

<b>Branch Name:</b>	IMCA
<b>Program Code:</b>	CS301
<b>Course Name:</b>	Hardware Configuration & Solution
<b>Course Code:</b>	1CS3010306P
<b>Pre-requisite Course:</b>	Select the essential components of a computer, Select computer components for specific needs, Assemble the components of a computer

**Course Objectives:**

1. To have fundamental knowledge on computer hardware.
2. To understand the basic terminology used in computer peripheral devices
3. To assemble and disassemble various peripheral devices of a Computer System.
4. To troubleshoot and repair various Operating Systems.
5. To get the knowledge of working of different hardware components

**Teaching and Examination Scheme:**

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Total (Marks)
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
-	-	2	2	-	-	-	-	-

**Inductive Practical List:**

Note: The experiment list provided beneath is for reference only. The course teacher may change/formulate it as per his/her methodology and requirement.

1. Identify basic components of a personal computer. Prepare a list of various computer peripherals. (e.g. CPU, Monitor, Keyboard, Mouse, Speaker, Web cam, Printer, Scanner, microphone, speakers, modem, projector etc).
2. Identify various components within the cabinet (on the motherboard) and learn the interconnections among them.
3. Identify major components including motherboards, memory, drives, peripheral cards and devices, BIOS, and Windows operating system. Observe the various components on the motherboard, identify it. Also observe their interconnection and arrangement inside the case. Detach and attach the cables and component in the PC case and motherboard. Carryout detailed study on all the components and devices on the given motherboard.
  - Processor socket ,Chipsets,
  - Memory module slots, BIOS, CMOS
  - FDD, HDD connectors
  - Different types of expansion slots (ISA, EISA, PCI, PCI express, AGP, Express Card & PC Card (or PCMCIA) etc.)
  - Add-on-cards (audio, graphics, I/O, TV tuner, network etc.)
  - Cables in a computer system (IDE Ribbon cable, SATA cable etc)
  - Connections for button, indicator lights etc.
  - Observe various types of memory modules (SIMM, DIMM, SO-DIMM, RIMM, SO-RIMM). Also observe impact of removal of memory modules from the system, start it and re insert memory module and restart system.
  - Disassemble the PC carefully. Assemble the same PC you have disassembled and boot the system. Observe the procedure of assembling a computer system.
4. Observe various secondary storage systems- Hard Disk, Flash drives, CD/ DVD drive. Open drives and draw the internal structure of them. (If available also open the various FDD/HDD disks to observe the magnetic disk inside.)

5. Observe the procedure for installing Operating System like win7/win8/win10/win11 with partition formatted in previous practical in one partition, (fat, fat16, fat32, ntfs, gpt). Try booting PC. Learn the content of boot.ini after the installation process. Now install unix Operating System like Linux /Ubuntu/ centos/ fedora/ red hat in another partition. Create dual booting system try booting PC. Learn the content of boot.ini after the installation process.
6. Identify BIOS settings. (strictly under the observation of Instructor)
  - Define BIOS.
  - Demonstrate starting BIOS.
  - Identify how to disable unused devices to decrease security risks.
  - Change booting of computer with different secondary storage CD, HDD, USB etc.
7. Search for various data recovery software apply on pen drive/HDD.
8. Perform computer maintenance and preventative maintenance functions.
  - Perform physical cleaning (internal and external) of personal computer.
  - Demonstrate how to adjust basic performance settings.
  - Perform hard drive file system maintenance.
  - Identify anti-virus software and applications.
  - Identify diagnostic software such as Norton Utilities.
9. Utilize Internet to download device drivers. Installation of drivers of various devices from the internet.
10. Demonstrate to remove unwanted software applications.
11. Connect and Configure printer and Scanner to CPU.
12. Assembling and Disassembling of a Computer System

#### **Text Books:**

1. PC Architecture, Michael Karbo, Know Ware - Competence Micro (September 2, 2002); eBook (karbosguide.dk, 2006).
2. Build a Computer from Scratch, Jeff Heaton, Heaton Research, Inc. (June 14, 2006)
3. Comdex computer Hardware-Course BY Vikas Gupta (Dreamtech Press)
4. C AND CLONES Hardware, Troubleshooting and Maintenance Govindarajalu, Tata Mc- graw-Hill Publication

#### **Reference Books:**

1. Computer Desktop Encyclopedia, Alan Freedman, Osborne/McGraw-Hill; 9th edition (September 24, 2001); eBook (2014, Updated Continuously)
2. Encyclopedia of Electronic Components Volume 1
3. Building Your Own Computer Made Easy (The Step By Step Guide) by James Bernstein

#### **List of Open Source Software/learning website:**

1. <http://williamstallings.com/ComputerOrganization>
2. <https://www.pearsonhighered.com/cs-resources/products/product.html#product,isbn=0132916525>
3. [www.tutorialspoint.com](http://www.tutorialspoint.com)
4. [www.javatpoint.com](http://www.javatpoint.com)

**Course Learning Outcomes (CLO): On completion of this course, the students will be able to:**

CLO	Description	Bloom's Taxonomy Level
CLO1	To understand the basic terminology used in computer peripheral devices	1. Remembering 2. Understanding
CLO2	To assemble and disassemble various peripheral devices of a Computer System.	1. Remembering 2. Understanding
CLO3	To troubleshoot and repair various Operating Systems.	1. Remembering 4. Analyze 2. Understanding
CLO4	To get the knowledge of working of different hardware components	6. Creating, 5. Evaluate 3. Applying 4. Analyze
CLO5	To Understanding and Assembling different PC part and also its working process	1 Remembering 2., 3 Applying Understanding 6.Creating
CLO6	To get the knowledge of How maintain PC and repair different part of computer hardware components	1 Remembering 2. Understanding 6.Creating, 3 Applying

**Mapping of CLOs with Pos & PSOs**

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CLO1	L		H	M	M		L	L		M	L	L	H	M
CLO2		L			L			M					M	
CLO3	M	L	M		L	M	M		M			M	M	
CLO4				H		M		L		L				M
CLO5	L		L		M		L		M		H	H	M	H
CLO6	M		L		H		H	M		H		M	H	

**H: High, M: Medium, L: Low**