



# INSTITUTE OF AERONAUTICAL ENGINEERING

Dundigal, Hyderabad - 500 043

## COMPUTER SCIENCE AND ENGINEERING

### COURSE DESCRIPTION FORM

<b>Course Title</b>	<b>ELECTRICAL AND ELECTRONICS LAB</b>			
<b>Course Code</b>	<b>A30282</b>			
<b>Regulation</b>	<b>R13 - JNTUH</b>			
<b>Course Structure</b>	Lectures	Tutorials	Practicals	Credits
	-	-	3	2
<b>Course Coordinator</b>	Mr. K Naresh Kumar, Assistant Professor, ECE			
<b>Team of Instructors</b>	Mr K Sudhakar Reddy, Assistant Professor, ECE Mr K Chaitanya, Assistant Professor, ECE Mr K Ravi, Assistant Professor, ECE			

#### I. COURSE OVERVIEW:

This lab complements the electrical and electronics devices course. Students will gain practical experience with identification of all the basic electrical and electronic components. After going through this course the student gets a thorough knowledge on basic electrical circuits, parameters, and operation of the transformers in the energy conversion process, electromechanical energy conversion, construction operation characteristics of DC and AC machines and the constructional features and operation of operation measuring instruments like voltmeter, ammeter, wattmeter etc.

#### II. PREREQUISITE(S):

Level	Credits	Periods/ Week	Prerequisites
UG	2	3	Engineering Physics

#### III. MARKS DISTRIBUTION:

Sessional Marks	End Semester Exam	Total Marks
There shall be a continuous evaluation during the semester for 25 marks. Day-to-day work in the laboratory shall be evaluated for 15 marks and internal practical examination conducted by the concerned teacher shall be evaluated for 10 marks.	50	75

#### IV. EVALUATION SCHEME:

S. No	Component	Duration	Marks
1.	Day-to-day Evaluation	-	15
2.	Internal Practical Examination	2.5 hours	10
5.	End Semester Examination	2.5 hours	50

#### V. COURSE OBJECTIVES:

**At the end of the course, the students will be able to:**

- I. Be familiar with the basic concepts and characteristics of the electrical devices.

- II. Be familiar with the design and verification of circuit theorems.
- III. Be competent with the knowledge of DC machines.
- IV. Be competent with the knowledge of AC machines.
- V. Be familiar with the principles of circuit analysis and design.
- VI. Be familiar with the basic concepts and characteristics of the electronic devices.
- VII. Master Diode and Transistor circuits.
- VIII. Design and implement regulated power supplies for electronic devices.

## VI. COURSE OUTCOMES:

**After completing this course the student must demonstrate the knowledge and ability to:**

1. **Understand** the circuit theorems and various electrical components.
2. **Understand** applications of DC and AC machines.
3. **Understand** identification and selection of various electronic components.
4. **Analyze** the characteristics of various electronics components.
5. **Understand** the conversion of AC power to DC power.

## VII. COURSE PLAN

Division of Experiments	List of Experiments
<b>Theorems</b>	<b>Week – 1</b> Verification of Superposition and Reciprocity theorems
	<b>Week – 2</b> Verification of Maximum power transfer theorem
	<b>Week – 3</b> Verification of Thevenin's and Norton's theorems
<b>DC machines</b>	<b>Week – 4</b> Swinburne's test on DC shunt machine
	<b>Week – 5</b> Brake test on DC shunt motor
	<b>Week – 6</b> Magnetization characteristics of DC generator
<b>AC machines</b>	<b>Week – 7</b> OC & SC Test on 1- $\phi$ transformer
	<b>Week – 8</b> Brake test on 3- $\phi$ induction motor
<b>Diode Characteristics</b>	<b>Week – 9</b> PN Junction Diode Characteristics
	<b>Week – 10</b> Zener Diode Characteristics
<b>Transistor Characteristics</b>	<b>Week – 11</b> Transistor CE Characteristics
<b>Rectification</b>	<b>Week – 12</b> Rectifier without Filters(Full&half wave)
	<b>Week – 13</b> Rectifier with Filters(Full&half wave)

**Prepared by** : Mr. K Sudhakar Reddy, Assistant Professor, ECE

**Date** : 12 June, 2015

**HOD, CSE**