

R.G.Government Polytechnic Banikhet, Distt. Chamba H.P-176303

Department of Electrical Engineering

Lesson Plan


Name of Faculty	Er Amit Attri
Discipline	Electrical Engineering
Semester	3 rd
Subject	EMT(L-5 Hrs./Week)
Lesson Plan Duration	August – December 2024

Week	Topic	Theory
1 st (01Aug.-07Aug.)	Unit – I DC Generators	DC generator: construction, parts, materials and their functions. Principle of operation of DC generator: Fleming's right hand rule,
2 nd (08Aug. – 16Aug.)	Unit – I DC Generators	schematic diagrams, e.m.f. equation of generator, armature reaction, commutation and Applications of DC generators
3 rd (17Aug. – 23Aug.)	Unit – II D.C. Motors	DC motor: Types of DC motors. Fleming's left hand rule, Principle of operation, Back e.m.f. and its significance, Voltage equation of DC motor.
4 th (24Aug– 31 Aug.)	Unit – II D.C. Motors	Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency. DC motor starters: Necessity, two point and three point starters.
5 th (02 Sept. –08 Sept.)	Unit – II D.C. Motors	Speed control of DC shunt and series motor: Flux and Armature control.Brushless DC Motor: Construction and working.
6 th (09 Sept. – 16Sept.)	Unit– III Single Phase Transformers	Types of transformers: Shell type and core type; Construction: Parts and functions, materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores.
Class Test – 1		In Second Week of September 2024.
7 th (17 Sept. – 23 sept)	Unit– III Single Phase Transformers	Transformer: Principle of operation, EMF equation of transformer: Derivation, Voltage transformation ratio, Significance of transformer ratings.
8 th (2 (24 Sept. – 30Sept.)	Unit– III Single Phase Transformers	Transformer No-load and on-load phasor diagram, Leakage reactance, Equivalent circuit of transformer: Equivalent resistance and reactance. Voltage regulation and Efficiency: Direct loading, OC/SC method, All-day efficiency.
9 th (01Oct. – 08 Oct.)	Unit– IV Three Phase Transformers	Bank of three single phase transformers, Single unit of three phase transformer. Distribution and Power transformers, Construction, cooling, Three phase transformers connections as per IS:2026 (part IV)-1977,
10 th (09 Oct. – 16 Oct.)	Unit– IV Three Phase Transformers	Three phase to two phase conversion (Scott Connection), Selection of transformer as per IS: 10028 (Part I)-1985, Criteria for selection of distribution transformer, and power transformer, Amorphous Core type

Class Test – 2		In Third Week of October 2024.
11 th (18 Oct. – 24 Oct.)	Unit– IV Three Phase Transformers	Distribution Transformer, Specifications of three-phase distribution transformers as per IS:1180 (part I)- 1989 Need of parallel operation of three phase transformer
12 th (25 Oct. – 01 Nov.)	Unit– IV Three Phase Transformers	Conditions for parallel operation. Polarity tests on mutually inductive coils and single phase transformers; Polarity test, Phasing out test on Three-phase transformer.
House Test		In Second Week of November 2024.
13 th (02 Nov. – 08 Nov.)	Unit V Special Purpose Transformers	Single phase and three phase auto transformers: Construction, working and applications.
14 th (11 Nov. – 18 Nov.)	Unit V Special Purpose Transformers	Instrument Transformers: Construction, working and applications of Current transformer and Potential transformer. Isolation transformer: Constructional Features and applications
15 th (19 Nov- 25 Nov)	Unit V Special Purpose Transformers	Single phase welding transformer: constructional features and applications. Pulse transformer: constructional features and applications. 'K' factor of transformers: overheating due to non-linear loads and harmonics.
	Revision	Revision and doubt clearance
16 th (25 Nov- 02 Dec)	Revision	Revision and doubt clearance

NOTE: Lesson Plan is Tentative, subject to availability of Time, Students & Faculty.

