

CS-106 - COMPUTER FUNDAMENTALS & HARDWARE

Course Title:	Computer Fundamentals & Hardware	Course Code	CS-106
Semester	I Semester	Course Group	Core
Teaching Scheme in Periods (L:T:P)	4:1:0	Credits	3
Methodology	Lecture + Tutorials	Total Contact Periods	150
CIE	60 Marks	SEE	40 Marks

Pre requisites

Basics about computer.

Course Outcomes

Upon completion of the course, the student shall be able to

CO1	Understand Fundamentals of Computer
CO2	Understand DOS Operating System.
CO3	Understand Windows Operating Systems.
CO4	Understand PC hardware and its Components.
CO5	Understand Processors, Memories
CO6	Understand Mass storage devices, I/O Devices.

Course Content and Blue Print of Marks for SEE

Unit No	Unit Name	Periods	Questions to be set for SEE				
			R		U	A	
I	Understand Fundamentals of Computer	24	Q4	Q1		Q9(a)	Q13(a)
II	Understand DOS Operating System.	24					
III	Understand Windows Operating Systems.	24		Q2		Q10(a)	Q14(a)
IV	Understand PC hardware and its Components.	24					
V	Understand Processors, Memories	26		Q3	Q5,Q 6	Q9(b),Q11(a), Q11(b)	Q13(b),Q15(a) , Q15(b)
VI	Understand Mass storage devices &I/O Devices.	28			Q7,Q 8	Q10(b),Q12(a) , Q12(b)	Q14(b),Q16(a) , Q16(b)
	Total	150	8		8	8	

Course Contents

UNIT - 1: Fundamentals of Digital Computer

Duration: 24 Periods (L:20 - T:4)

Generations of Computers -Block diagram of a Digital Computer - Functional parameters of CPU - Clock speed and word length - Functional blocks of a CPU: ALU and Control unit, types of memory RAM, ROM

UNIT - 2: DOS Operating Systems

Duration: 24 Periods (L:20 T:4)

Operating System - Need for an operating system - List the various operating systems – DOS Operating System – DOS Prompt - Types of DOS commands - Internal & External Commands - Directories and files - wild cards - autoexec.bat - config.sys

UNIT - 3: Windows Operating Systems

Duration: 24 Periods (L: 20 – T:4)

Features of Windows desktop - Components of a Window - Function of each component of a Window - Method of starting a program using start button -Maximize, minimize, restore down and close buttons- Meaning of a file and folder -Viewing the contents of hard disk drive using explorer - Finding a file - Installing and uninstalling software using control panel - Installing and uninstalling a hardware using control panel - Drive space - disk defragmentation - Installing a printer - Changing resolution, colour, appearance and screensaver options of the display - Changing the system date and time

UNIT - 4: PC hardware and its Components.

Duration: 24 Periods (L: 20 – T:4)

PC Hardware and software - Importance of BIOS - BIOS functions (i) POST, (ii) Bootstrap loading - Configuration of a general purpose computer - Identification of various components on the motherboard. Mother Board - Various I/O ports available on motherboard – SMPS - Importance of SMPS over linear voltage power supply - Connectors from SMPS and voltage levels of each wire in various connectors based on the standard color of the wire Processors

UNIT - 5: Processors, Memories

Duration:26 Periods (L: 22 – T:4)

Various processors used in the system : INTEL P4, AMD Athlon, Dual core, Core 2 Duo, i-series (i3,i5 and i7) – Chipset - INTEL chipsets 915,945,955, 965, 975 - AMD chipsets - Processor sockets Like ZIF, SEC, LGA, PGA, BGA. Memories - RAM - Static and Dynamic RAM - RAM types - SDRAM (Synchronous DRAM), Asynchronous DRAM, DDR1, DDR2 and DDR3 RAM - SIMM and DIMM - RAM Slots – Up gradation of RAM.

UNIT-6: Mass storage devices & I/O Devices

Duration: 28 Periods (L: 24 – T:4)

Hard Disk drive - Construction details of Hard disk drive - Jumper settings - Hard disk interfacing standards like IDE / SCSI / SATA – Optical disk drives - CDRom, CD-RW, - DVD-ROM, DVD- RW drives – Pen Drive – Solid State Drives (SSD) - Various input devices used with a general purpose computer - Keyboard (Wired & Wireless Keyboard) - Mouses (Wired & wireless Mouse) - Various scanners - Output Devices - Various Output devices used with a general purpose computer LED/OLED Monitors- Categories of printers (Impact and Non-Impact) - Dot matrix printer, Inkjet printer, Laser printer - Multi-Function printer.

