

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Electrical & Electronics Engineering

Subject Name: **Advanced Microprocessors**

Subject Code: **160805**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	2	5	70	30	50

Sr. No	Course Content	Total Hrs.
1.	Evolution of Microprocessors: 8-bit and 16-bit microprocessors, Intel, Zilog and Motorola processors.	2
2.	Architecture of a 16-bit Microprocessor: Intel 8086 and 8088 processor, concept of pipelining and memory segmentation, logical address, offset address and physical address; Bus Interface Unit (BIU); Execution Unit (EU), segment registers.	3
3.	Operation of 16-bit Microprocessor: Pin configuration of Intel 8086/8088; Minimum and maximum modes of operation; Address bus, data bus and control bus; Clock generator Intel 8284; Memory organization, memory address space.	6
4.	Interfacing: Interfacing concepts, interfacing memory; Input-output techniques, interfacing of I/O devices to the processor.	2
5.	Addressing Modes: Data related addressing modes- register, immediate, direct, register indirect, based relative, indexed relative, and based indexed, branch related addressing modes- intrasegment direct and indirect, intersegment direct and indirect.	3
6.	Instruction Set of 16-Bit Microprocessor: Machine cycles, data transfer, arithmetic, bit manipulation, string, program execution transfer and processor control instructions.	8

7.	Assembler Directives: ASSUME, DB, DD, DQ, DT, DW, DUP, END, EQU, EVEN, ORG, OFFSET, PROC, ENDP, LABEL and PTR.	2
8.	Assembly Language Programming: Macro-assembler, segment definition and models.	4
9.	Interrupt Structure: Interrupt pointer, type numbers, processing of interrupt, internal and external interrupts, interrupt priorities, BIOS routines.	3
10.	Coprocessors and Multiprocessing.	4

Text Books:

1. Hall, D. V., “Microprocessors and Interfacing –Programming and Hardware”, Tata McGraw-Hill Publishing Company Limited.
2. Bahadure, N. B., “Microprocessors: The 8086/8088, 80186/80286, 80386/80486 and the Pentium Family”, Prentice Hall of India Private Limited.

Reference Books:

1. Liu, Yu-Cheng and Gibson, G. A., “Microcomputer Systems: The 8086/8088 Family”, 2nd Ed., Prentice Hall of India Private Limited.
2. Triebel, W. A. and Singh, A., “The 8088 and 8086 Microprocessors, Programming Interfacing, Software, Hardware and Applications”, 4th Ed., Prentice Hall of India Private Limited.
3. Brey, Barry B., “The Intel microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Pro, and Pentium II processors : architecture, programming, and interfacing”, Prentice Hall of India Private Limited.
4. Intel Manual on 16-bit Microprocessor.