Signature of Teacher/Prepared by
(Er. Amit Attri)


Signature of HOD
(Er. Amit Attri)

R.G.Government Polytechnic Banikhet, Distt. Chamba H.P-176303

Department of Electrical Engineering

Lesson Plan

Name of Faculty	Mr. X
Discipline	Electrical Engineering
Semester	3 rd
Subject	EEM (L-4 Hrs./Week)
Lesson Plan Duration	August – December 2024

Week	Topic	Theory
1 st (01Aug.-07Aug.)	Unit – I Fundamentals of Measurements	Measurement: Significance, units, fundamental quantities and standards Classification of Instrument Systems
2 nd (08Aug. – 16Aug.)	Unit – I Fundamentals of Measurements	Null and deflection type instruments Absolute and secondary instruments Analog and digital instruments. Static and dynamic characteristics, types of errors,
3 rd (17Aug. – 23Aug.)	Unit – I Fundamentals of Measurements	Calibration: need and procedure Classification of measuring instruments: indicating, recording and integrating instruments. Essential requirements of an indicating instruments.
4 th (24Aug– 31 Aug.)	Unit – II Measurement of voltage and current	DC Ammeter: Basic, Multi range, Universal shunt, DC Voltmeter: Basic
5 th (02 Sept. –08 Sept.)	Unit – II Measurement of voltage and current	Multi-range, concept of loading effect and sensitivity AC voltmeter Rectifier type (half wave and full wave).
6 th (09 Sept. – 16Sept.)	Unit – II Measurement of voltage and current	CT and PT: construction, working and applications. Clamp-on meter
	Unit– III Measurement of Electric Power	Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features, merits and demerits
Class Test – 1		In Second Week of September 2024.
7 th (17 Sept. – 23 sept)	Unit– III Measurement of Electric Power	Dynamometer type wattmeter: Construction and working Range: Multiplying factor and extension of range using CT and PT Errors and compensations. Active and reactive power measurement: One, two and three wattmeter method.
8 th (2 Sept. – 30Sept.)	Unit– III Measurement of Electric Power	Effect of Power factor on wattmeter reading in two wattmeter method. Maximum Demand indicator.

9 th (01 Oct. – 08 Oct.)	Unit– IV Measurement of Electric Energy	Single and three phase electronic energy meter: Constructional features and working principle, Errors and their compensations.
10 th (09 Oct. – 16 Oct.)	Unit– IV Measurement of Electric Energy	Calibration of single phase electronic energy meter using direct loading.
Class Test – 2		In Third Week of October 2024.
11 th (18 Oct. – 24 Oct.)	Unit– V Circuit Parameter Measurement, CRO and Other Meters.	Measurement of resistance: Low resistance: Kelvin's double bridge, Medium Resistance: Voltmeter and ammeter method, High resistance: Megger and Ohm meter: Series and shunt Measurement of inductance using Anderson bridge (no derivation and phasor diagram). Measurement of capacitance using Schering bridge (no derivation and phasor diagram).
12 th (25 Oct. – 01 Nov.)	Unit– V Circuit Parameter Measurement, CRO and Other Meters.	Single beam/single trace CRO, Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube, electrostatic deflection, vertical amplifier, time base generator
House Test		In Second Week of November 2024.
13 th (02 Nov. – 08 Nov.)	Unit– V Circuit Parameter Measurement, CRO and Other Meters.	horizontal amplifier, measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications. Other meters: Earth tester, Digital Multimeter; L-C-R meter, Frequency meter (ferromagnetic and Weston type)
14 th (11 Nov. – 18 Nov.)	Unit– V Circuit Parameter Measurement, CRO and Other Meters.	Phase sequence indicator, power factor meter (single phase and three phase dynamometer type), Synchroscope, Tri- vector meter, Signal generator need, working and basic block diagram.
15 th (19 Nov- 25 Nov)	Unit– V Circuit Parameter Measurement, CRO and Other Meters.	Function generator: need, working and basic block diagram, function of symmetry.
16 th (25 Nov- 02 Dec)	Revision	Revision and doubt clearance

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Signature of Teacher/Prepared by
(Er. Divya)



Signature of HOD
(Er. Amit Attri)

R.G.Gove

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Department of Electrical Engineering

Lesson Plan

Name of Faculty	Er. Divya
Discipline	Electrical Engineering
Semester	3 rd
Subject	EDC (L-4 Hrs./Week)
Lesson Plan Duration	August – December 2024

