SR ENGINEERING COLLEGE
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(EC151)MICROPROCESSORS AND INTERFACING

COURSE OBJECTIVES:

Students will be able to.

1. Outline the history of computing devices.
2. Describe the architecture of 8086 microprocessors.
3. Develop programs for microprocessor and microcontrollers
4. Compare microprocessors and microcontrollers
5. Understand 8051 microcontroller concepts, architecture and programming

COURSE OUTCOMES:

At the end of the course, students will develop ability to

1. Define the history of microprocessors
2. Describe the architectures of 8085 and 8086 microprocessors.
3. Draw timing diagram
4. Write programs using 8086 and 8051
5. Distinguish between the different modules of operation of microprocessors.
6. Interface peripherals to 8086 and 8051
7. Evaluate the appropriateness of a memory expansion interface based on the address reference with particular application.
8. Apply the above concepts to real world electrical and electronics problems and applications.

Content	Hrs
Unit - 1	
Chapter No. 1 - 8086 Evaluation of Microprocessors, Over View of 8085 8086 Architecture: Functional Diagram, Register Organization, Addressing modes, Instructions, Functional schematic, Minimum and Maximum mode operations of 8086, 8086 Control signal interfacing, Timing Diagrams. Assembly Language Programming of 8086: Assembly Directives, Macro's, Simple Programs using Assembler,	15.00 hrs
Implementation of FOR Loop, WHILE, REPEAT and IF-THENELSE Features	
Unit - 2	
Chapter No. 2 - I/O and Memory Interface I/O and Memory Interface: 8086 System bus structure, Memory and I/O Interfacing with 8086, 8255 PPI, Various modes of operations and interface of I/O devices to 8086, A/D, D/A Converter Interfacing, need for DMA, 8057 DMA controller	10.00 hrs

Unit – 3	
Chapter No. 3 - Interrupts Interrupts: Interrupts in 8086, Interrupt vector table, dedicated interrupts, Interfacing 8259 (Interrupt Priority Control). Communication Interface: Serial Communication Standards, USART Interfacing RS-232, IEEE-488.	8.00 hrs
Unit - 4	
Chapter No. 4 - Introduction to Micro Controllers Introduction to Micro Controllers: Overview of 8051 Micro Controller, Architecture, I/O ports and Memory Organization, Addressing modes and Instruction set of 8051, Simple Programs using Stack Pointer, Assembly language programming of 8051	8.00 hrs
Unit - 5	
Chapter No. 5 - Interrupts & Communication Interrupt Communication: Interrupts – Timer / Counter and Serial Communication, Programming Timer Interrupts, Programming External H/W interrupts, Programming the serial communication interrupts, Interrupt Priority in the 8051, Programming 8051 Timers, Counters and Programming	9.00 hrs

Name of the Faculty **:Dr.J.Tarun Kumar**
M.Sampath Reddy

Course Number	**:**EC151	**Academic Year**	**:** 2017-18
Program	**:** B.Tech	**Course Name**	**:**MPI
Year/ Semester	**:** III/II	**Branch**	**:** EEE
		Section(s)	**:**A&B

Lesson Schedule

Lecture No. - Portion covered per hour	Planned Delivery Date
1. Evaluation of Microprocessors, Over View of 8085	04-12-2017
2. 8086 Architecture: Functional Diagram Execution and Bus Interface Unit	04-12-2017
3. Register Organization	09-12-2017
4. Addressing modes of 8086	11-12-2017
5. Types of Instructions,Data Transfer,Arethemetic and Logical Instructions	11-12-2017
6. 8086 Instructions: Branch instructions(Conditional and unconditional Branch)	16-12-2017
7. Minimum and Maximum mode operations of 8086	16-12-2017
8. Timing Diagrams	18-12-2017

9. Simple Assembly Language Programming of 8086	18-12-2017
10. Assembler Directives	21-12-2017
11. Simple Programs using Assembler Directives	23-12-2017
12. Procedures and Types of procedures	23-12-2017
13. Recursive Procedures	25-12-2017
14. Recursive rocedure : Factorial of a number	25-12-2017
15. Macros,Differences Between Procedures and Macros	28-12-2017
Unit-II	
16. 8086 System bus structure	28-12-2017
17. Memory Interfacing with 8086	28-12-2017
18. Need For I/O Interfacing	30-12-2017
19. Programable Pheripheral interface 8255	30-12-2017
20. I/O Interfacing Analog to digital conversion	01-01-2018
21. Digital to analog conversion	01-01-2018
22. Stepper Motor Interface	04-01-2018
23. Need For DMA , Data transfer Techniques	06-01-2018
24. 8257 DMA controller	08-01-2018
25. Interfacing 8257 with 8086:simple program on DMA Data transfer	11-01-2018
Unit-III	Planned Delivery Date
26. What is interupt,Interrupt structure of 8086	15-01-2018
27. Interrupt Vector Table,Dedicated Interrupts of 8086	18-01-2018
28. Interrupt driven data transfer ,Need for 8259	20-01-2018
29. 8259 Programable interrupt controller	27-01-2018
30. ICWs and OCWs of 8259	29-01-2018
31. Programing 8259,Interfacing 8259 with 8086	29-01-2018
32. Serial communication standards,8251 USART	01-02-2018
33. Parellel communication standards,IEEE-488 bus	03-02-2018
Unit-IV	
34. Introduction to Micro Controllers	05-02-2018
35. Overview of 8051 Micro Controller	08-02-2018
36. I/O ports of 8051	10-02-2018

