School of Electronics & Communication Engineering
Shri Mata Vaishno Devi University Katra

विज्ञानं ब्रह्म

Course Handout (with Syllabus & Lecture Plan)

Course Code: **EEL ES101 & EEP ES101**	Course Title: **Fundamentals of Electrical Engineering**
Semester: 2024-25 (Even)	Date of Issue: 02-09-2024
Course Coordinator	Dr Vipan Kakkar
Co Faculty / Instructor	

Teaching & Evaluation Scheme

L	T	S/P	C	Midterm Duration	Major Duration	Assign ment	Quiz	Midterm Marks	Major Marks	Total Marks
3	0	1	4	1.5 Hours	3.0 Hours	20	20	20	40	100

Significance and Objectives of the Course:
This course aims to expose students to:

1. basic concepts of electrical engineering
2. electrical components and working principle.
3. Ac/dc electrical circuit analysis.

Course Outcomes:
After successful completion of this course, students shall be able to;

1. Understanding of the basics of electrical engineering
2. The ability to analyse the AC and DC electrical circuits
3. The ability to apply different methods for electrical circuit analysis for solving the design problems
4. The ability to apply simplified methods such as electrical theorems for circuit analysis
5. Understanding of the resonance in electrical circuits and its significance

CO-PO Mapping:

		PO1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO11	PO12
1	CO1	3	2	1	2	2	2	2	1	2	2	1	3	1	3
2	CO2	3	2	3	2	2	2	2	1	2	2	1	3	1	3
3	CO3	3	2	2	3	1	2	2	1	2	2	1	3	1	3
4	CO4	3	2	3	3	1	3	3	2	3	2	1	3	1	3
5	CO5	3	2	3	3	1	2	2	2	3	2	1	3	1	3

List of Exercises / Experiments:

1. Introduction to Laboratory equipment and their working
2. Evaluation of KVL/KCL
3. Evaluation of KVL/KCL
4. Evaluation of Superposition Theorem
5. Evaluation of Thevenin Theorem
6. Evaluation of Maximum Power Theorem
7. AC analysis of a Circuit for evaluating various parameters
8. AC analysis of RL, RC Circuit
9. AC analysis of RLC Circuit
10. Performance of RLC circuits at resonance

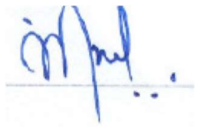
Lecture/Session Plan for the Semester:

	Unit / Topic / Lecture Contents	STATUS*
Week	**Lecture topic**	
1st	**Unit I:** Introduction to Electrical Engineering, DC and AC circuits, Active and passive two terminal elements, Ohms law	Completed
2nd	Basics of Electromagnetism, Voltage-Current relations for resistor, inductor, capacitor	Completed
3rd	Kirchhoff's laws, current division, voltage division	Completed
4th	Mesh analysis, Nodal analysis	Completed
5th	Source Transformation, Ideal sources –equivalent resistor	Completed
6th	**Unit II:** Inductive, capacitive networks, Star Delta transformation	Completed
7th	**Circuit Theorems:** Concepts of Circuit Theorems, Superposition Theorem,	Completed
8th	Thevenin theorem with tutorial examples	Completed
9th	Revision problems	Completed
10th	**Minor-I Exam**	Completed
11th	Maximum power transfer theorem, Norton theorem	Completed
12th	**Unit III**: Principle of ac voltages , waveforms and basic definitions, relationship between frequency, speed and number of poles, root mean square and average values of alternating currents and voltage, form factor and peak factor	Completed
13th	phasor representation of alternating quantities, the J operator and phasor algebra, analysis of ac circuits with single basic network element, single phase series circuits, single phase parallel circuits, single phase series parallel circuits, power in ac circuits, power factor.	Completed
14th	**Unit IV**: Fundamentals of AC- Average value, RMS value, form factor, crest factor, AC power and power factor, phasor representation of sinusoidal quantities.	Completed
15th	Simple series, parallel & series-parallel circuits containing R-L, R-C, R-L-C parameters	Completed
16th	Active, Apparent & Reactive power, Resonance in series & parallel circuits	Completed
17th	**Unit V**: Transformers : Principles of operation, Constructional Details, Ideal Transformer and Practical Transformer, Losses, Transformer Test, Efficiency and Regulation Calculations. (assignment taken)	Completed
18th	Revision Week	Completed
19th & 20th	**Major Exams**	Completed

Evaluation Scheme:

S. No.	Components	Weightage %	Absolute Marks	Due Date
1.	Assignment I	10	10	05.10.2024
2.	Midterm Exam	20	20	As per Academic Calendar
3.	Assignment II	10	10	10.11.2024

4.	Quiz	20	20	26.11.2024
5.	Major Exam	40	40	As per Academic Calendar



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Course Coordinator