> ○ Dual Core, Core 2 Duo, i2, i3, etc • Memory structure and Types of Memory <ul style="list-style-type: none"> ○ RAM (SRAM, DRAM, SO, DDR, etc.) ○ ROM (ROM, PROM, EPROM, EEPROM, etc.) • Slots: ISA Slots / PCI Slots / Memory Slots • Sockets • Cables: Serial Cable / Parallel Cable / USB Cable

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		<ul style="list-style-type: none"> • Ports: USB / Serial / Parellel / PS2 / HDMI • Power Devices: UPS • Graphic Cards, Network card, Sound Card
2	Input Devices	<ul style="list-style-type: none"> • Introduction • Types of Input Devices <ul style="list-style-type: none"> ○ Keyboard / Mouse / Trackball / Glide - Pad / Game Devices Joystick, etc.) / Light Pen / Touch Screen / Digitizers and Graphic Tablet / Mic (Sound Input) / Camera (Photo and Video Input) / POS (Point of Sale) Terminal (Scanners, etc) ○ MIDI(Musical Instrument Digital Interface) Keyboard, ○ Wireless Devices (Keyboard, Mouse, etc) • Types of Scanners <ul style="list-style-type: none"> ○ OCR, OMR, MICR, OBR
	Data Storage	<ul style="list-style-type: none"> • Introduction • Types of Magnetic Storage Devices <ul style="list-style-type: none"> ○ Floppy Disk / Hard Disk (SATA, SSD) / Magnetic Tape / Magnetic Disks • Storage Mechanism of Magnetic Storage Devices <ul style="list-style-type: none"> ○ Tracks / Sectors / Clusters / Cylinders • Reading / Writing Data to and from Storage Devices • Seek Time / Rotational Delay - Latency / Access • Time /Response Time • Other Storage Devices <ul style="list-style-type: none"> ○ USB - Pen Drive / CD / DVD / Blu-Rav Disk etc. ○ Flash Memory, Cloud Storage(Like Google Drive, OneDrive etc.)
3	Output Devices	<ul style="list-style-type: none"> • Types of Output Devices • CRT Display Units • Monitor • Non CRT display Units • LCD / LED / Plasma Displays • Types of Printers Impact and Non Impact Printers • Plotters • Other Devices <ul style="list-style-type: none"> ○ Fascimile(FAX) ○ OLED (Organic LED) ○ Headphone ○ SGD (Speech Generating Device)

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		<ul style="list-style-type: none"> ○ COM (Computer Output Microfilm) ○ Google Glass
	Numbering System and Codes	<ul style="list-style-type: none"> ● Introduction to Binary Codes / <ul style="list-style-type: none"> ○ Nibble / Bit / Byte / Carry Bit / Parity Bit / Sign Bit ○ KB / MB / GB / TB / HB (etc) ● Types of Numbering System <ul style="list-style-type: none"> ○ Binary / Octal/Decimal / Hex-Decimal ● Conversion <ul style="list-style-type: none"> ○ Binary to Octal, Decimal and Hexa-Decimal ○ Decimal to Binary, Octal and Hexa-Decimal ○ Octal to Binary, Decimal and Hexa-Decimal ○ Hexa-Decimal to Binary, Octal and Decimal ● Binary Arithmetic <ul style="list-style-type: none"> ○ Addition ○ Subtraction (1's Compliment and 2's Compliment) ○ Division ○ Multiplication ○ Types of Codes: ASCII/BCD / EBCDIC / Unicode ● Parity Check: <ul style="list-style-type: none"> ○ Event Parity System / Odd Parity System
4	Languages, Operating Systems and Software Packages	<ul style="list-style-type: none"> ● Introduction ● Translator (Assembler / Compiler / Interpreter) ● Types of Languages <ul style="list-style-type: none"> ○ Machine Level Language ○ Assembly Level Language ○ High Level Language (3GL, 4GL, 5GL, etc.) ● Types of Operating Systems <ul style="list-style-type: none"> ○ Batch Operating System ○ Multi Processing Operating System ○ Time Sharing Operating System ○ Online and Real Time Operating System ● Uses and applications of Software Packages <ul style="list-style-type: none"> ○ Word Processing Packages ○ Spread Sheet Packages ○ Graphical Packages ○ Database Packages I ○ Presentation Packages ○ Animation / Video / Sound Packages

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5	Emerging Technologies and Virus	<ul style="list-style-type: none"> • Different Communication methods <ul style="list-style-type: none"> ○ GIS / GPS / CDMA / GSM • Communication Devices <ul style="list-style-type: none"> ○ Cell Phones / Modem / Infrared / Bluetooth / WiFi/LiFi/SLM(Spatial Light Modulator) • Virus <ul style="list-style-type: none"> ○ Introduction to Virus and related terms ○ Origin and History ○ Types of Virus ○ Problems and Protection from Virus • Cloud Computing <ul style="list-style-type: none"> ○ What is Cloud Computing? ○ Characteristic & Service Models(Iaas, Paas, Saas) ○ Architecture ○ Security & Privacy
	Important Terms and Acronyms	<ul style="list-style-type: none"> • ATM • Backup / Restore • Hard Copy / Soft Copy • Bus / Data Bus • Buffer and types / Spooling • Cursor / Pointer / Icon • E-Mail I Attachment • CLil GUI • Compiler and its types • Drive I Directory (Folder) / File / Path • Menu / Popup Menu / Toolbar • Shutdown / Reboot / Restart • Syntax / Wild Card Characters • Optical Fiber (Fiber Optic) . • Net meeting • Printing Speed (CPS, CPM, LPM, DPI, PPM) • Peripherals

Seminar - 5 Lectures
Expert Talk - 5 Lectures
Test - 5 Lectures

Total Lectures 60 + 15 = 75

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Reference Books:

1. Computer Fundamentals – By P.K.Sinha.
2. Fundamental of IT for BCA – By S.Jaiswal.
3. Engineering Physics – By V.K.Gaur.
4. Teach Yourself Assembler – By Goodwin.

Course Outcome:

- ✓ Able to explore the fundamental concepts of computers
- ✓ Able to Understand peripheral devices, internal and external parts of computer system.
- ✓ Able to Understand Number System like binary, hexadecimal and octal number systems and their arithmetic.
- ✓ Able to recognize the emerging technologies
- ✓ Able to differentiate the types of virus

Additional Topics (Not to be asked in examination):

Student should be aware of followings

- To Format Hard Disk
- Installation of OS, multi-OS and other packages
- Use of DOS commands
- Operating of Accounting Software