37. Memory Organization of 8051 Internal RAM and ROM organization	12-02-2018
38. Addressing Modes Of 8051	15-02-2018
39. 8051 Instruction set	17-02-2018
40. Stack Programing	19-02-2018
41. Assembly language programing involving branch and loop instructions	22-02-2018
Unit-V	
42. Programmable timers and counters	26-02-2018
43. producing delays using times/counters	01-03-2018
44. Interrupt structure of 8051	03-03-2018
45. Interrupt programming	03-03-2018
46. Serial communicaton in 8051	05-03-2018
47. serial communication programming	05-03-2018
48. Interfacing switches and LEds	08-03-2018
49. Keyboard interfacing	12-03-2018
50. Stepper motor Interfacing	17-03-2018
51. LCD Interfacing	19-03-2018

Time Table:

Monday	:	1st & 2nd hrs	Thursday	:	--
Tuesday	:		Friday	:	
Wednesday	:		Saturday	:	1st & 2nd hrs

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(EE110) POWER ELECTRONICS

Course objectives:
Student will be able to:
1. Study the characteristics of SCR,MOSFET & IGBT
2. Control AC to DC voltage using converters
3. Determine design parameters of Chopper circuits
4. Analyze AC-AC Converters for speed control of Machines
5. Apply PWM techniques for Inverters

Course outcomes:
Students will be able to:
1. Suggest appropriate switches for specific applications
2. Design protection circuits for SCR
3. Evaluate performance indices of converters
4. Operate ac-dc three phase converters
5. Design the chopper circuits
6. Perform step up/step down frequency operation using cyclo converters
7. Apply inverters for speed control of induction motors
8. Evaluate the harmonic analysis of Inverters

LESSON PLAN

Name of the Faculty: **Ms.**P.Soumya **Academic Year: 2017-2018**
Course Number: **EE110** **Course Name : PE**
Program: **B.Tech** **Branch : EEE (A)**
Year/ Semester: **III/II**

Sl. No.	Topic of Lecture	Schedule DD/MM/ YYYY
	UNIT-I	
1	Introduction to Power Electronics	05/12/17
2	Thyristor theory of operation	0612/17
3	Static VI Characteristics	07,08/12/17
4	Turn-On methods of SCR	11/12/17
5	Two transistors Analogy	12/12/17
6	Dynamic Characteristics of SCR	13,14/12/17
7	Turn on & Turn off times	15/12/17
8	UJT Firing Circuit	18/12/17
9	Series Connection of SCR's	19/12/17
10	Parallel Connection of SCR's	20/12/17
11	Snubber Circuit details	21/12/17
12	Specifications & Ratings of SCR	22/12/17
13	Ratings of BJT, IGBT	27/12/17

14	Numerical Problems	27/12/17
15	Line Commutation, forced commutation (A,B)	28/12/17
16	Forced Commutation (C, D, E)	29/12/17
17	BJT VI Characteristics	30/12/17
18	Power MOSFET Characteristics	31/01/17
19	Power IGBT, Characteristics	02/01/18
	UNIT-II	
20	Phase Control Techniques	03/01/18
21	Single Phase line Commutated Converters	04/01/18
22	Mid Point connection and Bridge Connection	05/01/18
23	Half Controlled Converter with R. Load	08/01/18
24	Half Controlled Converter with RL load	09/01/18
25	HFC With RLE Load	10/01/18
26	Derivation of Average Load, Voltage & Currents	11/01/18
27	Active & Reactive Power to converter with freewheeling diode	12/01/18
28	Equations Without freewheeling diode	16/01/18
29	Numerical problems	17/01/18
30	Fully controlled converter	18/01/18
31	Mid Point with R Load, Bridge with R Load	19/01/18
32	Bridge Converter with RL Load with-out FWD	22/01/18
33	Bridge Converter with RLE Load	23/01/18
	MID EXAM-I	**24 – 27/01/18**
34	Bridge Converter with freewheeling diode	29/01/18
35	Derivation of Average Load Voltage & Current	30/01/18
36	Line commutated inverters, Active & Reactive Power inputs with and without freewheeling diode	31/01/18
37	Effect of source Inductance	01/02/18
38	Derivation of Load Voltage and current	02/02/18
39	Numerical Problems	05/02/18
40	3-phase line commutated converters	06/02/18
41	3-phase three pulse, six pulse converters	07/02/18
42	Mid Point & Bridge Connection	08/02/18
43	Average Load Voltage with R & RL Loads	09/02/18
44	Effect of source Inductance	12/02/18
45	Dual converter (Single Phase & Three Phase), Problems	14/02/18
	UNIT-III	
46	AC Voltage Controllers, 1-Phase (2 SCR's in Anti parallel)	15/02/18
47	AC Voltage controller with RL Load	16/02/18
48	Modes of Operation of TRIAC	19/02/18
49	TRIAC with R & RL loads	20/02/18
50	Derivation of rms load voltage, current and power factor wave forms	21/02/18
51	Firing circuit, Numerical problems	22/02/18
52	1-phase Mid-point cyclo converter with R, RL Loads	23/02/18
53	Bridge configuration of 1-phase cyclo converter (Principle of operations)	26/02/18

54	Step down wave forms	27/02/18
	UNIT-IV	
55	Chopper Time ratio control	28/02/18
56	Current limit control strategy	01/03/18
57	Step-down chopper, Derivation of load voltage	02/03/18
58	Currents with R, RL &RLE Loads	05/03/18
59	Step-up Chopper-load Voltage expression	06/03/18
60	Jones chopper, Oscillation chopper	07/03/18,08/03/18
61	Morgan's chopper wave forms	09/03/18
62	AC Chopper, Problems	12/03/18
	UNIT-V	
63	1-phase inverter, Basic series Inverter	13/03/18
64	Basic Parallel capacitor inverter, Bridge inverter	14/03/18
65	Simple forced commutation circuit for Bridge inverter	15/03/18
66	MC Murray Inverter	16/03/18
67	MC Murray Bedford Inverter	19/03/18
68	Voltage control techniques for inverter-PWM techniques	20/03/18
69	Numerical problems	21/03/18
	MID EXAM-II	**22 – 24/03/18**

