



Lok Jagruti Kendra University
University with a Difference

Diploma in Computer Science & Engineering



Course Code: 025130402

Computer System Organization

Programme / Branch Name			Diploma in Computer Science & Engineering			
Course Name	Computer System Organization				Course Code	025130402
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses

ESC: Engineering Science Courses

OEC: Open Elective Courses

BSC: Basic Science Courses

PCC: Program Core Courses

PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week / Credits				Evaluation Scheme			
L	T	P	Total Credit	CCE	SEE (Th)	SEE (Pr)	TOTAL
3	0	0	3	50	50	-	100

Legends:

L: Lectures

T: Tutorial

P: Practical

CCE: Continuous & Comprehensive Evaluation

SEE (Th): Semester End Evaluation (Theory)

SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

- ✓ Fundamentals of Digital electronics
- ✓ Knowledge of digital circuits and digital components
- ✓ Basics of Computers architecture and I/O peripherals.

3. Rationale

Understand the architecture and organization of digital computer with its various processing units and components, memory organization and input-output peripherals organization.

4. Objectives

- ✓ After successful completion of this course the students will be able to
 - Understand the basics of digital circuits and digital components of Computer Architecture.
 - Acquire knowledge on basic computer organization and design and introduction to advanced processor architecture.
 - Understand the different types of memory also explains about the associative memory, cache memory and virtual memory.
 - Explain data transfer and Input / Output module.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1	Organization and Design of Digital Computers	1.1. Overview of computers and basics of Digital Electronics-Flip Flops 1.2. Registers, Shift Registers 1.3. Register Transfer Notations 1.4. Register Transfer 1.5. Bus Transfer and Memory Transfer 1.6. Arithmetic Micro-Operations 1.7. Logic Micro-Operations 1.8. Shift Micro operations 1.9. Arithmetic Logic Shift Unit	- Deals with digital components, like Flip-flops, and various digital circuits. - Explain registers and register transfers language. - Describe various Arithmetic, Logic and Shift micro-operations. - Understanding Arithmetic Logic Shift Unit - ALU	20	08
2	Basic Computer Organization	2.1. Instruction Codes 2.2. Computer Registers - Accumulator, Data Register, Address Register, Program Counter, Memory Data Register, Index register, Memory Buffer Register 2.3. Computer Instructions 2.4. Timing and Control 2.5. Instruction Cycle 2.6. Memory Reference Instructions 2.7. Input-Output and Interrupt 2.8. Complete Computer Description	- Understand various fields of instruction code and list various instruction formats - Inspecting types of registers and understand role of each register - Observing control timing signals diagram for the given instruction - Understanding phases of instruction cycle - Focus on Input-output and interrupt and its working - Observing functional block diagram of BASIC computer	25	09
3	Central Processing Unit, Pipelining	3.1. General Register Organization 3.2. Stack Organization 3.3. Instruction Formats 3.4. Addressing Modes 3.5. Data Transfer and manipulation 3.6. Program Control 3.7. CISC – RISC	- Exploring General Register organization. - Focus on various stack organizations of CPU. - Exploring various instruction and instruction format.	25	10

		3.8. Parallel Processing: Flynn's Classification 3.9. Pipeline processing	- Discuss various addressing modes used in computers. - Understanding data transfer and data manipulation instruction. - Discuss program control instructions. - Compare and differentiate RISC and CISC Architecture. - Understanding advantage of pipelining in CPU Design.		
4	Input/Output Module	4.1. Input-Output Interface 4.2. Asynchronous Data Transfer 4.3. Strobe Control 4.4. Handshaking 4.5. Asynchronous Serial Transfer 4.6. Modes of Data Transfer 4.7. Input-Output Processor	- Defining I/O interface - Understanding methods of Asynchronous Data transfer - Describe Asynchronous Serial Transfer - Exploring different modes of data transfer - Input Output processor and its organization	15	7
5	Memory System	5.1. Memory Units and Classifications 5.2. Memory Hierarchy 5.3. Main Memory 5.4. Auxiliary Memory 5.5. Associative Memory 5.6. Cache Memory 5.7. Virtual memory	- Understand memory hierarchy and memory classification - Understanding concepts of main memory, auxiliary memory, Associative Memory, cache memory and virtual memory	15	8
				Total Hours	42

6. Suggested Specification Table for Evaluation Scheme

Unit No.	Unit Name	Distribution of Topics According to Bloom's Taxonomy					
		R %	U %	App %	C %	E %	An %
1	Organization and Design of Digital Computers	35	30	25	-	5	5
2	Basic Computer Organization	30	30	30	-	5	5
3	Central Processing Unit, Pipelining	30	35	25	-	5	5
4	Input/Output Module	35	30	25	-	5	5
5	Memory System	35	25	30	-	5	5

Legends: R: Remembering U: Understanding
App: Applying C: Creating
E: Evaluating An: Analyzing

7. Text Books

- 1) Computer System Architecture – M. Morris Mano, Latest Edition, Prentice-Hall Inc. publication.

8. Reference Books

- 1) Computer Architecture – Behrooz Parhami, Latest Edition, Oxford publication.
- 2) Computer Organization and Architecture Designing for Performance – William Stallings, Latest Edition, Pearson Education.

9. Open Sources (Website, Video, Movie)

- 1) <https://digimat.in/limesurvey/index.php/106105163>
- 2) <http://www.cs.iit.edu/~virgil/cs470/Book/>