

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA IN INFORMATION TECHNOLOGY

SEMESTER- VI

Subject Name: COMPUTER LOGIC DESIGN

Sr. No.	Subject Content	Hrs.
1	1.0 Register Transfer Logic 1.1 Basic components of Register Transfer Logic 1.2 Interregister Transfer (Bus Transfer and Memory Transfer) 1.3 Arithmetic Microoperations 1.4 Logic Microoperations 1.5 Shift Microoperations (Logic , Arithmetic and circular shift) 1.6 Decimal Data, Floating point Data, Nonnumeric Data	4
2	2.0 Basic Computer design 2.1 Instruction codes and instruction code formats 2.2 Basic computer registers 2.3 Classification of computer instructions 2.4 Hard- wired control & microprogrammed control comparison 2.5 Execution of instruction (Opcode fetch, Memory R/W and I/O R/W) 2.6 Design of a simple computer	6
3	3.0 Processor Logic Design 3.1 Processor and Bus organization 3.2 Accumulator register 3.3 Arithmetic logic unit and its design 3.4 Design of 4 bit adder / subtractor 3.5 Design of accumulator	6
4	4.0 Control Logic Design 4.1 Control organization	8

	4.2 Sequence register and decoder method 4.3 PLA control 4.4 Microprogram control 4.5 Design of hard wired control 4.6 Microprogram sequence organization 4.7 Microprogrammed CPU organization	
5	5.0 Computer Design 5.1 System configuration 5.2 Computer Instructions 5.3 Timing and Control 5.4 Design of control (Hard wired control and PLA control) 5.5 Microprogram control for computer 5.6 Computer Console	8
6	6.0 Advance Processors 6.1 Pentium Processor 6.2 Pentium architecture, Pentium Real mode 6.3 Pentium RISC features and super scalar architecture 6.4 Pipelining, instruction, branch prediction 6.5 Pentium Pro processor architecture 6.6 Pentium MMX architecture 6.7 Core- 2 Duo Features 6.8 Concept of RISC and comparison of RISC - CISC	10
	Total	42

NOTE:- Following are the minimum experiences required, but the college can do more experiences if possible.

Laboratory Experiences:

1. To Understand Register Transfer Logic
2. To understand Arithmetic Microoperations
3. To understand Logic Microoperations
4. To understand Shift Microoperations
5. To understand and design of simple computer
6. To design an accumulator
7. To design 4 bit adder
8. To design 4 bit subtractor
9. To understand PLA Control
10. To understand microprogrammed CPU organization
11. To understand computer consol
12. To study advanced processors

Reference Books:

1. Digital Logic and Computer Design By Morris Mano PHI
2. Computer System Architecture - By M. Morris Mano , PHI.
2. Computer Organization -By Carl Hamacher , McGraw Hill
3. The Intel Microprocessors (Eight Editions): Barry B. Brey, Pub: Pearson (Prentice Hall).
4. Advance Microprocessor - Deniel Tabak, TMH.