

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN COMPUTER ENGINEERING

Semester: 4

Subject Name Computer Organization and Architecture

Sr. No.	Course content
1.	REGISTER-TRANSFER AND MICRO-OPERATIONS: 1.1 Register - Transfer-Language 1.2 Register Transfer 1.3 Bus Transfer and Memory Transfer 1.4 Arithmetic Micro-Operations 1.5 Logic micro operations 1.6 Shift Micro operation. 1.7 Arithmetic Logic Shift Unit
2.	BASIC COMPUTER ORGANISATION: 2.1 Instruction Codes 2.2 Computer Registers 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
3.	CENTRAL PROCESSOR ORGANIZATION: 3.1 Introduction 3.2 General Register Organization 3.3 Stack Organization 3.4 Instruction Formats 3.5 Addressing Modes 3.6 Data Transfer and manipulation: 3.7 Program Control 3.8 RISC CISC Characteristics RISC Characteristics

4.	MICROPROGRAMMED CONTROL: 4.1 Control Memory 4.2 Address Sequencing 4.3 Microprogram Example 4.4 Design of Control Unit
5.	PIPELINE AND VECTOR PROCESSING: 5.1 Parallel Processing 5.2 Pipelining 5.3 Arithmetic Pipeline 5.4 Instruction Pipeline 5.5 RISC Pipelining 5.6 Vector Processing
6.	INPUT/OUTPUT ORGANIZATION: 6.1 Input-Output Interface 6.2 Asynchronous Data Transfer Strobe Control Handshaking Asynchronous Serial Transfer 6.3 Modes of Data Transfer 6.4 Input-Output Processor (IOP)
7.	MEMORY ORGANIZATION: 7.1 Memory Hierarchy 7.2 Main Memory and Auxiliary Memory 7.3 Associative Memory 7.4 Cache Memory 7.5 Virtual memory

Reference Books:

- (1) Computer System Architecture – Third Edition By M. Morris Mano , PHI.
- (2) Computer Architecture Behrooz Parhami Oxford