

COURSE TEMPLATE

1.	Department / Centre proposing the course	Electrical
2.	Course Title (< 45 characters)	INTRODUCTION TO ELECTRICAL ENGG .
3.	L-T-P structure	3 - 0 - 2
4.	Credits	4
5.	Course number	EEL101
6.	Status (category for program)	Institute Core

7.	Pre-requisites (course no./title)	none
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8.	Status vis-à-vis other courses (give course number/title)	
8.1	Overlap with any UG/PG course of the Dept./Centre	
8.2	Overlap with any UG/PG course of other Dept./Centre	
8.3	Supercedes any existing course	

9.	Not allowed for (indicate program names)	
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10.	Frequency of offering	☒ Every sem ☐ 1 st sem ☐ 2 nd sem ☒ Either sem
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11.	Faculty who will teach the course All EE faculty members	
12.	Will the course require any visiting faculty?	NO

13.	Course objective (about 50 words): To introduce the students to the basic concepts of electrical engineering so as to develop skills such that they can analyze analog and digital electronic circuits and also circuits involving electro-magnetic apparatus.	
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14.	Course contents (about 100 words) (Include laboratory/design activities): 1. Elements in an Electrical circuit: R, L, C, Diode, Voltage and current sources (independent and dependent / controlled sources with examples) 2. DC circuits, KCL, KVL, Network theorems, Mesh and nodal analysis 3. Step response in RL, RC, RLC circuits 4. Phasor analysis of AC circuits 5. Single-phase and 3-phase circuits 6. Two port networks, BJT: CE and small signal model, Operational amplifiers: Model and applications	
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	7. Introduction to Digital circuits 8. Magnetic circuits, Transformers: Modeling and analysis; parameter determination 9. Energy in magnetic field 10. Electromechanical energy conversion principles with examples 11. Principles of measurement of voltage, current and power Laboratory component and the List of experiments 1. CRO (mechanism and usage) 2. KCL, KVL, Network theorem verification 3. Step / transient response of RL, RC, RLC circuits 4. Steady state response of RLC circuits for sinusoidal excitation 5. Diode experiment (clipping, clamping and rectification) 6. Basic circuits using opamp 7. Transformer OC and SC tests 8. BH loop in an iron core, DC and AC motor – for observation only 9. A small mini-project
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15. Lecture Outline *(with topics and number of lectures)*

Module no.	Topic	No. of hours
1	1. Elements in an Electrical circuit: R, L, C, Diode, Voltage and current sources (independent and dependent / controlled sources with examples)	3
2	DC circuits, KCL, KVL, Network theorems, Mesh and nodal analysis	5
3	Step response in RL, RC, RLC circuits	2
4	Phasor analysis of AC circuits	3
5	Single-phase and 3-phase circuits	3
6	Two port networks, BJT: CE and small signal model, Operational amplifiers: Model and applications	8
7	Introduction to Digital circuits	4
8	Magnetic circuits, Transformers: Modeling and analysis; parameter determination	6
9	Energy in magnetic field	2
10	Electromechanical energy conversion principles with examples	3
11	Principles of measurement of voltage, current and power	3
12		
COURSE TOTAL (14 times 'L')		42

16. Brief description of tutorial activities

NA

17. Brief description of laboratory activities

Module no.	Experiment description	No. of hours
1	CRO (mechanism and usage)	2
2	KCL, KVL, Network theorem verification	1
3	Step / transient response of RL, RC, RLC circuits	1
4	Steady state response of RLC circuits for sinusoidal excitation	1
5	Diode experiment (clipping, clamping and rectification)	2
6	Basic circuits using opamp	1
7	Transformer OC and SC tests	1
8	BH loop in an iron core, DC and AC motor – for observation only	1
9	A small mini-project	4
10		14
COURSE TOTAL (14 times 'P')		

18. Suggested texts and reference materials

STYLE: Author name and initials, Title, Edition, Publisher, Year.

Ralf J.Smith and Richard C.Dorf, Circuits, Devices and Systems, Fifth Edition, 1992.

19. Resources required for the course *(itemized & student access requirements, if any)*

19.1	Software	
19.2	Hardware	

19.3	Teaching aides (videos, etc.)	
19.4	Laboratory	
19.5	Equipment	
19.6	Classroom infrastructure	
19.7	Site visits	

20. Design content of the course *(Percent of student time with examples, if possible)*

20.1	Design-type problems	
20.2	Open-ended problems	
20.3	Project-type activity	
20.4	Open-ended laboratory work	
20.5	Others (please specify)	

Date:

(Signature of the Head of the Department)