

**Computer Architecture**

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**Digital Electronics &  
Microcontrollers**

**Course Objective:** To learn and understand the organisation and architecture of computer system.

**S. NO****Course Outcomes (CO)****CO1**

Explain the working of computer systems &amp; its basic principles

<b>CO2</b>	Design the basic structure of processor and control design
<b>CO3</b>	Discuss the basic concepts of pipelining techniques
<b>CO4</b>	Highlights the memory hierarchy and its organization and working of I/O devices with its interfacing

S. NO	Contents	Contact Hours
<b>UNIT 1</b>	Introduction to digital electronics: combinational circuits and sequential circuits. Basic machine Principle, Structure and representation of real world data. Subroutine, Branching & Macro facility	<b>6</b>
<b>UNIT 2</b>	Processor Organization, Information representation and Number format, Instruction cycle and Instruction format, Addressing modes, Arithmetic operation, timed point addition, subtraction, multiplication and division, ALU design, Parallel processing – Performance consideration, Pipeline processor	<b>9</b>
<b>UNIT 3</b>	Instruction sequencing and Interpretation, Hardware Control design method and Microprogrammed Control	<b>9</b>
<b>UNIT 4</b>	Memory device characteristic, Random access and serial access memories, Virtual memory – memory hierarchies, Page replacement policies, Segments, pages and file organization, High speed memories – cache and associative memory	<b>9</b>
<b>UNIT 5</b>	Memory device characteristic, Random access and serial access memories, Virtual memory – memory hierarchies, Page replacement policies, Segments, pages and file organization, High speed memories – cache and associative memory	<b>9</b>
<b>TOTAL</b>		<b>42</b>

REFERENCES		
S.No.	Name of Books/Authors/Publishers	Year of Publication / Reprint
<b>1</b>	M.M. Mano: Computer System Architecture, 3rd Ed. PHI.	2017
<b>2</b>	J.P. Hayes: Computer Architecture and Organization, 3rd Ed. TMH	2017
<b>3</b>	C.W. Gear: Computer organization and Programming, TMH.	1980
<b>4</b>	T.C. Bartee: Digital Computer Fundamental, TMH.	2001
<b>5</b>	A. S. Tanenbaum: Structured Computer System Organization, PHI.	2016

## **B.Tech. Information Technology**

**Course code:** Course Title

**Course Structure**

**Pre-Requisite**