Timings:

Monday	:	4th hr	Thursday	:	5th
Tuesday	:	1st	Friday	:	3rd
Wednesday	:	2nd	Saturday	:	

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(EE111)POWER SYSTEM OPERATION AND CONTROL

COURSE OBJECTIVES:
The students will be able to

1. Draw the characteristics of thermal generators.
2. Develop mathematical model of a speed governing system.
3. Explain the necessity of constant frequency.
4. Analyze load frequency control and economic dispatch control.
5. Elaborate various sources of reactive power.

COURSE OUTCOMES:
At the end of the course, student will have an ability to

1. Mention the role of the characteristics of thermal generators in economic dispatch problem.
2. Calculate optimal loading of thermal generators to meet the power demand.
3. Draw the block diagram model of a speed governing system.
4. Analyze IEEE type –I excitation system.
5. Assess the change in frequency of the system for different load changes.
6. Distinguish controlled and uncontrolled cases of a two area system.
7. Design a compensation scheme for a transmission line.
8. Justify the need of reactive power control.

LESSON PLAN

Name of the Faculty : M. Sai kumar **Academic Year :** 2017-18
Course Number : EE320 **Course Name :** PSOC
Program : B. Tech **Branch :** EEE
Year/ Semester: III/II **Section :** A

S. No.	Topic	Schedule Date
	UNIT-I:	
1	Objective of the course	04.12.2017
2	Characteristics of Thermal Generators	05,06.12.2017
3	Condition for Optimal Operation	08.12.2017
4	Problems on Economic Dispatch by neglecting losses	11-13.12.2017
5	Problems on Unit Limit Violation	15-16.12.2017
6	Condition for Optimal dispatch by considering Losses	18.12.2017
7	B-Coefficients formula Derivation	19.12.2017
8	Flow Chart & Algorithm	20.12.2017
9	Problems on ED Problem	22-23.12.2017
10	Characteristics of Hydel units	27.12.2017
11	Hydroelectric Power Plant models	29.12.2017
12	Scheduling problems	30.12.2017

13	Short term Hydrothermal scheduling	02.01.2018
14	Problems on Hydro thermal scheduling	03.01.2018
	UNIT-II:	
15	First order turbine model	05.01.2018
16	Block diagram representation of steam turbines	06.01.2018
17	Modeling of synchronous machine	08.01.2018
18	Swing equation & State space II order model	09.01.2018
19	Mathematical modeling of speed governing system	10.01.2018
20	Fundamental Characteristic, excitation systems	12,16,17,19.01.2018
21	IEEE Type-I model block diagram representation	20.01.2018
	UNIT –III:	
22	Necessity of constant frequency	22.01.2018
23	Control area concept	23.01.2018
	I- Mid Examination	24-27.1.2018
24	Single area control	29.01.2018
25	Block diagram representation of an isolated Power System	30.01.2018
26	Steady State response	31.01.2018
27	Dynamic response of Un-controlled case	2.02.2018
28	Problems on LFC	3.02.2018
29	LFC of two-area systems	5-6.02.2018
30	Block diagram of Two area system	7,9.02.2018
31	Uncontrolled case	12.02.2018
32	controlled case	14.02.2018
33	Tie-line bias control	16.02.2018
	UNIT –IV:	
34	PI Controller for single area	17,19.02.2018
35	Steady state response	20.02.2018
36	LFC and Economic dispatch control	21,23,24.02.2018
37	LFC of 2 area system	26-28.02.2018
	UNIT –V:	
38	Over view of reactive power control	02.03.2018
39	Compensation in transmission systems	03.03.2018
40	Sources of reactive power	05-06.03.2018
41	Advantages of different compensation equipment	09.03.2018
42	Disadvantages of various compensation equipment	12.03.2018

43	Load Compensation	13.03.2018
44	Specifications of Load compensator	14.03.2018
45	Uncompensated Transmission Lines	16,17,19.03.2018
46	Shunt Compensation	20.03.2018
47	Series Compensation	21.03.2018
48	Revision	27,28,31.03.2018, 2-4.04.2018
	II- Mid Examination	

Time Table:

Monday	:	11.20 - 12:10 pm	Thursday	:	--
Tuesday	:	10.20 - 11:10 am	Friday	:	12:10 - 01:00 pm
Wednesday	:	09:30 - 10:20 am	Saturday	:	10:20 - 11:10 am

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(EE112)SOLAR THERMAL PV SYSTEMS

COURSE OBJECTIVES:
The students will be able to

1. Explain the concepts of solar radiation.
2. Explain the measurement of solar radiation.
3. Discuss the PV power generation.
4. Explain the operation of solar cell and its simulation model.
5. Discuss the various types of solar radiation systems.

COURSE OUTCOMES:
At the end of the course, student will have an ability to

1.Sketch the solar radiation measuring instruments.
2. Evaluate the performance of PV system.
3. Construct the solar thermal radiation system.
4.Analyse the PV system based on F-chart.
5.Estimate the solar energy.
6.Analyse the life cycle analysis of solar system.
7. Economic analysis of solar energy conversion system.
8.Evaluate the carbon credit of solar energy system.

