

<b>Program</b>	Bachelor of Technology (BTech)	<b>Semester - 6</b>
<b>Type of Course</b>	Professional Core	
<b>Prerequisite</b>	Digital Fundamentals	
<b>Course Objective</b>	Students will learn the basic concepts of computer system which will lead them to comprehend and design processors. The students will acquire the knowledge of CPU, peripheral communication and different protocols with hardware implementations.	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Practical	Credit	Theory Marks		Practical Marks		Total Marks
				SEE (T)	CIA (T)	SEE (P)	CIA (P)	
4	0	0	4	70	30	-	-	100

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		T - Teaching Hours   W - Weightage	
Sr.	Topics	T	W
1	<b>Register Transfer and Microoperation</b> Register Transfer Language, Bus and Memory Transfers, Arithmetic Logic and Shift Microoperations	8	20
2	<b>Basic Computer Organization and Design</b> Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt	9	20
3	<b>Central Processing Unit</b> General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer (RISC), Complex Instruction Set Computer (CISC)	10	20
4	<b>Pipelining and Computer Arithmetic</b> Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Addition and Subtraction Algorithm, Multiplication Algorithm.	9	20
5	<b>Input-Output Organization</b> Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA), Input-Output Processor (IOP)	9	20
<b>Total</b>		<b>45</b>	<b>100</b>

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyze	Evaluate	Create
<b>Weightage</b>	15	40	15	20	10	0

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes	
<b>At the end of this course, students will be able to:</b>	
C01	<b>discuss</b> common bus interface and microoperations performed by processor.
C02	<b>carry</b> out instruction formats, timing and control to design ALU.
C03	<b>explore</b> the internal architecture of CPU with stack organization.
C04	<b>estimate</b> execution timing with the help of pipeline and algorithm.
C05	<b>illustrate</b> peripheral operations, DMA operations and IOP communication.

**Reference Books**

1.	<b>Computer System Architecture</b> By M. Morris Mano   Pearson Education
2.	<b>Computer System Organization</b> By N. D. Jotwani   McGraw Hill
3.	<b>Computer Organization and Architecture</b> By William Stallings   Prentice Hall of India
4.	<b>Computer Architecture and Organization</b> By John P. Hayes   McGraw Hill