SRM UNIVERSITY
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF CSE
COURSE PLAN

Course Code : **15CS205J**
Course Title : **MICROPROCESSORS AND MICROCONTROLLERS**
Semester : **V**
Course Time : **JUL 2017 – DEC 2017**

Session Details

SECTION	DAY ORDER	PERIOD	TIMINGS
Group - I	2	6	12.30 – 1.20
	2	7	1.25 – 2.15
	4	8	2.20 – 3.10
	5	4	10.40 – 11.30
Group - II	2	1	8.00 – 8.50
	2	2	8.50 – 9.40
	4	3	9.45 – 10.35
	5	9	3.15 – 4.05

FACULTY DETAILS

Group	Name	OFFICE	Mail id
I	Mr.S.JAGADEESAN	TP – 709B	jagadeesan.s@ktr.srmuniv.ac.in
I I	Mr.S.JAGADEESAN	TP – 709B	jagadeesan.s@ktr.srmuniv.ac.in

TEXT BOOK

1. Barry B. Brey**, "**THE INTEL Microprocessors-Architecture, Programming and Interfacing**"**, 8th Edition, Pearson, 2012.(Units I-IV)
2. A.K.Ray and K.M. Bhurchandi, "Advanced Microprocessor and Peripherals" Tata McGraw Hill, 3rd Edition, 2013(Unit-5).

REFERENCES

3. N.Senthilkumar, M.Saravanan, S,Jeevanathan, "Microprocessors and Microcontrollers", Oxford University Press, 2011.
4. Kenneth J Ayala, "The 8086 Microprocessor: Programming and Interfacing the PC", Cengage Learning, Reprint 2014.
5. Kenneth J Ayala, "The 8051 Microcontroller", 3rd edition, Cengage Learning, Reprint 2014.
6. Muhammed Ali Mazidi, Janice GillispleMaidi, Rolin.D. McKinlay, " The 8051 Microcontroller and Embedded Systems, Using Assembly and C", Second edition, Pearson Prentice Hall, 2015.

Web resources

1. **www.emu8086.com**
2. **www.cpu-world.com**
3. **www.hobbyprojects.com**

Pre-requisite: 15CS202 (or) 15IT212J

Objectives:

1. To learn the basics of 8086 Microprocessor to Pentium-core Microprocessor and their functions.
2. To understand and implement the 8086 family Assembly Language Programming.
3. To explore the I/O interfacing and advanced Microprocessors.
4. Expose to the functional architecture of 8051 and its basic programming using C.

Assessment Details:

Cycle test I : 15
Cycle test II : 25
Surprise Test : 05
Quiz : 05

Test Schedule

S.No	DATE	TEST	TOPICS	DURATION
1	As per Calendar	Cycle Test - I	Unit I & II	2 periods
2	As per Calendar	Cycle Test - II	Unit III, IV & V	3 Hrs

Outcomes:

Students who have successfully completed this course will have full understanding of the following concepts.

To learn about

- Microprocessor 8086 Architecture & Instructions.
- Programming Concepts Using Assembly Language with C/C++.
- Design aspects of I/O Interface & Advanced Microprocessors.
- Architecture And Programming 8051.

Detailed Session Plan:

UNIT-1 INTRODUCTION TO MICROPROCESSOR AND FAMILY

Introduction –Microprocessors and Microcontrollers-its computational functionality and importance - overview of syllabus - 8086 architecture and Historical background - The Microprocessor–Based Personal Computer Systems - Internal Microprocessor Architecture - Real mode memory Addressing–Protected mode Memory Addressing.

Session No.	Topics to be covered	Contact hours	Ref	Teaching Method	Testing Method
1	Introduction –Microprocessors and Microcontrollers-its computational functionality and importance - overview of syllabus	1	1-5	BB/PP	Discussion Quiz
2	8086 architecture & Historical background	2	1,2	BB/PP	Quiz / Assignment
3	The Microprocessor–Based Personal Computer Systems	1	1	BB/PP	Quiz
4	Internal Microprocessor Architecture	2	1	BB/PP	Quiz
5	Real mode memory Addressing–Protected mode Memory Addressing	2	1	BB/PP	Discussion Objective type test

UNIT–II 8086 Family Assembly Language Programming

Machine language instruction format-Addressing modes-Data addressing - Program memory and stack addressing modes - Instruction Set: Data Movement Instructions - Arithmetic and Logic Instructions - Program control Instructions - Assembler Directives of 8086.

6.	Machine language instruction format-Addressing modes-Data addressing	1	1,2	BB/PP	Group discussion Quiz
7.	Program memory and stack addressing modes	2	1	BB/PP	Quiz
8.	Instruction Set: Data Movement Instructions	2	1	BB/PP	Quiz
9.	Arithmetic and Logic Instructions	2	1	BB/PP	Assignment/ practical
10.	Program control Instructions	2	1	BB/PP	Assignment/ practical
11.	Assembler Directives of 8086	1	1	BB/PP	Quiz

UNIT–III PROGRAMMING CONCEPTS

Using Assembly Language with C/C++ for 16-Bit DOS Applications and 32-Bit Applications - Modular Programming - Using the Keyboard and Video Display - Data Conversions–Example Programs: Binary to ASCII- ASCII to Binary.					
12.	Using Assembly Language with C/C++ for 16-Bit DOS Applications and 32-Bit Applications	4	1	BB/PP	Quiz
13.	Modular Programming	2	1	BB/PP	Assignment/ practical
14.	Using the Keyboard and Video Display	2	1	BB/PP	Assignment/ practical
15.	Data Conversions–Example Programs: Binary to ASCII- ASCII to Binary	2	1	BB/PP	Assignment/ practical
UNIT–IV I/O INTERFACE & ADVANCED MICROPROCESSORS Introduction to I/O Interface - Programmable Peripheral Interface architecture- modes - Basic DMA Operations- 8237 DMA Controller architecture-software commands - Disk Memory Systems - Introduction to Pentium - Pentium Pro Microprocessor- Pentium II- Pentium III- Pentium-IV & Core2.					
16.	Introduction to I/O Interface	1	1	BB/PP	Group discussion Quiz
17.	Programmable Peripheral Interface architecture-modes	2	1	BB/PP	Quiz
18.	Basic DMA Operations- 8237 DMA Controller architecture--software commands	2	1,2	BB/PP	Quiz
19.	Disk Memory Systems	1	1	BB/PP	Quiz
20.	Introduction to Pentium - Pentium Pro Microprocessor- Pentium II- Pentium III-Pentium-IV & Core2	3	1	BB/PP	Assignment/ practical
UNIT–V ARCHITECTURE AND PROGRAMMING 8051 Architecture of 8051- Signal Descriptions-Register Set-Program Status Word - Memory and I/O Addressing-Addressing modes- Instruction set - Timer/Counter-Serial-Interrupt - Basic Programming.					
21.	Architecture of 8051- Signal Descriptions-Register Set-Program Status Word	2	2,3,5	BB/PP	Group discussion

22.	Memory and I/O Addressing-Addressing modes- Instruction set	2	2,3,5	BB/PP	Assignment/ practical
23.	Timer/Counter-Serial-Interrupt	2	2,3,5	BB/PP	Assignment/ practical
24.	Basic Programming	2	2,6	BB/PP	Assignment/ practical

BB – Black Board, PP – Power Point

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