LESSON PLAN

Name of the Faculty: K.Dhanraj **Academic Year :** 2017-18
Course Number : EE112 **Course Name :** STPVS
Program : B.Tech **Branch :** EEE
Year/ Semester: III/II **Section :** A

S.No.	Topic	Schedule Date
	UNIT-I:	
1	Introduction	05.12.2017
2	Nature of Solar Radiation	06.12.2017
3	Global Radiation.	12.12.2017
4	Beam Radiation.	12.12.2017
5	Diffuse Radiation	12.12.2017
6	Hourly, Daily and Seasonal variation of solar Radiation.	13.12.2017
7	Estimation of Solar Radiation	16,19.12.2017
8	Measurement of Solar Radiation	20.12.2017
	UNIT-II:	
9	Types of solar collectors	23,27.12.2017
10	Thermal Analysis of Solar Collectors.	30.12.2017
11	Solar Water Heating Systems (Active and Passive)	2.1.2018
12	Solar Space Heating and Cooling Systems	3.1.2017
13	Solar Industrial Process Heating Systems	06.01.2018
14	Solar Dryers and Desalination Systems	09.01.2018
15	Solar Thermal Power Systems	10.01.2018

	UNIT –III:	
16	Solar cells and panels, performance of solar cell	16.01.2018
17	Estimation of power obtain from solar power	17.01.2018
18	Solar panels PV systems	20.01.2018
19	Components of PV systems, performance of PV systems	23.01.2018
	I-mid examination	24-27.01.2018
20	Applications of PV systems	03.02.2018
21	Concentrating PV systems	06.02.2018
22	PV power plants	07.02.2018
23	Power plant with fuel cells.	14.02.2018
	UNIT –IV:	
24	Design and Modelling of Solar Energy Systems**:**introduction	17.022018
25	F Chart method Systems.	20.022018
26	Design and Modelling of Solar Energy Systems: φ– F Chart method	21.02.2018
27	Utilizability of Solar Energy Systems.	24.02.2018
28	Modelling of Solar Energy Systems.	27.02.2018
29	Simulation of Solar Energy Systems.	28.02.2018
	UNIT –V:	
30	**Economic Analysis of Solar Energy Systems:** Introduction	03.03.2018
31	Economic Analysis of Solar Energy Systems: Life cycle analysis of Solar Energy Systems.	06.03.2018
32	Economic Analysis of Solar Energy Systems: Time Value of Money.	07,13.032018
33	Economic Analysis of Solar Energy Systems: Evaluation of Carbon Credit of Solar Energy Systems.	14,17.03.2018
34	Revision	20.21.03.2018
	II-mid examination	22-24.03.2018

Time Table:

Monday	:	--	Thursday	:	--
Tuesday	:	11.20 - 12:10 pm	Friday	:	--
Wednesday	:	11.20 - 12:10 pm	Saturday	:	12:10 - 1:00 pm

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(EC152) MICROPROCESSORS AND INTERFACING LAB

Year	Semester	Hours / Week			C	Marks		
		L	T	P/D		CIE	SEE	Total
III	II	-	-	3	2	30	70	100

COURSE OBJECTIVES

Students will be able to

1. List the features of 8086 microprocessor and 8051 microcontroller
2. Describe accessing of data using different addressing modes
3. Develop assembly level programs for microprocessor and microcontroller
4. Analyze interfacing of peripheral devices with 8086
5. Test operation of timers/counter, serial/parallel ports, interrupts using 8051

COURSE OUTCOMES

At the end of the course, the student will develop ability to

1. Write assembly level programs on arithmetic operations using various addressing modes
2. Familiarize with the assembly level programming on strings.
3. Apply the concepts of assembly level programming on sorting and code conversions.
4. Design interfacing of various I/O devices to microprocessor
5. Design assembly language programs on 8051 microcontroller.
6. Apply the concept of serial communication of transmission of serial data.
7. Verify the ports, timer, and interrupts operation in 8051 microcontroller
8. Design and implement microcontroller-based embedded system

LESSON PLAN

Name of the Faculty: K.Naveen / Jaspreet kukreja/ Ishita deb/ ch.Harish

Academic Year: 2017-18

Course Number : EC152 **Course Name :** MPI LAB

Program : B.Tech **Branch:** EEE

Year/ Semester : III/II **Section:** A

S No		Schedule Dates
	I.MICROPROCESSOR 8086	
1	Introduction to microprocessor 8086	8/12/2017
2	Demo on 8086 hardware kit	15/12/2017
3	Arithmetic operation In various addressing modes– Multi byte Addition and Substraction, Multiplication and Division – Signed and unsigned Arithmetic operation,ASCII – arithmetic operation	22/12/2017

4	Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion	29/12/2017
5	Length of a string,Move block,Reverse string,String comparision,Inserting,Deleting,Sorting	05/01/2018
6	Average of numbers,Factorial , LCM, GCD, Sum of squares,Sum of cubes	12/01/2018
II.INTERFACING		
1	8255 – PPI: Generation of wave forms Square, Rectangle, Ramp, Step wave, Triangular	19/01/2018
	Internal lab exam -1	02/02/2018
2	Stepper motor in clockwise and anticlockwise direction	09/02/2018
III.MICROCONTROLLER 8051		
1	Arithmetic operations in various addressing modes	16/02/2018
2	Timers in different modes	23/02/2018
3	Serial communication implementation	02/03/2018
4	Revision	09/03/2018
5	Internal lab exam-2	16/03/2018

Timings:

Monday	:		Thursday	:	
Tuesday	:		Friday	:	1.40pm-4.00pm
Wednesday	:		Saturday	:	

