COURSE PLAN

1. Course Title	Electronics For Mechanical Systems	**5. Semester**	III - "C & D" Sec
2. Course Code	ECB 2181	**6. Academic Year**	2017-2018
3. Course Faculty	S.SADHISH PRABHU	**7. Department**	Mechanical
4. Theory / Practical	THEORY	**8. No. of Credits**	3

9. Course Learning Objectives:

- ✓ To study the characteristics of semiconductor devices such as diodes transistors and their applications.
- ✓ To study fundamentals of digital logic circuits.
- ✓ To study 8085 microprocessors and its interfacing with other peripheral devices.

10. Course pre-requisites:

Students should have knowledge on

- ✓ Basic of physics pertaining to electronics and semiconductors
- ✓ Basic knowledge of digital number systems.

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.ecb2181.weebly.com.

Assessment Scheme :

The following shall be the assessment method for this course.

i) Continuous Assessment tests.

Sl.no	Details	Marks
1	**CAT 1** (90 min) : Module 3, 4 and 5	35
2	**CAT 2** (90 min) : Module 6,1 and 2	35

ii)

Sl.no	Details	Marks
1	Problems in Module 3 and Module 4	15
2	Class test and Assembly language programs	15
Sl.no	**Details**	**Marks**
1	Internals will be awarded by taking the average of the two assessment including the problems, programs and class test.	50
2	End semester examination	50
	Total	**100**

14. Course outcomes

On completion of this course the student will be able to

CO 1 Identify active and passive devices.
CO 2 Describe the operation of BJT, FET, DIAC, TRIAC, SCR etc…
CO 3 design simple logical circuits based on Boolean algebra and theorems
CO 4 Compare the operation of different Flip flops, registers etc...
CO 5 Differentiate various addressing modes and instruction available in 8085 microprocessor.
CO 6 develop simple assembly language program for interfacing peripherals using 8085 microprocessor

15. Mapping of course outcomes with learning activities and assessments

The learning activities include

LA 1: Problems in Module 3 and Module 4
LA 2: Assembly language programs (ALP) in module 5 and 6
LA 3: Class tests in module 1 and 2

Course outcomes	Learning activities	Assessments	CAT I %	CAT II %	End sem %
CO 3 and CO 4	LA 1	CAT 1 and problems	80	-	100
CO 6	LA 2	CAT 1 and ALP	20		
CO1 and CO 2	LA 3	CAT 2 and Assignment	-	100	

Date :

Course faculty:

Head of the Department

ANNEXURE (vide item 11)
Schedule of Teaching and Learning

S.NO	PERIOD	TOPIC	MODE OF DELIVERY	TEACHING AIDS	REFERNCE/ SOURCE
MODULE III DIGITAL ELECTRONICS					
1.	2	Number systems	Lecture	Chalk Board	R1
2.	2	Binary Arithmetic Operations	Lecture	Chalk Board	R1
3.	1	Boolean Algebra	Lecture	Chalk Board	R1
4.	2	Logic gates	Lecture	Chalk Board	R1
5.	2	Karnaugh map:SOP, POS	Lecture	Chalk Board	R1
MODULE IV COMBINATIONAL AND SEQUENTIAL CIRCUITS					
6.	1	Combinational Circuits: Half and full adders	Lecture	Chalk board	R1
7.	1	Magnitude Comparator	Lecture	PPT	R1
8.	1	Multiplexer/ Demultiplexer - Encoder / decoder	Lecture	PPT &Chalk Board	R1
9.	3	Sequential circuits: Flip Flops: SR, JK, D and T FF-Truth tables and circuits	Lecture	PPT	R1
10.	1	Shift Registers	Lecture	PPT	R1
11.	1	Ripple Counters	Lecture	PPT & Chalk Board	R1
MODULE V 8085 MICROPROCESSOR					
12.	3	Architecture of 8085-Pin configuration	Lecture	PPT	T2
13.	2	Instruction set	Lecture	PPT	T2
14.	2	Addressing modes- Simple programs using arithmetic and logical operations.	Lecture	Chalk Board & PPT	T2

MODULE VI INTERFACING AND APPLICATIONS OF MICROPROCESSOR					
15.	1	Interfacing of Input and Output devices	Lecture	PPT	T2,R3
16.	1	Applications of microprocessor: Temperature control	Lecture	Chalk Board& PPT	T2,R3
17.	1	Applications of microprocessor : Stepper motor control,	Lecture	Chalk Board& PPT	T2,R3
18.	1	Applications of microprocessor : traffic light control	Lecture	PPT	T2
19.	1	Memory Interfacing-memory mapping-I/O Interfacing:	Lecture	PPT	T2,R3
20.	1	I/O mapped I/O and Memory mapped I/O	Lecture	PPT	T2,R3
21.	1	The Intel 8255 PPI	Lecture	PPT	T2,R3
MODULE I SEMICONDUCTORS AND RECTIFIERS					
22.	2	Classification of solids based on energy band theory	Lecture	PPT	T1, R4
23.	1	Intrinsic semiconductors- Extrinsic semiconductors	Lecture	PPT	T1,R4
24.	2	P type and N type-PN junction and its application	Lecture	PPT	T1,R4
25.	1	Zener diode	Lecture	PPT	T1,R4
MODULE II SEMICONDUCTORS AND RECTIFIERS					
26.	3	Bipolar junction transistor- CB, CE, CC configuration and characteristics-	Lecture	PPT	T1,R4
27.	2	Field effect transistor: Configuration and characteristic-	Lecture	PPT	T1,R4
28.	3	SCR, DIAC, TRIAC, UJT- Characteristics and simple applications.	Lecture	PPT	T1,R4

TEXT BOOKS:

T1. Milman and Halkias, "Integrated Electronics", Tata McGraw-Hill publishers,1995.

T2. Ramesh Goankar, "Microprocessor Architecture", Programming and Applications with 8085, Wiley Eastern, 1998.

REFERENCES:

R1. Malvino and Leach, "Digital Principles and Applications", Tata McGraw- Hill,1996]

R2. Mehta V.K, "Principles of Electronics", S. Chand and Company Ltd, 1994

R3. Dougles V.Hall, "Microprocessor and Interfacing", Programming and Hardware, Tata McGraw-Hill, 1999.

R4. Salivahanan S, Suresh Kumar N, Vallavaraj A, "Electronic Devices and Circuits" First Edition, Tata McGraw-Hill,1999.