Text Books

1. Enhanced Guide to Managing And Maintaining Your PC - Jean Andrews, (Thomson)
2. PC Hardware A Beginners Guide -- Gilster (TMH)
3. Trouble Shooting Your PC -- Stone & poor, Microsoft Press

Reference Books

1. PC Upgrading -- Stephen Bigelow (TMH)
2. Computer Science Theory & Application - E. Balaguruswamy, B. Sushila
3. Introduction to Computers (Special Indian Edition) - Peter Norton.

Suggested Learning Outcomes

CO1: Understand Fundamentals of Computer.

- 1.1 Define basic computer-related terms such as **Computer, Hardware, Software, Firmware, High-Level Language, and Low-Level Language**.
- 1.2 Explain the concept, features, and evolution of different **generations of computers**.
- 1.3 Draw and label the **block diagram of a computer system**.
- 1.4 Describe the interaction between the **CPU, memory, and input/output devices** in a computer system.
- 1.5 Explain the function of the **Central Processing Unit (CPU)**.
- 1.6 Identify and describe the major **functional units of the CPU**.
- 1.7 Describe the function and importance of **computer memory**.
- 1.8 Explain the role and function of various **input and output devices**.
- 1.9 State the relevance of **CPU speed and word length** in computer performance.
- 1.10 Classify computers based on **size and processor type**.

CO2: Understand DOS Operating System.

- 2.1 Define the term **Operating System**.
- 2.2 State the main **functions of an operating system**.
- 2.3 List various **operating systems** that are commonly used at present.
- 2.4 Explain the meaning and features of the **DOS operating system**.
- 2.5 Describe the **DOS prompt** and its structure.
- 2.6 Classify **DOS commands** into **internal** and **external** commands.
- 2.7 Explain the purpose of **internal DOS commands**.
- 2.8 Describe the usage of internal commands such as **CD, MD, DIR, RD, COPY, COPYCON, TYPE, DEL, PATH, DATE, and TIME**.
- 2.9 Explain the purpose of **external DOS commands**.
- 2.10 Describe the usage of external commands such as **ATTRIB, TREE, FORMAT, CHKDSK, XCOPY, PRINT**.
- 2.11 Explain the concept of **directories and files** in DOS.
- 2.13 Describe the use of **wildcard characters** in DOS commands.
- 2.13 Know the importance of **AUTOEXEC.BAT** file in DOS.
- 2.14 Know the of **CONFIG.SYS** file in DOS.

CO3: Understand Windows Operating Systems.

- 3.1 Understand Windows Operating Systems
- 3.2 List the features of Windows desktop.
- 3.3 List the components of a Window.
- 3.4 State the function of each component of a Window.

- 3.5 Explain the Method of starting a program using start button.
- 3.6 Explain usage of maximize, minimize, restore down and close buttons.
- 3.7 State the meaning of a file.
- 3.8 State the meaning of a folder.
- 3.9 Explain the Method of viewing the contents of hard disk drive using Explorer
- 3.10 Explain the Method of finding a file using search option.
- 3.11 Describe installing & uninstalling software using control panel
- 3.12 Explain installing & uninstalling hardware using control panel
- 3.13 Narrate finding out drive space using system tool option of Accessories group
- 3.14 Explain the procedure of disk defragmentation using System tools
- 3.15 Narrate installing a printer using control panel
- 3.16 Explain the procedure for changing resolution, colour, appearance, screensaver options of the display
- 3.17 Narrate the process of changing the system date and time

CO4: Understand PC hardware and its Components.