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(EE117) INDUCTION MOTORS AND SYNCHRONOUS MACHINES LAB

Year	Semester	Hours / Week			C	Marks		
		L	T	P/D		CIE	SEE	Total
III	II	-	-	3	2	30	70	100

COURSE OBJECTIVES:

Students will be able to

1. Identify various parts of an induction motor
2. Explain starting methods of an induction motor
3. Develop circle diagram of an induction motor to determine the performance
4. Calculate the regulation of an alternator
5. Estimate Xd and Xq of a salient pole synchronous machine

COURSE OUTCOMES:

At the end of the course, students will develop ability to

1. Draw the equivalent circuit of a single phase induction motor
2. Explain testing of an induction motor
3. Execute brake test on three phase induction motor
4. Analyze No-load and blocked rotor tests of a three phase Induction motor
5. Evaluate regulation of a three –phase alternator
6. Construct V and inverted V curves of a three—phase synchronous motor
7. Predict efficiency of a three-phase alternator
8. Select the optimistic method to find the regulation of an alternator

LESSON PLAN

Name of the Faculty : K.Balakrishna **Academic Year** : 2017-18
Course Number : EE117 **Course Name** : IMSM LAB
Program : B.Tech **Branch** : EEE
Year/ Semester : III/II **Section** : A

S.No.	List of Experiments	Batch-1	Batch-2
1	Introduction lab	04-12-2017	05-12-2017
2	Brake test on three phase Induction Motor	11-12-2017	12-1-2017
3	No-load and Blocked rotor tests on three phase Induction motor	18-12-2017	19-12-2017
4	Draw the equivalent circuit diagram of a 3-phase I.M (Draw the circle diagram and obtain the machine performance parameters)	08-01-2018	02-01-2018
5	Equivalent Circuit of a single phase induction motor	16-01-2018	09-01-2018
6	**First Lab Internal Exam**	22-01-2018	23-01-2018
7	Load test on single phase induction motor	29-01-2018	30-01-2018
8	Regulation of a three –phase alternator by synchronous impedance and MMF methods	05-02-2018	06-02-2018
9	V and Inverted V curves of a three—phase synchronous motor	12-02-2018	20-02-2018
10	Determination of Xd and Xq of a salient pole synchronous machine	19-02-2018	27-02-2018
11	Regulation of three-phase alternator by Z.P.F. and A.S.A methods	26-02-2018	06-03-2018
12	Efficiency of a three-phase alternator	05-03-2018	13-03-2018
13	Design an experimental setup to obtain performance parameters of a 3 phase, 5 Hp squirrel cage induction motor **(Open End Experiment)**	12-03-2018	12-03-2018
14	**Second Lab Internal Exam**	19-03-2018	20-03-2018

Time Table:

Monday	:	5^{th} – 7^{th}	Thursday	:	
Tuesday	:	5^{th} – 7^{th}	Friday	:	
Wednesday	:		Saturday	:	

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(EE118) POWER ELECTRONICS AND SIMULATION LABORATORY

COURSE OBJECTIVES:

Students will be able to

1. Identify the switches with their specifications and ratings.
2. Select appropriate firing circuits for the converters.
3. Classify different commutation circuits.
4. Write the simulation program power electronics circuits.
5. Apply different converters for different applications.

COURSE OUTCOMES:

At the end of the course, students will develop ability to

1. Recognize the appropriate switch for the selective application.
2. Use different firing circuits for different converters.
3. Sketch voltage and current waveforms for various loads.
4. Demonstrate and compute the readings of the various controller circuits.
5. Differentiate series and parallel inverter operations.
6. Categorize the quadrant operations.
7. Simulate and estimate the converter circuits.
8. Justify the appropriate converter for drive applications.

LESSON PLAN

Name of the Faculty : B.Sathyavani/k.Dhanraj/E.Thirupathi

Academic Year: 2017-18

Course Number : EE118 **Course Name : PE&S Lab**

Program : B.Tech. **Branch : EEE**

Year/ Semester: III / II **Section : A**

S. No.	Topic	Schedule Date	Schedule Date
1	Study of Characteristics of SCR, MOSFET	04.12.17	05.12.17
2	Gate firing circuits for SCR's	11.12.17	12.12.17
3	Single Phase AC Voltage Controller with R and RL Loads	18.12.17	19.12.17
4	Single Phase fully controlled bridge converter with R and RL loads	08.01.18	02.01.18
5	DC Jones chopper with R and RL Loads	22.01.18	09.01.18
6	Single Phase Series and Parallel inverter with R load	29.01.18	16.01.18
7	Single Phase Cyclo-converter with R and RL loads	05.02.18	23.01.18
8	Three Phase half controlled bridge converter with R-load	12.02.18	30.01.18
9	Single Phase dual converter with RL loads	19.02.18	06.02.18
10	PSPICE simulation of single phase inverter with PWM control	26.02.18	20.02.18
11	Revision	05.03.18	27.02.18

12	Revision	12.03.18	13.03.18
13	**Internal Lab Exam**	19.03.18	20.03.18

Time Table:

Monday	:	III EEE-A	Thursday	:	
Tuesday	:	III EEE-A	Friday	:	
Wednesday	:		Saturday	:	

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(EE110) POWER ELECTRONICS

Course objectives:

Student will be able to:

1. Study the characteristics of SCR,MOSFET & IGBT
2. Control AC to DC voltage using converters
3. Determine design parameters of Chopper circuits
4. Analyze AC-AC Converters for speed control of Machines
5. Apply PWM techniques for Inverters

Course outcomes:

Students will be able to:

1. Suggest appropriate switches for specific applications
2. Design protection circuits for SCR
3. Evaluate performance indices of converters
4. Operate ac-dc three phase converters
5. Design the chopper circuits
6. Perform step up/step down frequency operation using cyclo converters
7. Apply inverters for speed control of induction motors
8. Evaluate the harmonic analysis of Inverters.

