SRI VENKATESWARA COLLEGE OF ENGINEERING

COURSE DELIVERY PLAN - THEORY

Department of Computer Science & Engineering / Information Technology	LP: EC 16504
B.E/B.Tech/M.E/M.Tech : **B.Tech - IT** Regulation: **2016**	Rev. No: **00**
PG Specialisation : -	Date: **18/12/2017**
Sub. Code / Sub. Name : **EC16504 – MICROPROCESSOR AND MICROCONTROLLER**	
Unit : **I**	

Unit Syllabus: THE 8086 MICROPROCESSOR

Introduction to 8086 – Microprocessor architecture – Addressing modes - Instruction set and assembler directives – Assembly language programming – Modular Programming - Linking and Relocation - Stacks - Procedures – Macros – Interrupts and interrupt service routines – Byte and String Manipulation.

Objective: This unit enables to study the architecture and instruction set of 8086 and to understand interrupt process and to write assembly language programs.

Session No *	Topics to be covered	Ref	Teaching Aids
1.	Introduction to 8086	1- Ch.1 ; Pg.1-24 , 3- Ch. 2 ; Pg.23-27, 4-Ch. 1 ; Pg.1-2.	BB/PPT
2.	Microprocessor architecture	1-Ch. 2 ; Pg.25-34 3-Ch.2 ; Pg.28-32, 4-Ch. 1 ; Pg.3-8.	BB/PPT
3.	Addressing modes	1-Ch. 2 ; Pg.35-38 , 3-Ch. 2 ; Pg. 34-35 , 4-Ch. 2 ; Pg.41-45.	BB/PPT
4.	Instruction set and assembler directives	1-Ch. 3 ; Pg.53-140 . 3-Ch.3; Pg.41-59 , 3-Ch.6; Pg.131-162 . 4-Ch. 2 ; Pg.38-40,74-81.	BB/PPT
5.	Assembly language programming	1-Ch. 3 ; Pg.58-134, 3-Ch.6 ; Pg.131-162, 4-Ch.3 ; Pg. 84-128.	BB/PPT
6.	Modular Programming - Linking and Relocation	1-Ch. 4 ; Pg.141-150, 3-Ch.4 ; Pg.71-93.	BB/PPT
7.	Stacks - Procedures – Macros	1-Ch. 4 ; Pg.151-168 , 174-182, 3-Ch. 5 ; Pg. 99-129, 4-Ch.4 ; Pg. 131-137,145-154.	BB/PPT
8.	Interrupts and interrupt service routines	1-Ch. 4 ; Pg.169 -173, 3-Ch. 8 ; Pg.207-240, 4-Ch. 4 ; Pg.138-144.	BB/PPT
9.	Byte and String Manipulation	1-Ch. 5 ; Pg.207-226, 3-Ch. 5 ; Pg. 95-99.	BB/PPT
10.	Summary & Tutorial		

Content beyond syllabus covered(if any):

Course Outcome 1:

The students will be able to design and implement programs on 8086 microprocessor by understanding its architecture , instruction set and interrupt process.

* Session duration: 50 minutes

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COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: **EC16504 – MICROPROCESSOR AND MICROCONTROLLER**

Unit : II

Unit Syllabus : 8086 SYSTEM BUS STRUCTURE

8086 signals – Basic configurations – System bus timing – System design using 8086 – IO programming – Introduction to Multiprogramming – System Bus Structure - Multiprocessor configurations – Coprocessor, Closely coupled and loosely Coupled configurations – Introduction to advanced processors.

Objective: This unit gives an overview to design and understand the high end multiprocessor configurations and system bus structure of 8086.

