COURSE TITLE   : ADVANCED MICROPROCESSORS
COURSE CODE   : 6041
COURSE CATEGORY   : A
PERIODS/WEEK   : 5
PERIODS/SEMESTER   : 75/6
CREDITS   : 5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Architecture of Intel 8086.	19
2	Programming of 8086 & Interrupt Processing.	19
3	Intel 80386 and Pentium.	19
4	Introduction to Multicore Processors.	18
	Total	**75**

Course General Outcome :

Module	GO	On completion of the study of this course the students will be able :
1	1	To understand the architecture of Intel 8086.
2	2	To understand interrupt processing in 8086.
	3	To understand programming of 8086.
3	4	To understand the architecture of 80386.
	5	To understand the architecture of Pentium.
4	6	To understand hyper threading technology and multicore processors.

GO - General Outcome

On the completion of the study the student will be able :

MODULE I   ARCHITECTURE OF INTEL 8086

1.1.0   To understand the Architecture of Intel 8086.

   1.1.1   To list the main features of Intel 8086.

   1.1.2   To explain the internal architecture of Intel 8086.

1.1.3   To explain memory segmentation in 8086.

1.1.4   To explain physical address generation in 8086.

1.1.5   To describe the register set of 8086.

1.1.6   To illustrate the Flag register in 8086.

1.1.7   To describe the pin functions of 8086.

1.1.8   To explain the minimum mode and maximum mode configurations of 8086.

MODULE II   PROGRAMMING OF 8086 AND INTERRUPT PROCESSING

2.1.0   To understand Interrupt Processing in 8086.

2.1.1   To state the sources of interrupts in 8086.

2.1.2   To explain interrupt response in 8086.

2.1.3   To illustrate interrupt vector table.

2.1.4   To explain the types of interrupts in 8086.

2.2.0   To understand Programming of 8086

2.2.1   To define addressing mode.

2.2.2   To explain the data addressing modes of 8086.

2.2.3   To classify 8086 instructions.

2.2.4   To describe the instructions of 8086.

2.2.5   To define assembler.

2.2.6   To define assembler directives.

2.2.7   To describe the commonly used assembler directives.

2.2.8   To write simple assembly language programs using assembler directives.

MODULE III   INTEL 80386 AND PENTIUM

3.1.0   To understand the Architecture of 80386.

3.1.1   To list the key features of Intel 80386.

3.1.2   To explain the internal architecture of 80386.

3.1.3   To explain the operating modes of 80386.

3.1.4   To describe paging mechanism in 80386.

3.1.5   To explain address translation in PVAM (non paged and paged modes).

3.2.0   To understand the Architecture of Pentium.

3.2.1   To list the main features of Pentium processor.

3.2.2   To explain the internal architecture of Pentium processor.

3.2.3   To list the operating modes of Pentium processor.

3.2.4   To list the main features of Pentium-Pro processor.

MODULE IV   INTRODUCTION TO MULTICORE PROCESSORS

4.1.0   To understand hyper threading technology and multicore processors.

4.1.1   To describe the concept of hyper threading technology.

4.1.2   To define core.

4.1.3   To identify the limitations of single core processor.

4.1.4   To state the concept of multi core processing.

4.1.5   To distinguish between homogeneous and heterogeneous multicore processors.

4.1.6   To differentiate single core and multicore processors with general block diagrams.

4.1.7   To list the advantages of multicore technology.

4.1.8   To state the major issues in multicore processing.

4.1.9   To explain the internal architecture of Intel Core2 Duo.

4.1.10   To list the important technological features of IA processors.

4.1.11   To differentiate between Core i3, i5 and i7 processors.

COURSE CONTENTS

MODULE I   Architecture of 8086

Features of Intel 8086 - Internal architecture of Intel 8086 - Memory segmentation - Physical address generation - Register set of 8086 - Flag register - Pin functions - Minimum mode and maximum mode configurations.

MODULE II   Programming of 8086 and interrupt processing

Sources of interrupts in 8086 - interrupt response - interrupt vector table - types of interrupts - addressing mode - data addressing modes of 8086 - classification of 8086 instructions - instructions of 8086 (description only) - assembler - assembler directives - commonly used assembler directives (ASM 86) - simple assembly language programs.

MODULE III   Intel 80386 and Pentium

Key features of Intel 80386 - internal architecture of 80386 - operating modes - paging mechanism - address translation in PVAM (non paged and paged modes) - features of Pentium processor - internal architecture of Pentium processor - list of operating modes - features of Pentium-Pro processor.

MODULE IV   Introduction to multicore processors

Hyper threading technology - define core - limitations of single core processor - concept of multi core processing - advantages - homogeneous and heterogeneous multicore processors - single core and multicore processors comparison - major issues in multicore processing - internal architecture of Intel Core2 Duo (Simple block diagram only) - important technological features of IA processors - comparison of Core i3, i5 and i7 processors.

Text Books

1. Microprocessors and Interfacing - Douglas V Hall – TMH.

2. The x86 Microprocessors - Second Edition - Lyla B Das – Pearson.

3. Microcomputer Systems: The 8086/8088 Family - Yu Cheng Liu and Glen A Gibson – PHI.

4. Microprocessor 8086 Programming & Interfacing - A Nagoor Kani - RBA Publications.