LESSON PLAN

Name of the Faculty : M.M.Irfan **Academic Year : 2017-2018**
Course Number : EE110 **Course Name : PE**
Program : B.Tech **Branch : EEE (B)**
Year/ Semester : III/II

Sl. No.	Topic of Lecture	Schedule DD/MM/ YYYY
	UNIT-I	
1	Introduction to Power Electronics	05/12/17
2	Thyristor theory of operation	0612/17
3	Static VI Characteristics	07,08/12/17
4	Turn-On methods of SCR	11/12/17
5	Two transistors Analogy	12/12/17
6	Dynamic Characteristics of SCR	13,14/12/17
7	Turn on & Turn off times	15/12/17
8	UJT Firing Circuit	18/12/17
9	Series Connection of SCR's	19/12/17
10	Parallel Connection of SCR's	20/12/17
11	Snubber Circuit details	21/12/17
12	Specifications & Ratings of SCR	22/12/17
13	Ratings of BJT, IGBT	27/12/17
14	Numerical Problems	27/12/17
15	Line Commutation, forced commutation (A,B)	28/12/17
16	Forced Commutation (C, D, E)	29/12/17
17	BJT VI Characteristics	30/12/17
18	Power MOSFET Characteristics	31/01/17
19	Power IGBT, Characteristics	02/01/18
	UNIT-II	
20	Phase Control Techniques	03/01/18
21	Single Phase line Commutated Converters	04/01/18
22	Mid Point connection and Bridge Connection	05/01/18
23	Half Controlled Converter with R. Load	08/01/18
24	Half Controlled Converter with RL load	09/01/18
25	HFC With RLE Load	10/01/18
26	Derivation of Average Load, Voltage & Currents	11/01/18
27	Active & Reactive Power to converter with freewheeling diode	12/01/18
28	Equations Without freewheeling diode	16/01/18
29	Numerical problems	17/01/18
30	Fully controlled converter	18/01/18
31	Mid Point with R Load, Bridge with R Load	19/01/18
32	Bridge Converter with RL Load with-out FWD	22/01/18
33	Bridge Converter with RLE Load	23/01/18
	MID EXAM-I	**24 – 27/01/18**
34	Bridge Converter with freewheeling diode	29/01/18
35	Derivation of Average Load Voltage & Current	30/01/18
36	Line commutated inverters, Active & Reactive Power inputs with and without freewheeling diode	31/01/18

37	Effect of source Inductance	01/02/18
38	Derivation of Load Voltage and current	02/02/18
39	Numerical Problems	05/02/18
40	3-phase line commutated converters	06/02/18
41	3-phase three pulse, six pulse converters	07/02/18
42	Mid Point & Bridge Connection	08/02/18
43	Average Load Voltage with R & RL Loads	09/02/18
44	Effect of source Inductance	12/02/18
45	Dual converter (Single Phase & Three Phase), Problems	14/02/18
UNIT-III		
46	AC Voltage Controllers, 1-Phase (2 SCR's in Anti parallel)	15/02/18
47	AC Voltage controller with RL Load	16/02/18
48	Modes of Operation of TRIAC	19/02/18
49	TRIAC with R & RL loads	20/02/18
50	Derivation of rms load voltage, current and power factor wave forms	21/02/18
51	Firing circuit, Numerical problems	22/02/18
52	1-phase Mid-point cyclo converter with R, RL Loads	23/02/18
53	Bridge configuration of 1-phase cyclo converter (Principle of operations)	26/02/18
54	Step down wave forms	27/02/18
UNIT-IV		
55	Chopper Time ratio control	28/02/18
56	Current limit control strategy	01/03/18
57	Step-down chopper, Derivation of load voltage	02/03/18
58	Currents with R, RL &RLE Loads	05/03/18
59	Step-up Chopper-load Voltage expression	06/03/18
60	Jones chopper, Oscillation chopper	07/03/18,08/03/18
61	Morgan's chopper wave forms	09/03/18
62	AC Chopper, Problems	12/03/18
UNIT-V		
63	1-phase inverter, Basic series Inverter	13/03/18
64	Basic Parallel capacitor inverter, Bridge inverter	14/03/18
65	Simple forced commutation circuit for Bridge inverter	15/03/18
66	MC Murray Inverter	16/03/18
67	MC Murray Bedford Inverter	19/03/18
68	Voltage control techniques for inverter-PWM techniques	20/03/18
69	Numerical problems	21/03/18
MID EXAM-II		**22 – 24/03/18**

Timings:

Monday	:	5th hr	Thursday	:	5th
Tuesday	:	1st	Friday	:	4th
Wednesday	:	2nd	Saturday	:	

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(EE111)POWER SYSTEM OPERATION AND CONTROL

COURSE OBJECTIVES:
The students will be able to

6. Draw the characteristics of thermal generators.
7. Develop mathematical model of a speed governing system.
8. Explain the necessity of constant frequency.
9. Analyze load frequency control and economic dispatch control.
10. Elaborate various sources of reactive power.

COURSE OUTCOMES:
At the end of the course, student will have an ability to

9. Mention the role of the characteristics of thermal generators in economic dispatch problem.
10. Calculate optimal loading of thermal generators to meet the power demand.
11. Draw the block diagram model of a speed governing system.
12. Analyze IEEE type –I excitation system.
13. Assess the change in frequency of the system for different load changes.
14. Distinguish controlled and uncontrolled cases of a two area system.
15. Design a compensation scheme for a transmission line.
16. Justify the need of reactive power control.

