

# GUJARAT UNIVERSITY BCA SEMESTER III SYLLABUS

COURSE TITLE	Computer Organization
COURSE CODE	CC-201
COURSE CREDIT	3
Session Per Week	4
Total Teaching Hours	40 HOURS

## AIM

To study and understand the basic organization of computers and the working of each component.

## **LEARNING OUTCOMES**

On the completion of the course students will:

- 1. Understand the working of basic computer components and CPU operation.
- 2. Data Representation in computers.
- 3. Understand the concepts related to computer memory.

# **DETAIL SYLLABUS**

		TEACHING
UNIT	TOPIC / SUB TOPIC	HOURS
	Logic Circuits and Components of Digital Computers	10
	Digital Logic Circuit	
	Digital Computers	
	• Logic Gates	2
	Boolean Algebra	
	Combinational Circuits	
	o Half-Adder	2
	o Full-Adder	
	• Flip-Flops	
1	o SR Flip-Flop	2
	o D Flip-Flop	
	o JK Flip-Flop	
	o T Flip-Flop	
	Digital Components	
	Integrated Circuits	
	• Decoders	2
	o NAND Gate Decoder	
	o Encoders	
	• Multiplexers	
	• Registers	2
	• Shift Registers	2
	Binary Counters	
	Memory Unit	
	o Random-Access Memory	
	o Read-Only Memory	
	o Types of ROMs	

Data Representation  Data Types  O Number System  O Octal and Hexadecimal Numbers  O Decimal Representation  O Alphanumeric Representation  O Alphanumeric Representation  O (Ir-1)'s Complement  Fixed-Point Representation  O Integer Representation  O Arithmetic Subtraction  O Overflow  O Decimal Fixed-Point Representation  Floating-Point Representation  O Homory Transfer  O Hime-State Bus Buffers  O Three-State Bus Buffers  O Three-State Bus Buffers  O Three-State Bus Buffers  O Three-State Bus Buffers  O Hemory Transfer  O Hime-State Bus Buffers  O Hime-State Bus Buffer		Representation of Data and Register Transfer with Microoperations	10
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Basic Computer Organization and Design  Instruction Codes  o Stored Program Organization o Indirect Address  Computer Registers o Common Bus System  Computer Instructions o Instruction Set Completeness  Timing and Control Instruction Cycle o Fetch and Decode o Determine the Type of Instruction		Arithmetic Logic Shift Unit	
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Timing and Control Instruction Cycle O Fetch and Decode O Determine the Type of Instruction		Computer Instructions	
Instruction Cycle     o Fetch and Decode     o Determine the Type of Instruction		o Instruction Set Completeness	
o Fetch and Decode o Determine the Type of Instruction		Timing and Control	
o Determine the Type of Instruction	3	• Instruction Cycle	
		o Fetch and Decode	
3 o Register-Reference Instructions 2		o Determine the Type of Instruction	
		o Register-Reference Instructions	2
Memory-Reference Instructions		Memory-Reference Instructions	
Input-Output and Interrupt		• Input-Output and Interrupt	
Complete Computer Description			
Design of Basic Computer			
Design of Accumulator Logic			

	Central Processing Unit	
	• Introduction	
	General Register Organization	3
	Stack Organization	
	• Instruction Formats	
	Addressing Modes	3
	Data Transfer and Manipulation	
	Program Control	
	Organization of Input-Output and Memory	10
	Input-Output Organization	
	Peripheral Devices	
	Input-Output Interface	2
	Asynchronous Data Transfer	
	o Handshaking	
	Modes of Transfer	3
4	Priority Interrupt	
	Direct Memory Access	
	Memory Organization	
	Memory Hierarchy	2
	Main Memory	2
	Auxiliary Memory	
	Associative Memory	
	Cache Memory	3
	Virtual Memory	

# **TEXT BOOK/S:**

Text Book:

Computer System Architecture (3rd Edition)

By: M. Morris Mano Publisher: Pearson

#### **REFERENCE BOOKS:**

1. Computer Architecture and Organization (2nd Edition), By: B. Govindrajalu, Publisher: TMH

### **WEB RESOURCES:**

https://www.tutorialspoint.com/computer\_logical\_organization/index.htm

https://en.wikipedia.org/wiki/Computer\_architecture

http://nptel.ac.in/courses/106103068/#

http://www.srmuniv.ac.in/downloads/computer\_architecture.pdf

https://imlearner.files.wordpress.com/2010/08/computer-system-architecture-3rd-ed-morris-mano-p98.pdf

http://www.a-zshiksha.com/forum/viewtopic.php?f=133&t=61511

https://docs.google.com/file/d/0B0DfyDcYZ0AbeFlhdmo3cy1udVk/edit

https://docs.google.com/uc?id=0B0DfyDcYZ0AbN2tzZEhRcEF1a1k&export=download

https://robot.bolink.org/ebooks/Computer%20System%20Architecture%203e%20By%20M%20Morris%20Mano.pdf

https://books.google.co.in/books/about/Computer\_Architecture\_and\_Organization.html?id=YT74AkSrj4sC

http://www.freebookcentre.net/CompuScience/Free-Computer-Architecture-Books-Download.html

http://freecomputerbooks.com/compscCategory.html

http://www.freetechbooks.com/computer-organization-and-architecture-f56.html