COURSE TITLE   : ADVANCED MICROPROCESSORS AND INTERFACING

COURSE CODE   : 5213
COURSE CATEGORY : E
PERIODS/WEEK   : 4
PERIODS/SEMESTER: 52
CREDITS   : 4

TIME SCHEDULE

Module	Topics	Periods
1	Intel 8086 Microprocessor Architecture ,Assembler and Programming	14
2	Interupts and Interfacing	14
3	80286, and 80386 Processors	13
4	Pentium Microprocesors and multicore processors	11
TOTAL		**52**

COURSE OUTCOME

Module	G.O.	On completion of the study of this module the student will be able
1	1	To understand Intel 8086 Microprocesor
	2	To understand Addressing modes, instruction set and programming of 8086
	3	To understand Assembler and Programming
2	1	To understand Interrupts in 8086
	2	To understand Interfacing of 8237 DMA controller
	3	To understand Interfacing of 8254 timer
3	1	To understand the architecture of 80286
	2	To understand the Architecture of 80386
4	1	To understand the Architecture of Pentium
	2	To understand hyper threading technology and multicore processors

On completion of the study the student will be able

MODULE I   TO UNDERSTAND INTEL 8086 MICROPROCESSOR

1.1.0   To understand Intel 8086 microprocessor
   1.1.0   To understand architecture of Intel 8086 microprocessor

1.2.0   To understand Addressing modes of 8086
  1.2.1   To explain addressing modes of 8086
  1.2.2   To explain different instruction types of 8086
  1.2.3   To explain different instructions in 8086
  1.2.4   To Program 8086
  1.2.5   To write simple Programs

1.3.0   To understand Assembler
  1.3.1   To explain Assembler
  1.3.2   To explain Assembler Directive
  1.3.3   To write Programs using assembler directives

MODULE II   INTERUPTS AND INTERFACING

2.1.0   To understand Interrupts in 8086
  2.1.1   To explain Basic Interrupt processing
  2.1.2   To describe Types of interrupts.
  2.1.3   To describe Hardware Interupts
  2.1.4   To explain Software interupts
  2.1.5   To explain Interupt vector table

2.2.0   To understand   Interfacing of 8237 DMA controller
  2.2.1   To explain basic DMA operation
  2.2.2   To explain   BASIC DMA terminology
  2.2.3   To describe DMA on the 8086 Microprocessor
  2.2.4   To list Features of Dma controller
  2.2.5   To explain 8237 pin details
  2.2.6   To explain 8237 registers
  2.2.7   To describe 8237 Software commands
  2.2.8   To explain block diagram block diagram 8237 DMA controller

2.3.0   To understand   Interfacing of 8254 timer
  2.3.1   To explain block diagram of 8254 timer
  2.3.2   To explain 8254 pin details

MODULE III   80286 AND 80386 PROCESSORS

3.1.0   To Understand the architecture of 80286
  3.1.1   To explain Operating modes of 80286
  3.1.2   To describeSpecial function register of 80286
  3.1.3   To explain Flag register of 80286
  3.1.4   To Describe Real mode memory addressing
  3.1.5   To explain Protected mode memory addressing

3.2.0   To understand the Architecture of 80386
3.2.1   To list the key features of Intel 80386
3.2.2   To explain the internal architecture of 80386
3.2.3   To describe the operating modes of 80386
3.2.4   To describe paging mechanism in 80386
3.2.5   To explain address translation in PVAM (non paged and paged modes)
3.2.6   To Compare 80286,80386 and 80486

MODULE IV   PENTIUM AND ARM PROCESSORS

4.1.0   To understand the Architecture of Pentium
4.1.1   To list the main features of Pentium processor
4.1.2   To explain the internal architecture of Pentium processor
4.1.3   To explain superscalar architecture-
4.1.4   To explain data and instruction
4.1.5   To list the operating modes of Pentium processor
4.1.6   To list the main features of Pentium-Pro processor

4.2.0   To understand hyper threading technology and multicore processors
4.2.1   To describe the concept of hyper threading technology
4.2.2   To define core
4.2.3   To identify the limitations of single core processor
4.2.4   To state the concept of multi core processing
4.2.5   To distinguish between homogeneous and heterogeneous multicore processors
4.2.6   To differentiate single core and multicore processors with general block diagrams
4.2.7   To list the advantages of multicore technology
4.2.8   To state the major issues in multicore processing
4.2.9   To list the features of ARM processor

CONTENT DETAILS

MODULE I

Review the architecture of 8086 – addressing modes with examples-instruction types-instructions-simple programs-assembler-assembler-assembler diectives-simple program examples using assembler directives

MODULE II

Basic interrupt processing-– hardware interrupts-software interrupts interrupt vector table -Interfacing the 8086 with the following chips:, 8237 DMA controller,8254 basic DMA operation-BASIC DMA terminology-Features of Dma controller-   8237   pin   details-8237   registers- 8237   Software commands-block diagram 8237-block diagram of 8254 timer-   8254 pin details

MODULE III

architecture of 80286-Operating modes of 80286-Special function register of 80286Flag register of 80286-Real mode memory addressing-Protected mode memory addressingthe Architecture of 80386-key features of Intel 80386-   internal architecture of 80386   -the operating modes of 80386- paging mechanism in 80386-address translation in PVAM (non paged and paged modes)

MODULE IV

Architecture of Pentium - main features of Pentium processor-superscalar architecture-data and instruction-operating modes of Pentium processor-   main features of Pentium-Pro processor-the concept of hyper threading technology- define core-the limitations of single core processor-concept of multi core processing-distinguish between homogeneous and heterogeneous multi core processors - differentiate single core and multicore processors with general block diagrams- advantages of multicore technology-major issues in multicore processing-features of **ARM** processor

REFERENCES

1. Barry B. Brey -The Intel Microprocessors - 8th edn. PEARSON INDIA
2. Lyla B.Das -The x86 Microprocessors - PEARSON INDIAearson **Education; First edition (2010)**
3. Douglas V. Hall -Microprocessors and Interfacing – TMH
4. G.T. Manohar - Advanced Microprocessors –PEARSON INDIA
5. Yu Cheng Liu and Glen A Gibson - Microcomputer Systems: The 8086/8088 Family – PHI
6. A Nagoor Kani - Microprocessor 8086 Programming and Interfacing - RBA Publications
7. Furber - Arm System-On-Chip Architecture- Pearson education