LESSON PLAN

Name of the Faculty : K.Rajeshwar reddy **Academic Year :** 2017-18
Course Number : EE320 **Course Name :** PSOC
Program : B. Tech **Branch :** EEE
Year/ Semester: III/II **Section :** B

S. No.	Topic	Schedule Date
	UNIT-I:	
1	Objective of the course	04.12.2017
2	Characteristics of Thermal Generators	06-07.12.2017
3	Condition for Optimal Operation	08.12.2017
4	Problems on Economic Dispatch by neglecting losses	11-13.12.2017
5	Problems on Unit Limit Violation	14-15.12.2017
6	Condition for Optimal dispatch by considering Losses	16.12.2017
7	B-Coefficients formula Derivation	18.12.2017
8	Flow Chart & Algorithm	20.12.2017
9	Problems on ED Problem	21-22.12.2017

10	Characteristics of Hydel units	23.12.2017
11	Hydroelectric Power Plant models	27-28.12.2017
12	Scheduling problems	29-30.12.2017
13	Short term Hydrothermal scheduling	30.12.2017
14	Problems on Hydro thermal scheduling	03.01.2018
	UNIT-II:	
15	First order turbine model	04.01.2018
16	Block diagram representation of steam turbines	05.01.2018
17	Modeling of synchronous machine	06.01.2018
18	Swing equation & State space II order model	08.01.2018
19	Mathematical modeling of speed governing system	10.01.2018
20	Fundamental Characteristic, excitation systems	11,12,17,18.01.2018
21	IEEE Type-I model block diagram representation	19.01.2018
	UNIT –III:	
22	Necessity of constant frequency	20.01.2018
23	Control area concept	22.01.2018
	I- Mid Examination	24-27.1.2018
24	Single area control	29.01.2018
25	Block diagram representation of an isolated Power System	31.01.2018
26	Steady State response	1.02.2018
27	Dynamic response of Un-controlled case	2.02.2018
28	Problems on LFC	3.02.2018
29	LFC of two-area systems	5,7.02.2018
30	Block diagram of Two area system	8,9.02.2018
31	Uncontrolled case	12.02.2018
32	controlled case	14.02.2018
33	Tie-line bias control	15.02.2018
	UNIT –IV:	
34	PI Controller for single area	16,17.02.2018
35	Steady state response	19.02.2018
36	LFC and Economic dispatch control	21,22,23.02.2018
37	LFC of 2 area system	24,26,28.02.2018
	UNIT –V:	
38	Over view of reactive power control	02.03.2018
39	Compensation in transmission systems	03.03.2018
40	Sources of reactive power	05,07.03.2018

41	Advantages of different compensation equipment	08.03.2018
42	Disadvantages of various compensation equipment	09.03.2018
43	Load Compensation	12.03.2018
44	Specifications of Load compensator	14.03.2018
45	Uncompensated Transmission Lines	15,16,17.03.2018
46	Shunt Compensation	19.03.2018
47	Series Compensation	21.03.2018
48	Revision	28,29,31.03.2018, 2,4.04.2018
	II- Mid Examination	

Time Table:

Monday	:	12:10 - 1:00 pm	Thursday	:	1.40 - 2:30 pm
Tuesday	:	--	Friday	:	11:20 - 12:10 pm
Wednesday	:	09:30 - 10:20 am	Saturday	:	11:20 - 12:10 pm

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(EC152) MICROPROCESSORS AND INTERFACING LAB

Year	Semester	Hours / Week			C	Marks		
		L	T	P/D		CIE	SEE	Total
III	II	-	-	3	2	30	70	100

COURSE OBJECTIVES

Students will be able to

6. List the features of 8086 microprocessor and 8051 microcontroller
7. Describe accessing of data using different addressing modes
8. Develop assembly level programs for microprocessor and microcontroller
9. Analyze interfacing of peripheral devices with 8086
10. Test operation of timers/counter, serial/parallel ports, interrupts using 8051

COURSE OUTCOMES

At the end of the course, the student will develop ability to

9. Write assembly level programs on arithmetic operations using various addressing modes
10. Familiarize with the assembly level programming on strings.
11. Apply the concepts of assembly level programming on sorting and code conversions.
12. Design interfacing of various I/O devices to microprocessor
13. Design assembly language programs on 8051 microcontroller.
14. Apply the concept of serial communication of transmission of serial data.
15. Verify the ports, timer, and interrupts operation in 8051 microcontroller
16. Design and implement microcontroller-based embedded system

LESSON PLAN

Name of the Faculty: Ishita Deb / Jaspreet kukreja / Ch.Harish

Academic Year: 2017-18

Course Number : EC152 **Course Name :** MPI LAB

Program : B.Tech **Branch:** EEE

:

Year/ Semester III/II **Section:** B

S No		Schedule Dates
	I.MICROPROCESSOR 8086	
1	Introduction to microprocessor 8086	5/12/2017
2	Demo on 8086 hardware kit	12/12/2017
3	Arithmetic operation In various addressing modes– Multi byte Addition and Substraction, Multiplication and Division – Signed and unsigned Arithmetic operation,ASCII – arithmetic operation	19/12/2017

4	Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion	02/01/2018
5	Length of a string,Move block,Reverse string,String comparision,Inserting,Deleting,Sorting	09/01/2018
6	Average of numbers,Factorial , LCM, GCD, Sum of squares,Sum of cubes	16/01/2018
II.INTERFACING		
1	8255 – PPI: Generation of wave forms Square, Rectangle, Ramp, Step wave, Triangular	23/01/2018
	Internal lab exam -1	30/01/2018
2	Stepper motor in clockwise and anticlockwise direction	06/02/2018
III.MICROCONTROLLER 8051		
1	Arithmetic operations in various addressing modes	20/02/2018
2	Timers in different modes	27/02/2018
3	Serial communication implementation	06/03/2018
4	Revision	13/03/2018
5	Internal lab exam-2	20/03/2018

