SCHEME OF COURSE WORK

Course Details:

Course Title	:COMPUTER ORGANIZATION						
Course Code	: 15CT1104	L T P C	3	0	0	3	
Program:	: B.Tech.						
Specialization:	: INFORMATION TECHNOLOGY						
Semester	: III						
Prerequisites	: Digital logic design						
Courses to which it is a prerequisite	: MICROPROCESSORS AND MICROCONTROLLERS, EMBEDDED SYSTEMS						

Course Outcomes (COs):

1	Discuss basic structure and organization of computers.
2	Explain register transfer micro operations.
3	Apply fixed and floating point arithmetic algorithms.
4	Discuss memory and input/output organizations.
5	Explain pipeline and vector processing.

Program Outcomes

A graduate of Information Technology Engineering will be able to

PO1: Apply the knowledge of mathematics, science, engineering fundamentals and principles of Information Technology to solve problems in different domains.

PO2: Analyze a problem, identify and formulate the computing requirements appropriate to its solution.

PO3: Design and develop software components, patterns, processes, Frameworks and applications that meet specifications within the realistic constraints including societal, legal and economic to serve the needs of the society

PO4: Design and conduct experiments, as well as analyze and interpret data

PO5: Use appropriate techniques and tools to solve engineering problems.

PO6: Understand the impact of Information technology on environment and the evolution and importance of green computing.

PO7: Analyze the local and global impact of computing on individual as well as on society and incorporate the results in to engineering practice.

PO8: Demonstrate professional ethical practices and social responsibilities in global and societal contexts.

PO9: Function effectively as an individual, and as a member or leader in diverse and multidisciplinary teams.

PO10: Communicate effectively with the engineering community and with society at large.

PO11: Understand engineering and management principles and apply these to one's own work, as a member and Leader in a team, to manage projects.

PO12: Recognize the need for updating the knowledge in the chosen field and imbibing learning to learn skills.

Course Outcome versus **Program Outcomes:**

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2			2								2	1	
CO2	3	3		2	3								2	1	
CO3	3	3	3	3	3								2	1	
CO4	3	3	3	2	3								2	1	
CO5	3	3	3	3	2								2	1	

S - Strongly correlated, *M - Moderately* correlated, *Blank - No correlation*

AssessmentMethods:	Assignment / Quiz / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Computer Components, Computer Function, Bus Interconnection, Processor Organization, Register Organization**.**	CO-1	1. Describe the functionalities of computer components? 2. Discuss Processor and Register organization.	▫ Lecture ▫ Demonstration	Assignment 1 /Quiz1 /Test1 (Week 7-8)
2	Instruction codes, Computer instructions, Memory reference instructions, Instruction Cycle.	CO-1	1. Classify Computer instructions. 2. Draw the functionality diagram of Instruction cycle.	▫ Lecture ▫ Demonstration	Assignment 1 /Quiz1 /Test1 (Week 7-8)
3	Stack organization, instruction formats, addressing modes, data transfer and manipulation, program control, RISC.	CO-1	1. Convert the following infix expression into zero/ one/ two/ three address formats. 2.Differentiate between CISC & RISC	▫ Lecture ▫ Problem solving	Assignment 1 /Quiz1 /Test1 (Week 7-8)
4	Register transfer language, Register transfer, Bus and Memory transfers, Arithmetic Micro operations,	CO-2	1. Represent Register, Bus and memory transfer using RTL Notation and their corresponding timing diagrams. 2. Draw the Combinational Circuit of Full Adder/Subtractor	▫ Lecture ▫ Demonstration	Assignment 1 /Quiz1 /Test1 (Week 7-8)
5	Logic Micro operations, Shift Micro operations, Arithmetic Logic Shift Unit.	CO-2	1. List Logic Micro operations. 2.List Shift Micro operations	▫ Lecture Demonstration	Assignment 1 /Quiz1 /Test1 (Week 7-8)
6	Control Memory, Address Sequencing, Micro Program examples, Design of control unit,	CO-2	1. Explain branching instructions. 2. Design the circuit diagram of control unit.	▫ Lecture Demonstration	Assignment 1 /Quiz1 /Test1 (Week 7-8)
7	Data representation- Fixed point representation, Floating point representation, Addition and Subtraction,	CO-3	1.Represent the various forms of data representation with examples 2. Perform Addition and subtraction of two numbers by considering sample data.	▫ Lecture Problem solving	Assignment 1 /Quiz1 /Test1 (Week 7-8)
8	Multiplication Algorithms, Division Algorithms,	CO-3	1.Draw the flowchart of Multiplication algorithm 2. Perform multiplication and division of two numbers by considering sample data.	▫ Lecture Problem solving	Assignment 1 /Quiz1 /Test1 (Week 7-8)

9		MID TEST – 1				
10	Floating-point Representations, Floating-point Arithmetic Operations,	CO-3	1(a).Express 32_{10} in IEEE floating point representation 2.perform addition of 2 floating pint numbers.	□ Lecture □ Discussion □ Problem solving	Assignment 2 /Quiz2 /Test2 (Week 15-16)
11	Memory system overview, Memory Hierarchy, Semi-conductor Main Memory, Cache Memory principle, Elements of cache design,	CO-4	1. Explain memory hierarchy. 2. Discuss about cache memory.	□ Lecture □ Discussion	Assignment 2 /Quiz2 /Test2 (Week 15-16)
12	Virtual Memory, Magnetic Disk,	CO-4	1. Explain virtual memory. 2.Explain about any 2 storage devices.	□ Lecture □ Discussion	Assignment 2 /Quiz2 /Test2 (Week 15-16)
13	External Devices, I/O modules, Interrupts, Programmed I/O, Interrupt driven I/O, Direct Memory Access, I/O Channels and Processors, PCI**.**	CO-4	1.Draw the flow diagram of interrupted I/O 2. Explain about DMA.	□ Lecture □ Discussion	Assignment 2 /Quiz2 /Test2 (Week 15-16)
14	Asynchronous Data Transfer, Priority Interrupt, Serial Communication**.**	CO-4	1. Differentiate between synchronous and asynchronous data transfer. 2. Explain serial communication	□ Lecture	Assignment 2 /Quiz2 /Test2 (Week 15-16)
15	Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors. Multiprocessors and Multi computers	CO-5	1.List the advantages of parallel processing 2. Explain vector processing. 3. Differentiate between multiprocessor and multi computer.	□ Lecture	Assignment 2 /Quiz2 /Test2 (Week 15-16)
16	, Characteristics of Multi-processors,Multiple Processor Organizations. Symmetric Multi-Processors, Cache Coherence, Clusters.	CO-5	1.Explain the characteristics of multiprocessor. 2. Explain the taxonomy of parallel processor. 3.Explain About the Cluster	□ Lecture	Assignment 2 /Quiz2 /Test2 (Week 15-16)
17		**Mid-Test 2**				
18		**END EXAMs**				