

B.C.A 1<sup>st</sup> Semester

030010116: CC3: Computer Fundamentals and Organization

**Objective:**

To understand the fundamentals of computer organization, memory organization and working of devices.

**Course Outcomes:** Upon Completion of the course, students shall be able to

- C01:** Describe basics of computer.
- C02:** Comprehend the components of computer.
- C03:** Describe I/O Devices working with computer.
- C04:** Illustrate organization of memory.
- C05:** Analyse the organization of processor.
- C06:** Identify the types of storage media in computer.

Unit	Sub Unit	No. of Lecture(s)	Topics	Reference Chapter/Additional Reading	Teaching Methodology	Evaluation Parameters
<b>1. Computer Basics</b>			<b>(Total: 05 lectures)</b>			
	1.1	1	Simple Model Computer	VR #1-Page No.5-6	Chalk and talk	
	1.2	1	Characteristics of Computer	VR#1-Page No.6, SPK#1-Page No.2-3	Chalk and talk and group discussion	
	1.3	1	Generation of Computer	VR #12-Page No.249-255, SPK#1-Page No.5-13	Chalk and talk & Power point Presentation	
	1.4	2	Stored program concepts: Von-Neumann architecture	VR #1-Page No.12, RW#6-Page No.46	Power Point Presentation and chalk and talk	
<b>2. Logic Circuits</b>			<b>(Total: 08 lectures)</b>			
	2.1	1	Introduction	VR #7-Page No.113	Chalk and talk	<b>Quiz 1</b>
	2.2	1	Switching circuits	VR #7-Page No.114	Chalk and talk	
	2.3	1	AND, OR and NOT operations	VR #7-Page No.115-116	Chalk and talk	
	2.4	1	Logic Gates	VR #7-Page No.124-127, MM #1-Page No.5-7	Chalk and talk	
	2.5	2	Physical Devices used to construct Gates	VR #7-Page No.128-131	Power Point Presentation and chalk and talk	
	2.6	1	Transistors	VR #7-Page No.132-133, RW#10-Page No.112-115	Power Point Presentation and chalk and talk	
	2.7	1	Integrated Chips	VR #7-Page No.134-136	Power Point Presentation	

B.C.A 1<sup>st</sup> Semester

					and chalk and talk	
<b>3. Input/ Output Devices</b>				<b>(Total: 11 lectures)</b>		
	3.1	3	Bus, Ports: Serial, Parallel, USB ports	RW#21-Page No.201- 203,209-215	Power Point Presentation & Chalk and talk and video	<b>Unit Test - 1</b>
	3.2	4	Input Units - Keyboard, Mouse, MICR, OMR, OCR, Barcode Reader	VR #3-Page No.32-37, SPK#9-Page No.140-149		
	3.3	4	Output units - CRT, LCD, Printers, Plotters	VR #7-Page No.38-42, SPK#9-Page No.150-155		

B.C.A 1<sup>st</sup> Semester

<b>4 Memory Organization</b>					<b>(Total: 09 lectures)</b>	
	4.1	1	Memory Cell	VR #4-Page No.48	Chalk and talk	
	4.2	2	Memory Organization	VR #4-Page No.48-53	Chalk and talk	
	4.3	1	Read Only Memory	VR #4-Page No.54	Power Point Presentation and chalk and talk	
	4.4	1	Serial Access Memory	VR #4-Page No.55-56	Power Point Presentation and chalk and talk	
	4.5	1	Physical Devices Used to Construct Memories	VR #4-Page No.56-62	chalk and talk	
	4.6	1	Magnetic and Optical Disk	VR #4-Page No.63-74	Power Point Presentation and chalk and talk	
	4.7	2	Virtual Memory	VR #9-Page No.165-166	Power Point Presentation and chalk and talk	
<b>5. Computer Architecture</b>					<b>(Total: 08 lectures)</b>	
	5.1	1	Structure of Instructions	VR #5-Page No.79-82	Power Point Presentation & Chalk and talk	
	5.2	1	Description of Processor	VR #5-Page No.83-86		
	5.3	1	Interconnection Units	VR #8-Page No.142-144		
	5.4	2	Processor to Memory Communication, I/O to Processor Communication	VR #8-Page No.145-150		
	5.5	2	Interrupt Structure	VR #8-Page No.151-152		
	5.6	1	RISC and CISC	VR #8-Page No.163-164		
<b>6. Microcomputers</b>					<b>(Total: 07 lectures)</b>	
	6.1	1	Introduction: Ideal and Actual microcomputer	VR #11-Page No.219-225	Chalk and talk	<b>Internal Theory</b>
	6.2	1	Memory System	VR #11-Page No.226-227	Chalk and talk Video	
	6.3	1	Minimum configuration	VR #11-Page No.227-230	Power Point Presentation & Chalk and talk	
	6.4	1	Special purpose microprocessors	VR #11-Page No.231-237	Power Point	

B.C.A 1<sup>st</sup> Semester

					Presentatio n & Chalk and talk
	6.5	1	Microcomputer software	VR #11-Page No.238-239	Chalk and talk
	6.6	2	Applications : Smartcard, RFID, Washing machine	VR #11-Page No.241-244	

**References:**

**Text Books:**

1. V. Rajaraman - Fundamentals of Computers – PHI –[VR]
2. Ron White – How Computers Work – Tech Media – [RW]

**Reference Books:**

1. B. Ram ,Computer Fundamentals, Architecture and organization ,New Age International Publication. [BR]
2. M. Morris Mano ,Computer System Architecture , Prentice Hall [MM]
3. K M Hebbar, Computer Architecture ,MacMillan Publication [KMH]
4. Sinha P. K. ,Computer Fundamentals, BPB Publication [SPK]

B.C.A 1<sup>st</sup> Semester

**Course Objectives and Course Outcomes Mapping:**

- To understand the computer organization: C01,C02
- To understand the memory organization: C04,C05,C06
- To understand the working of devices:C02,C03

**Course Units and Course Outcomes Mapping**

Unit No.	Unit	Course outcome					
		C01	C02	C03	C04	CO 5	CO 6
1	Computer Basics	✓	✓				
2	Logic Circuits		✓	✓			
3	Input / Output Devices			✓			
4	Memory organization				✓	✓	✓
5	Computer Architecture					✓	✓
6	Microcomputers				✓		✓

**MODES OF TRANSCATION (Delivery)**

Unit No	Topic Detail	Teaching Approach	PO Mapped
1.	1.3, 4.3	Open Book Study: Students have to explain topic given by course teacher after reading from book. For topic 10 minutes will be given to prepare.	P01, P02
1,2	1.2,2.6	Group discussion on topic given by course teacher. For discussion 15 minutes will be given. After that students need to explain in front of class.	P01, P02, P03

**Activities/Practicum:**

The following activities shall be carried out by the students.

- ❖ Study of trends in computer.
- ❖ Study of the evolution in processor development.

Learner	Activities to be done	PO Mapped
---------	-----------------------	-----------

B.C.A 1<sup>st</sup> Semester

<b>For slow learner</b>	Assign one questions after completion of every lecture as assignment. Discussed the answer with them. If student face any difficulty into that question then solve their query.	P01, P02, P03
<b>For advanced learner</b>	Students have to discuss answer of only one question which is assign them in classroom.	P02

Concept Linkage:

Unit/ Sub Unit	Prior Concept linkage	Post Concept Linkage
4		060060308: 4:4.1