Timings:

Monday	:		Thursday	:	
Tuesday	:	10.20 am-1.00 pm	Friday	:	
Wednesday	:		Saturday	:	

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(EE117) INDUCTION MOTORS AND SYNCHRONOUS MACHINES LAB

Year	Semester	Hours / Week			C	Marks		
		L	T	P/D		CIE	SEE	Total
III	II	-	-	3	2	30	70	100

COURSE OBJECTIVES:

Students will be able to

1. Identify various parts of an induction motor
2. Explain starting methods of an induction motor
3. Develop circle diagram of an induction motor to determine the performance
4. Calculate the regulation of an alternator
5. Estimate Xd and Xq of a salient pole synchronous machine

COURSE OUTCOMES:

At the end of the course, students will develop ability to

1. Draw the equivalent circuit of a single phase induction motor
2. Explain testing of an induction motor
3. Execute brake test on three phase induction motor
4. Analyze No-load and blocked rotor tests of a three phase Induction motor
5. Evaluate regulation of a three –phase alternator
6. Construct V and inverted V curves of a three—phase synchronous motor
7. Predict efficiency of a three-phase alternator
8. Select the optimistic method to find the regulation of an alternator

LESSON PLAN

Name of the Faculty : Dr.R.Arulmurugan **Academic Year :** 2017-18
Course Number :EE117 **Course Name :**IMSMLAB
Program : B.Tech **Branch :** EEE
Year/ Semester : III/II **Section :**B

S.No.	List of Experiments	Batch-1	Batch-2
1	Introduction lab	08.12.17	09.12.17
2	Brake test on three phase Induction Motor	15.12.17	16.12.17
3	No-load and Blocked rotor tests on three phase Induction motor	22.12. 17	23.12.17
4	Draw the equivalent circuit diagram of a 3-phase I.M (Draw the circle diagram and obtain the machine performance parameters)	29.12. 17	30.12.17
5	Equivalent Circuit of a single phase induction motor	05.01.18	06.01.18
	Load test on single phase induction motor	12.01.18	06.01.18
6	**First Lab Internal Exam**	19.01.18	20.01.18
8	Regulation of a three –phase alternator by synchronous impedance and MMF methods	02.02.18	03.02.18
9	V and Inverted V curves of a three—phase synchronous motor	09.02.18	03.02.18
10	Determination of Xd and Xq of a salient pole synchronous machine	16.02.18	18.02.18
11	Regulation of three-phase alternator by Z.P.F. and A.S.A methods	23.02.18	24.02.18
12	Efficiency of a three-phase alternator	02.03.18	03.03.18
13	Design an experimental setup to obtain performance parameters of a 3 phase, 5 Hp squirrel cage induction motor **(Open End Experiment)**	09.03.18	03.03.18
14	**Second Lab Internal Exam**	16.03.18	17.03.18

Time Table:

Monday	:		Thursday	:	
Tuesday	:		Friday	:	IIIEEE-B
Wednesday	:		Saturday	:	IIIEEE-B

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(EE118) POWER ELECTRONICS AND SIMULATION LABORATORY

COURSE OBJECTIVES:
Students will be able to
1. Identify the switches with their specifications and ratings.
2. Select appropriate firing circuits for the converters.
3. Classify different commutation circuits.
4. Write the simulation program power electronics circuits.
5. Apply different converters for different applications.

COURSE OUTCOMES:
At the end of the course, students will develop ability to
1. Recognize the appropriate switch for the selective application.
2. Use different firing circuits for different converters.
3. Sketch voltage and current waveforms for various loads.
4. Demonstrate and compute the readings of the various controller circuits.
5. Differentiate series and parallel inverter operations.
6. Categorize the quadrant operations.
7. Simulate and estimate the converter circuits.
8. Justify the appropriate converter for drive applications.

LESSON PLAN

Name of the Faculty : M.M.Irfan/A.Rajamallaiah/K.Rajeshwar reddy/E.Thirupathi
Academic Year: 2017-18
Course Number : 13EE325 **Course Name : PE&S Lab**
Program : B.Tech. **Branch : EEE**
Year/ Semester: III / II **Section : B**

S. No.	Topic	Schedule Date	Schedule Date
1	Study of Characteristics of SCR, MOSFET	08.12.17	16.12.17
2	Gate firing circuits for SCR's	15.12.17	23.12.17
3	Single Phase AC Voltage Controller with R and RL Loads	22.12.17	30.12.17
4	Single Phase fully controlled bridge converter with R and RL loads	29.12.17	06.01.18
5	DC Jones chopper with R and RL Loads	05.01.18	12.01.18
6	Single Phase Series and Parallel inverter with R load	19.01.18	20.01.18
7	Single Phase Cyclo-converter with R and RL loads	02.02.18	03.02.18
8	Three Phase half controlled bridge converter with R-load	09.02.18	17.02.18
9	Single Phase dual converter with RL loads	16.02.18	24.02.18

10	PSPICE simulation of single phase inverter with PWM control	23.02.18	03.03.18
11	Revision	02.03.18	09.03.18
12	**Internal Lab Exam**	16.03.18	17.03.18

Time Table:

Monday	:		Thursday	:	
Tuesday	:		Friday	:	III EEE-B
Wednesday	:		Saturday	:	III EEE-B