

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E Semester: 3 Computer Engineering

Subject Code 130704

Subject Name COMPUTER ORGANIZATION AND ARCHITECTURE

Sr.No	Course content
1.	OVERVIEW OF REGISTER TRANSFER AND MICROOPERATIONS: Register Transfer Language, Register transfer, Bus and Memory transfer, Arithmetic Micro-operations, Logic Micro-operations, Shift Microoperations, Arithmetic Logic Shift Unit.
2.	BASIC COMPUTER ORGANIZATION AND DESIGN : Instruction codes, Computer registers, computer instructions, Timing and Control, Instruction cycle, Memory-Reference Instructions, Input-output and interrupt, Complete computer description, Design of Basic computer, design of Accumulator Unit.
3.	PROGRAMMING THE BASIC COMPUTER: Introduction, Machine Language, Assembly Language, the Assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.
4.	MICROPROGRAMMED CONTROL: Control Memory, Address sequencing, Microprogram Example, design of control Unit
5.	CENTRAL PROCESSING UNIT: Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC)
6.	PIPELINE AND VECTOR PROCESSING: Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors
7.	COMPUTER ARITHMETIC: Introduction, Addition and subtraction, Multiplication and Division Algorithms, Floating Point Arithmetic, Decimal Arithmetic Unit and Operations

Reference Books:

1. Computer System Architecture : By M. Morris Mano.
2. Structured Computer Organization : By Tanenbaum
3. Computer Organization : By Stallings.
4. Computer Architecture and Organization : By Hayes.