- 4.1 Explain PC Hardware and software
- 4.2 State the importance of BIOS
- 4.3 Explain the BIOS functions (i) POST, (ii) Bootstrap loading
- 4.4 State the configuration of a general purpose computer.
- 4.5 Identify Mother board, Processor, Chipset, SMPS, Disk Drives, RAM, ISA/EISA, PCI, IDE slots, RAM slots, AGP Slot, Mouse, Keyboard connector, Monitor connector (VGA Port), Printer connector, Speaker connector, USB ports, Parallel port, Serial Port, and Modem of the system.
- 4.6 List various components on motherboard.
- 4.7 List the I/O ports available on motherboard
- 4.8 Explain SMPS
- 4.9 State the importance of SMPS over linear voltage power supply
- 4.10 Know the connectors from SMPS and list the voltage levels of each wire in various connectors based on the standard color of the wire

CO5: Understand Processors, Memories

- 5.1 Describe various processors used in the system: INTEL P4, AMD Athlon, Dual core, Core 2 Duo and i-series (i3,i5,i7).
- 5.2 Define chipset.
- 5.3 Explain the INTEL chipsets 915,945,955, 965, 975
- 5.4 List the AMD chipsets
- 5.5 State different processor sockets Like ZIF, SEC, LGA, PGA, BGA.
- 5.6 Define the static and dynamic RAM.
- 5.7 Explain RAM types - SDRAM (Synchronous DRAM), Asynchronous DRAM, DDR1, DDR2 and DDR3
- 5.8 Describe SIMM and DIMM
- 5.9 Explain RAM Slots
- 5.10 Explain the procedure to upgrade RAM capacity of the system by adding additional RAMs

CO6: Understand Mass storage devices, I/O Devices.

- 6.1 List the different Mass Storage devices.

- 6.2 Give the constructional details and working of a Hard disk Drive
- 6.3 Explain the importance of jumper settings of Hard Disk drive and give details of it
- 6.4 Familiarize with hard disk interfacing standards like IDE / PATA / SCSI / SATA
- 6.5 Know about various optical disk drives like CD-ROM, CD-RW, DVD-ROM, DVD-RW.
- 6.6 Explain the process of reading and writing of data on various disk drives like CD-ROM, CD-Writer, DVD Drive.
- 6.7 Know about Flash Drives.
- 6.8 Know about Solid-State Drives (SSD)
- 6.9 Describe different Types of Keyboard
- 6.10 Describe different Types of Mouses
- 6.11 Describe different types of scanners
- 6.12 Know about LED/OLED Monitors
- 6.13 Describe different categories of printers (Impact and Non-Impact)
- 6.14 Describe Dot matrix printer, Laser printer, Multi-Function printer

Suggested Student Activities

Student activity like mini-project, surveys, quizzes, etc. should be done in group of 5-10 students. Each group should do any one of the following type of activity or any other similar activity related to the course with prior approval from the course coordinator and programme coordinator concerned.

1. Each group should conduct different activity and no repetition should occur.
2. Explore and analyze topics to improve the level of creativity and analytical skill by taking Quiz/ tests/ assignments. Documents have to be maintained as a record.
3. Create a power point presentation on the topic relevant to course or advanced topics an extension to the course to improve the communication skills. Documents have to be maintained as a record.
4. Visit different sites relevant to topics. Listen to the lectures and submit a handwritten report.

Suggested e-Learning Links

1. https://www.tutorialspoint.com/computer_fundamentals/computer_fundamentals_tutorial.pdf
2. <http://www.garfieldcs.com/wordpress/wordpress/wp-content/uploads/2011/09/Computer-Hardware-Basics.pdf>
3. <https://abiiid.files.wordpress.com/2010/12/pc-hardware-a-beginners-guide>

CO-PO Mapping Matrix

	Basic and Discipline Specific Knowledge	Problem Analysis	Design/Development of Solutions	Engineering Tools, Experimentation and Testing	Engineering Practices for Society, Sustainability and Environment	Project Management	Lifelong Learning	Linked PO
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO
CO1	3							1
CO2	3		1					1,3
CO3	3							1
CO4	3		2	2				1,3,4
CO5	3		2	1				1,3,4
CO6	3			2				1,4

QUESTION PAPER PATTERN FOR SEMESTER END EXAM

S.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	8	1	Nil	8 Marks
02	Part-B	Understanding(U)	8	3	4	12 Marks
03	Part-C	Application(A)	8	5	4	20 Marks
Total Marks						40 Marks

Unit No	Questions to be set for SEE				
	R			U	A
I	Q4	Q1		Q9(a)	Q13(a)
II					
III		Q2		Q10(a)	Q14(a)
IV					
V		Q3	Q5,Q6	Q9(b), Q11(a), Q11(b)	Q13(b), Q15(a), Q15(b)
VI			Q7,Q8	Q10(b), Q12(a), Q12(b)	Q14(b), Q16(a), Q16(b)
Total Questions	8			8	8

MODEL QUESTION PAPER
BOARD DIPLOMA MID-1 EXAMINATION (C-26)
DCSE-I-SEMESTER
CS-106– Computer Fundamentals & Hardware

TIME: 1HOUR

MAXIMUM MARKS: 20

PART-A

MARKS: 4 X 1=4

NOTE: 1. Answer all questions.