Session No *	Topics to be covered	Ref	Teaching Aids
11.	8086 signals – Basic configurations	1-Ch. 8 ; Pg.310-324, 4-Ch. 1 ; Pg.21-27.	BB/PPT
12.	System bus timing –System design using 8086	1-Ch.8 ; Pg.324-329, 4-Ch. 1; Pg.28-35.	BB/PPT
13.	IO programming	1-Ch. 6 ; Pg.229-267, 4-Ch. 8 ; Pg.420-428.	BB/PPT
14.	Introduction to Multiprogramming	1-Ch. 7 ; Pg.272-305.	BB/PPT
15.	System Bus Structure	1-Ch. 8 ; Pg.308-342, 4-Ch. 8; Pg.423-427	BB/PPT
16.	Multiprocessor configurations – Coprocessor	1-Ch.11 ; Pg.450-460, 3-Ch. 11 ; Pg.365-379, 4-Ch.8 ; Pg.393-422.	BB/PPT
17.	Closely Coupled configurations	1-Ch.11 ; Pg.460-463, 4-Ch. 8 ; Pg.428-429	BB/PPT
18.	Loosely Coupled configurations	1-Ch.11 ; Pg.463-477, 4-Ch. 8 ; Pg.428-429	BB/PPT
19.	Introduction to advanced processors	1-Ch.11 ; Pg.477-516 4-Ch.12 ; Pg.556-584	BB/PPT
20.	Summary & Tutorial		

***Content beyond syllabus covered*(if any):**

Course Outcome 2:

The students will be able to understand the system bus structure of 8086 and design of multiprocessor configurations

* Session duration: 50 mins

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Sub. Code / Sub. Name: **EC16504 – MICROPROCESSOR AND MICROCONTROLLER**

Unit : **III**

Unit Syllabus : I/O INTERFACING

Memory Interfacing and I/O interfacing - Parallel communication interface – Serial communication interface – D/A and A/D Interface - Timer – Keyboard /display controller – Interrupt controller – DMA controller – Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.

Objective: This unit enables to understand various interfacing concepts and its circuits, necessary for the various applications using 8086 microprocessor.

Session No *	Topics to be covered	Ref	Teaching Aids
21.	Memory Interfacing and I/O interfacing	4-Ch. 5 ; Pg.158-183.	BB/PPT
22.	Parallel communication interface	1-Ch.9 ; Pg.369-374, 3-Ch. 9 ; Pg.245-250, 4-Ch.5; Pg.184-211.	BB/PPT
23.	Serial communication interface	1-Ch. 9 ; Pg.349-369, 3-Ch. 14 ; Pg.487-493, 4-Ch.6 ; Pg.278-289.	BB/PPT
24.	D/A and A/D Interface	1-Ch.9 ; Pg.374-377, 3-Ch. 10 ; Pg.301-307, 4-Ch.5; Pg.212-227.	BB/PPT
25.	Timer – Keyboard /display controller	1-Ch. 9 ; Pg.378-395, 3-Ch. 8; Pg.221-232, 3-Ch. 9 ; Pg.260-277, 4-Ch.6 ; Pg.235-248,266-277.	BB/PPT
26.	Interrupt controller	1-Ch. 8; Pg.329-338, 3-Ch.8; Pg.207-221,232-242, 4-Ch.6 ; Pg.249-265.	BB/PPT
27.	DMA controller	1-Ch.9 ; Pg.395-402, 3-Ch.11; Pg.348-353 , 4-Ch.7; Pg. 294-317.	BB/PPT
28.	Programming and applications Case studies: Traffic Light control LED display , LCD display	3-Ch. 9; Pg.267-268,276-277.	BB/PPT
29.	Keyboard display interface and Alarm Controller	3-Ch. 13; Pg.435-462.	BB/PPT
30.	Summary & Tutorial		

Content beyond syllabus covered(if any):

Course Outcome 3:

The student will be able to design I/O and Memory interfacing units.

* Session duration: 50 mins

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COURSE DELIVERY PLAN - THEORY

Sub. Code / Sub. Name: **EC16504 – MICROPROCESSOR AND MICROCONTROLLER**

Unit : **IV**

Unit Syllabus : MICROCONTROLLER

Architecture of 8051 – Special Function Registers(SFRs) - I/O Pins Ports and Circuits - Instruction set - Addressing modes - Assembly language programming.

Objective: This unit introduces the design of 8051 microcontroller and its various instruction sets and addressing modes.

