COURSE PLAN

1. Course Title	MICROPROCESSORS & MICROCONTROLLERS	**5. Semester**	V
2. Course Code	ECB 3103	**6. Academic Year**	2015-2016
3. Course Faculty	S.SADHISH PRABHU	**7. Department**	ECE
4. Theory / Practical	THEORY	**8. No. of Credits**	3

9. Course Learning Objectives:

OBJECTIVES:

- ✓ To illustrate the architecture of 8085 and 8086 microprocessors.
- ✓ To introduce the programming and interfacing techniques of 8086 microprocessor.
- ✓ To analyse the basic concepts and programming of 8051 microcontroller
- ✓ To understand the interfacing circuits for various applications of 8051 microcontroller.
- ✓ To introduce the architecture of advanced microprocessors and microcontrollers.

10. Course pre-requisites:

Students should have knowledge on the basic of
- ✓ Digital circuits and
- ✓ Programming languages

11. Schedule of teaching and learning

[As per Annexure 1]

12. Course material and References :

The course material and references are available in the website www.ecb3103.weebly.com.

13. Assessment Scheme :

The following shall be the assessment method for this course.

i) Periodical tests.

Sl.no	Details	Marks
1	**CAT 1** (90 min) : Module 1 & 2	40
2	**CAT 2** (90 min) : Module 3 & 4	40
3	**CAT 3** (90 min) : Module 5 & 6	25

ii)

Sl.no	Details	Marks
1	Assignment on assembly language Programs related to 8086 processor	10
2	Seminars in 8051 microcontroller	10
3	A team project on 8051 microcontroller	25

Sl.no	Details	Marks
1	Internals will be awarded by taking the average of the three assessment including the assignments, seminars and project	50
2	End semester examination	50
	Total	**100**

14. Course outcomes

On completion of this course the student will

CO1 : Describe the architecture of 8085, 8051 and 8086.
CO2 : Illustrate the organization of registers and memory in microprocessors.
CO3 : Differentiate Minimum and Maximum Mode bus cycle.
CO4 : Identify the addressing mode of an instruction.
CO5 : Develop programming skills in assembly language.
CO6 : Explain the need for different interfacing devices.
CO7 : Compare the concepts of CISC and RISC processors.
CO8 : Outline the architecture of ARM processor and PIC microcontroller.

15. Mapping of course outcomes with learning activities and assessments

The learning activities include

LA 1 : Assignments on 8086/8051
LA 2 : Seminars
LA 3 : Group discussion / project on 8051

Course outcomes	Learning activities	Assessments	CAT I %	CAT II %	CAT III %	End sem %
CO1, CO2, CO3, CO4 and CO5	LA 1	CAT 1 and assignment	50	-	-	100
CO4, CO5 and CO6	LA1 and LA2	CAT 2 assignment and seminars	-	50	-	
CO6, CO7 and CO8	LA3	CAT 3 and group discussion / project on 8051	-	-	50	

Date   :
Course faculty:

                                                              Head of the Department

ANNEXURE (1)

Schedule of Teaching and Learning

S.NO	PERIOD	TOPIC	MODE OF DELIVERY	TEACHING AIDS	REFERNCE/ SOURCE
MODULE I ARCHITECTURE OF 8085 AND 8086 MICROPROCESSORS [9]					
1.	3	Introduction to Micro Computers, Microprocessors - 8085 Architecture	Lecture	PPT	T1
2.	3	8086 Microprocessor - Architecture- Register Organization -Memory Organization	Lecture	PPT	R3
3.	2	Minimum Mode bus cycle-Maximum Mode bus cycle-Timing Diagram	Lecture	PPT	R3
4.	1	Interrupts & Service Routine.	Lecture	PPT	R3
MODULE II PROGRAMMING OF 8086 [5]					
5.	1	Addressing modes	Lecture	PPT	T2 ,R3 & R4
6.	2	Instruction set	Lecture	PPT	T2 ,R3 & R4
7.	2	Assembly language Programming	Lecture	PPT	T2 ,R3 & R4
MODULE III INTERFACING WITH 8086 [9]					
8.	1	Memory interfacing	Lecture	PPT	T2 & R3
9.	1	Interfacing with peripheral ICs 8251- serial I/O	Lecture	PPT	T2 & R3
10.	1	8255-parallel I/O	Lecture	PPT	T2 & R3
11.	1	8254-programmable interval timer	Lecture	PPT	T2 & R3
12.	1	8279-Keyboard display controller	Lecture	PPT& CHALK BOARD	T2 & R3
13.	1	8257-DMA	Lecture	PPT& CHALK BOARD	T2 & R3
14.	1	LEDs,	Lecture	PPT	T2 & R3
15.	1	LCDs	Lecture	PPT	T2 & R3
16.	1	ADCs and DACs.	Lecture	PPT	T2 & R3
MODULE IV 8051 MICROCONTROLLER [9]					
17.	3	Architecture of 8051	Lecture	PPT	T3 & R2
18.	3	Special Function Registers(SFRs)- I/O Pins Ports and Circuits	Lecture	PPT	T3 & R2
19.	3	Instruction set -Addressing modes- Assembly language programming	Lecture	PPT& CHALK BOARD	T3 & R2

		MODULE V INTERFACING 8051 MICROCONTROLLER [9]			
20.	1	Programming 8051 Timers	Lecture	PPT	T3 & R2
21.	1	Serial Port Programming	Lecture	PPT	T3 & R2
22.	1	Interrupts Programming	Lecture	PPT	T3 & R2
23.	2	LCD & Keyboard Interfacing	Lecture	PPT	T3 & R2
24.	2	ADC, DAC & Sensor Interfacing	Lecture	PPT& CHALK BOARD	T3 & R2
25.	1	External Memory Interface	Lecture	PPT& CHALK BOARD	T3 & R2
26.	1	Stepper Motor interface	Lecture	PPT& CHALK BOARD	T3 & R2
		MODULE VI ADVANCED MICROPROCESSORS & MICROCONTROLLERS [5]			
27.	2	Advanced Microprocessor Architecture-Pentium	Lecture	PPT& CHALK BOARD	T2,R1&R3
28.	1	Concept of CISC and RISC processors	Lecture	PPT& CHALK BOARD	T2,R1&R3
29.	2	Introduction to ARM processor and PIC microcontroller.	Lecture	PPT& CHALK BOARD	T2,R1&R3

TEXT BOOKS:
1. Ramesh S Gaonkar, "Microprocessor Architecture, Programming and application with 8085", 4th Edition, Penram International Publishing, New Delhi, 2000.
2. A.K. Ray and K.M.Burchandi, "Intel Microprocessors Architecture Programming and Interfacing", 2nd Edition, McGraw Hill International Edition, 2000.
3. Mohammed Ali Mazidi and Janice GillispieMazidi, "The 8051 Microcontroller and Embedded Systems", 2nd Edition, Pearson Education Asia, New Delhi, 2003.

REFERENCES:
1. Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family – Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007.
2. Kenneth J Ayala, "The 8051 Microcontroller Architecture Programming and Application", 2nd Edition, Penram International Publishers (India), New Delhi, 1996.
3. DoughlasV.Hall, "Microprocessors and Interfacing, Programming and Hardware", TMH,2012.
4. M. Rafi Quazzaman, "Microprocessors Theory and Applications: Intel and Motorola", : Prentice Hall of India, Pvt. Ltd., New Delhi, 2003.

<u>**Note:**</u>
T - Text Books
R - Reference Books