2. Each question carries one mark.

1. What is Hardware?
2. Define Memory?
3. Define Operating System?
4. What is directory?

PART-B

MARKS: 2 X 3=6

NOTE: 1. Answer any one question from 5 and 6.

c) Each question carries three marks.

5. a) Classify of Computers based on Size?
(OR)
d) Explain Briefly Generation of Computers.
6. a) List any six internal DOS Commands.
(OR)
e) What are wild card characters.

PART-C

MARKS: 2 X 5=10

NOTE: 1. Answer any one question from 7 and 8.

2. Each question carries five marks.

7. a) Explain the block Diagram of Computer.
(OR)
b) Explain Low Level Language and High level Language.
8. a) Explain briefly about Autoexec.bat and config.sys files.
(OR)
b) Explain briefly about any six External DOS Commands.

MODEL QUESTION PAPER
BOARD DIPLOMA MID-2 EXAMINATION (C-26)
DCSE-I-SEMESTER
CS-106– Computer Fundamentals & Hardware

TIME: 1 HOUR

MAXIMUM MARKS: 20

PART-A

MARKS: 4 X 1 =4

NOTE: 1. Answer all questions.

2. Each question carries one mark.

1. List the components of Windows?
2. What is the meaning of Folder.
3. What is BIOS?
4. List any four Components on Mother board.

PART-B

MARKS: 2 X 3=6

NOTE: 1. Answer any one question from 5 and 6.

2. Each question carries three marks.

5. a) Write the procedure for installing software using control panel.
(OR)
b) Write the procedure for finding the file in computer.
6. a) Write about Bootstrap Loading
(OR)
b) Write the configuration of General Purpose computer

PART-C

MARKS: 2 X 5=10

NOTE: 1. Answer any one question from 7 and 8.

2. Each question carries five marks.

7. a) Explain the procedure for changing resolution, colour, appearance, screensaver options of the display
(OR)
b) Write the process of changing the system date and time
8. a) Explain Chipset.
(OR)
b) Explain different motherboard types

MODEL QUESTION PAPER
BOARD DIPLOMA END EXAMINATION (C-26)
DCSE-I-SEMESTER

CS-106– Computer Fundamentals & Hardware

TIME: 2 HOURS

MAXIMUM MARKS: 40

PART-A

MARKS: 8 X 1=8

NOTE: 1. Answer all questions.

2. Each question carries one mark.

1. Define Memory?
2. List the components of Windows?
3. What is the meaning of Folder?
4. Define Chipset.
5. List various processors?
6. List AMD Chipsets?
7. List any two mass storage devices?
8. List different types of Keyboards

PART-B

NOTE: 1. Answer any one question from 9, 10, 11 and 12.
3=12

MARKS: 4 X

2. Each question carries three marks.

9. a) Classify of Computers based on Size?
(OR)
b) Explain RAM Types.
10. a) Write the procedure for installing software using control panel.
(OR)
b) Explain the working of Hard Disk Drive?
11. a) Explain RAM Slots.
(OR)
b) Describe SIMM and DIMM?
12. a) Describe different types of mouse.
(OR)
b) Explain the importance of Jumper Setting of Hard Disk?

PART-C

NOTE: 1. Answer any one question from 13, 14, 15 and 16

MARKS: 4 X 5=20

2. Each question carries five marks.

13. a) Explain the block Diagram of Computer.
(OR)
b) Explain the procedure to upgrade RAM capacity of the system by adding additional RAM.
14. a) Explain the procedure for changing resolution, colour, appearance, screensaver options of the display.
(OR)
b) Explain the process of reading and writing of data on various disk drives like CD- ROM, CD- Writer, DVD Drive.
15. a) Explain RAM types - SDRAM (Synchronous DRAM), Asynchronous DRAM.
(OR)
b) Explain the INTEL chipsets 915,945,955, 965.
16. a) Explain different types of scanners .
(OR)
b) Explain Dot matrix printer, Laser printer, Multi-Function printer.