Week	Topic	Theory
1 st (01Aug. –07Aug.)	Unit 1 Semiconductor and Diodes	Definition, Extrinsic/Intrinsic, N-type & p-type PN Junction Diode – Forward and Reverse Bias
2 nd (08Aug. – 16Aug.)	Unit 1 Semiconductor and Diodes	Characteristics Zener Diode – Principle, characteristics, construction, working
3 rd (17Aug. – 23Aug.)	Unit 1 Semiconductor and Diodes Unit 2 Bipolar Junction Transistor (BJT)	Diode Rectifiers – Half Wave and Full Wave Filters – C, LC and PI Filters NPN and PNP Transistor – Operation and characteristics
4 th (24Aug– 31 Aug.)	Unit 2 Bipolar Junction Transistor (BJT)	Common Base Configuration – characteristics working Common Emitter Configuration
5 th (02 Sept. –08 Sept.)	Unit 2 Bipolar Junction Transistor (BJT)	characteristics and working Common Base Configuration characteristics and working High frequency model of BJT Classification of amplifiers, negative feedback
6 th (09 Sept. – 16Sept.)	Unit 3 Field Effect Transistors FET	Working Principle, Classification MOSFET
Class Test – 1		In Second Week of September 2024.
7 th (17 Sept. – 23 sept)	Unit 3 Field Effect Transistors FET	Classification MOSFET Small Signal model N-Channel/ P-Channel MOSFETs – characteristics enhancement and depletion mode

8 th (24 Sept. – 30 Sept.)	Unit 3 Field Effect Transistors FET	MOSFET as a Switch Common Source Amplifiers. Uni-Junction Transistor – equivalent circuit and operation
9 th (01 Oct. – 08 Oct.)	Unit 4 SCR DIAC & TRIAC	SCR – Construction, operation, working, characteristics DIAC – Construction, operation, working, characteristics
10 th (09 Oct. – 16 Oct.)	Unit 4 SCR DIAC & TRIAC	TRIAC – Construction, operation, working, characteristics
Class Test – 2		In Third Week of October 2024.
11 th (18 Oct. – 24 Oct.)	Unit 4 SCR DIAC & TRIAC	SCR and MOSFET as a Switch
12 th (25 Oct. – 01 Nov.)	Unit 4 SCR DIAC & TRIAC	DIAC as bidirectional switch Comparison of SCR, DIAC, TRIAC, MOSFET
House Test		In Second Week of November 2024.
13 th (02 Nov. – 08 Nov.)	Unit 5 Amplifiers and Oscillators	Feedback Amplifiers – Properties of negative Feedback impact of feedback on different parameters Basic Feedback Amplifier Topologies: Voltage Series
14 th (11 Nov. – 18 Nov.)	Unit 5 Amplifiers and Oscillators	Voltage Shunt Current Series, Current Shunt Oscillator Basic Principles,
15 th (19 Nov- 25 Nov)	Unit 5 Amplifiers and Oscillators	Crystal Oscillator, Non-linear/ Pulse Oscillator
	Revision	Revision and doubt clearance
16 th (25 Nov- 02 Dec)	Revision	Revision and doubt clearance

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R.G.Gove

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R.G.Government Polytechnic Banikhet, Distt. Chamba H.P-176303**Department of Electrical Engineering****Lesson Plan**


Name of Faculty	Er. Divya
Discipline	Electrical Engineering
Semester	3rd
Subject	EC (L-5 Hrs./Week)
Lesson Plan Duration	August – December 2024

Week	Topic	Theory
1 st (01Aug. –07Aug.)	Unit – I Single Phase A.C Series Circuits	Generation of alternating voltage, Phasor representation of sinusoidal quantities R, L, C circuit elements its voltage and current response
2 nd (08Aug. – 16Aug.)	Unit – I Single Phase A.C Series Circuits	R-L, R-C, R-L-C combination of A.C series circuit, impedance, reactance, impedance triangle, Power factor, active power, reactive power, apparent power
3 rd (17Aug. – 23Aug.)	Unit – I Single Phase A.C Series Circuits	power triangle and vector diagram, Resonance, Bandwidth, Quality factor and voltage magnification in series R-L, R-C, RL-C circuit
4 th (24Aug– 31 Aug.)	Unit – II Single Phase A.C Parallel Circuits	R-L, R-C and R-L-C parallel combination of A.C. circuits. Impedance, reactance, phasor diagram, impedance triangle
5 th (02 Sept. –08 Sept.)	Unit – II Single Phase A.C Parallel Circuits	R-L, R-C, R-L-C parallel A.C. circuits power factor, active power, apparent power, reactive power, power triangle
6 th (09 Sept. – 16Sept.)	Unit – II Single Phase A.C Parallel Circuits	Resonance in parallel R-L, R-C, R-L-C circuit, Bandwidth, Quality factor and voltage magnification
Class Test – 1		In Second Week of September 2024.
7 th (17 Sept. – 23 sept)	Unit– III Three Phase Circuits	Phasor and complex representation of three phase supply, Phase sequence and polarity Types of three-phase connections,
8 th (24 Sept. – 30Sept.)	Unit– III Three Phase Circuits	Phase and line quantities in three phase star and delta system, Balanced and unbalanced load, neutral shift in unbalanced load.
9 th (01Oct. – 08 Oct.)	Unit– III Three Phase Circuits	Three phase power, active, reactive and apparent power in star and delta system

