ELECTRICAL AND ELCETRONICS ENGINEERING LABORATORY

II Semester: CSE / IT								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
AEE001	Foundation	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		-	-	3	2	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 45**				**Total Classes: 45**		

OBJECTIVES:

The course should enable the students to:

I. Analyze basic electrical circuits by implementing different circuits.
II. Apply circuit theorems to evaluate the behavior of electrical circuits.
III. Gain knowledge on semiconductor devices like diode and transistor
IV. Interpret different transistor configurations

COURSE LEARNING OUTCOMES (CLOs):

The students should enable to:

1. Apply Kirchhoff's current and voltage laws to linear electrical circuits using hardware
2. Verification of superposition theorem using hardware
3. Verification of Thevenin's theorem using hardware
4. Verification of Norton's theorem using hardware
5. Verification of maximum power transfer theorem using hardware
6. Apply Kirchhoff's current and voltage laws to linear electrical circuits using digital simulation
7. Verification of superposition and Thevenin's theorem using digital simulation.
8. Verification of Norton's theorem and maximum power transfer theorem using digital simulation.
9. Understand the PN junction diode characteristics
10. Understand the zener diode characteristics
11. Build half wave and full wave rectifier circuits
12. Understand transistor common base characteristics
13. Understand transistor common emitter characteristics
14. Explore the knowledge and skills of employability to succeed in national and international level competitive examinations.

LIST OF EXPERIMENTS

Week-1	**KIRCHOFF'S LAWS**

Practical verification of Kirchhoff's current law and voltage law.

Week-2	**SUPERPOSITION THEOREM**

Illustration of superposition theorem.

Week-3	**THEVENIN'S THEOREM**

Obtain the equivalent circuit of the given electrical network using Thevenin's theorem.

Week-4	**NORTON'S THEOREM**

Practical verification of Norton's theorem and obtain the equivalent circuit.

Week-5	**MAXIMUM POWER TRANSFER THEOREM**

Verification of maximum power transfer theorem.	
Week-6	**KVL AND KCL**
Verification of KVL and KCL using digital simulation	
Week-7	**DIGITAL SIMULATION OF THEOREMS**
Superposition theorem and Thevenins theorem using digital simulation	
Week-8	**NORTON'S THEOREM AND MAXIMUM POWER TRANSFER THEOREM**
Norton's theorem and maximum power transfer theorem using digital simulation.	
Week-9	**P-N JUNCTION DIODE**
Volt Ampere characteristics of p-n junction diode.	
Week-10	**ZENER DIODE**
Understand the zener diode characteristics	
WeeK-11	**RECTIFIERS**
Build half wave and full wave rectifier circuits	
Week-12	**COMMON BASE TRANSISTOR**
Build half wave and full wave rectifier circuits	
Week-13	**COMMON EMITTER TRANSISTOR**
Understand transistor common emitter characteristics	

Text Books:

1. A Chakrabarthy, "Electric Circuits", DhanipatRai & Sons, 6th Edition, 2010.
2. C L Wadhwa "Electrical Circuit Analysis including Passive Network Synthesis", New Age International, 2nd Edition, 2009.
3. J P J Millman, C C Halkias, Satyabrata Jit, Millman's, "Electronic Devices and Circuits", Tata McGraw Hill, 2nd Edition, 1998.

Reference Books:

1. A Sudhakar, Shyammohan S Palli, "Circuits and Networks", Tata McGraw-Hill, 4th Edition, 2009.
2. R. L. Boylestad , Louis Nashelsky,"Electronic Devices and Circuits", PEI/PHI, 9th Edition, 2006.
3. A. K. Theraja, "Textbook of Electrical Technology", S. Chand, 1st Edition, 2014..
4. David A Bell, "Electric circuits", Oxford University Press, 7th Edition, 2009.

Web References:

1. https://www.nptel.ac.in/Courses/117106108
2. https://www.gnindia.dronacharya.info/EEEDept/labmanuals.html
3. https://www.textofvideo.nptel.iitm.ac.in
4. https://www.textofvideo.nptel.iitm.ac.in/