Session No *	Topics to be covered	Ref	Teaching Aids
31.	Architecture of 8051	2-Ch. 1 ; Pg.19-26, 4-Ch. 17 ; Pg. 649-651, 5-Ch. 3 ; Pg. 54-61.	BB/PPT
32.	Special Function Registers(SFRs)	2-Ch. 2 ; Pg.40-49, 4-Ch.17 ; Pg.654-658. 5-Ch.3 ; Pg.60-66.	BB/PPT
33.	I/O Pins Ports and Circuits	2-Ch 4 ; Pg.75-85, 4-Ch.17 ; Pg. 653, 5-Ch. 3 ; Pg.66-69.	BB/PPT
34.	Instruction set	2-Ch.3 ; Pg.55-71, 4-Appendix A ; Pg.682-690, 5-Ch.6,7 ; Pg.138-164.	BB/PPT
35.	Instruction set	2-Ch. 6 ; Pg.115-146, 4-Appendix A ; Pg.682-690, 5-Ch. 8 ; Pg.169-185.	BB/PPT
36.	Addressing modes	2-Ch.5 ; Pg.89-110, 4-Ch. 17 ; Pg.662-665, 5-Ch. 5 ; Pg.121-130.	BB/PPT
37.	Assembly language programming	2-Ch.2 ; Pg.30-35, 5-Ch. 6 ; Pg.138-145.	BB/PPT
38.	Assembly language programming	2-Ch. 6; Pg.115-135, 5-Ch. 7 ; Pg.152-164.	BB/PPT
39.	Assembly language programming	2-Ch. 6; Pg.135-146, 5-Ch. 8 ; Pg.169-185.	BB/PPT
40.	Summary & Tutorial		

Content beyond syllabus covered(if any):

Course Outcome 4:

The student will be able to understand the design and implement programs on 8051 microcontroller.

* Session duration: 50 mins

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Sub. Code / Sub. Name: **EC16504 – MICROPROCESSOR AND MICROCONTROLLER**

Unit : **V**

Unit Syllabus : INTERFACING MICROCONTROLLER

Programming 8051 Timers - Serial Port Programming - Interrupts Programming – LCD & Keyboard Interfacing - ADC, DAC & Sensor Interfacing - External Memory Interface- Stepper Motor and Waveform generation.

Objective: This unit enables to impart knowledge about interfacing 8051 microcontroller.

Session No *	Topics to be covered	Ref	Teaching Aids
41.	Programming 8051 Timers	2-Ch. 9; Pg.201-222, 5-Ch.11; Pg.287-304.	BB/PPT
42.	Serial Port Programming	2-Ch.10 ; Pg.237-260, 5-Ch. 9 ; Pg. 218-225.	BB/PPT
43.	Interrupts Programming	2-Ch.11 ; Pg.271-290, 4-Ch.17 ; Pg. 661-662.	BB/PPT
44.	LCD & Keyboard Interfacing	2-Ch.12 ; Pg.299-315, 5-Ch. 10 ; Pg.231-259.	BB/PPT
45.	ADC	2-Ch.13 ; Pg.322-342, 5-Ch.10 ; Pg.267-268.	BB/PPT
46.	DAC	2-Ch. 13 ; Pg.344-347, 5-Ch. 10 ; Pg.265-267.	BB/PPT
47.	Sensor Interfacing	2-Ch.13 ; Pg.348-351, 5-Ch.10 ; Pg.260-264.	BB/PPT
48.	External Memory Interface	2-Ch.14 ; Pg.355-381, 4-Ch.17 ; Pg. 658-660, 5-Ch.9 ; Pg.194.	BB/PPT
49.	Stepper Motor and Waveform generation	2-Ch.14 ; Pg.432-438, 4-Ch.17 ; Pg. 667.	BB/PPT
50.	Summary & Tutorial		

***Content beyond syllabus covered*(if any) :** Designing an embedded application using PIC Controller

Course Outcome 5:

The student will be able to design and implement interfacing units with 8051 microcontroller based systems.

* Session duration: 50 mins

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Course Outcome 1: The ability to design and implement programs on 8086 microprocessor.
Course Outcome 2: The ability to establish a communication interface by understanding the system bus structure of 8086 microprocessor.
Course Outcome 3: The ability to design circuits and interface various I/O and memory devices to 8086 microprocessor.
Course Outcome 4: The ability to design and implement 8051 microcontroller based systems.
Course Outcome 5: The ability to design circuits and interface 8051 microcontroller.

	Prepared by	Approved by
Signature		18/12/17
Name	Dr.C.Yaashuwanth Mr.K.Suresh	Dr.V.Vidhya
Designation	Associate Professor/IT Assistant Professsor/IT	HOD/IT I/c
Date	18.12.17	18.12.17
Remarks* :		

The Same lesson plan ~~that~~ will be followed for this Semester

19/12/17

HOD I/c/IT

19/12/17

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