10 th (09 Oct. – 16 Oct.)	Unit– IV Network Reduction and Principles of Circuit Analysis	Source transformation, Star/delta
Class Test – 2		In Third Week of October 2024.
11 th (18 Oct. – 24 Oct.)	Unit– IV Network Reduction and Principles of Circuit Analysis	delta/star transformation & Mesh Analysis,
12 th (25 Oct. – 01 Nov.)	Unit– IV Network Reduction and Principles of Circuit Analysis	Node Analysis
	Unit– V Network Theorems	Superposition theorem.
House Test		In Second Week of November 2024.
13 th (02Nov. – 08Nov.)	Unit– V Network Theorems	Thevenin's theorem. Norton's theorem
14 th (11 Nov. – 18 Nov.)	Unit– V Network Theorems	Maximum power transfer theorem Reciprocity theorem. Duality in electric circuits.
15 th (19 Nov- 25 Nov)	Revision	Revision and doubt clearance
16 th (25 Nov- 02 Dec)	Revision	Revision and doubt clearance

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Department of Electrical Engineering

Lesson Plan

Name of Faculty	Mr. X
Discipline	Electrical Engineering
Semester	3 rd
Subject	IEGS(L-4 Hrs./Week)
Lesson Plan Duration	August – December 2024

Week	Topic	Theory
1 st (01Aug. –07Aug.)	Unit – I Thermal Power Plants: Coal, Gas/ Diesel and Nuclear-based	Layout and working of a typical thermal power plant with steam turbines and electric generators. Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal, Gas/ diesel, Nuclear fuels–fusion and fission action.
2 nd (08Aug. – 16Aug.)	Unit – I Thermal Power Plants: Coal, Gas/ Diesel and Nuclear-based	Safe Practices and working of various thermal power plants: coal-based, gas-based, diesel-based, nuclear-based. Functions of the following types of thermal power plants and their major auxiliaries: Coal fired boilers, fire tube and water tube. Gas/diesel based combustion engines.
3 rd (17Aug. – 23Aug.)	Unit – I Thermal Power Plants: Coal, Gas/ Diesel and Nuclear-based UNIT – II LARGE AND MICRO-HYDRO POWER PLANTS	Types of nuclear reactors: Disposal of nuclear waste and nuclear shielding. Thermal power plants in India. Energy conversion process of hydro power plant. Classification of hydro power plant: High, medium and low head
4 th (24Aug– 31 Aug.)	UNIT – II LARGE AND MICRO-HYDRO POWER PLANTS	Construction and working of hydro turbines used in different types of hydro power plant: a. High head – Pelton turbine b. Medium head – Francis turbine c. Low head – Kaplan turbine.
5 th (02 Sept. –08 Sept.)	UNIT – II LARGE AND MICRO-HYDRO POWER PLANTS	Safe Practices for hydro power plants. Different types of micro- hydro turbines for different heads: Pelton, Francis and Kaplan turbines, Locations of these different types of large and micro-hydro power plants in Himachal. Potential locations of micro-hydro power plants in Himachal
6 th (09 Sept. – 16Sept.)	UNIT– III SOLAR AND BIOMASS BASED POWER PLANTS	Solar Map of India: Global solar power radiation. <i>Solar Power Technology</i> a. Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough,

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7 th (17 Sept. – 23 sept)	UNIT– III SOLAR AND BIOMASS BASED POWER PLANTS	<p>b. Parabolic Dish, Fresnel Reflectors</p> <p>c. Solar Photovoltaic (PV) power plant: layout, construction, working. <i>Biomass- based Power Plants</i></p> <p>d. Layout of a Bio-chemical based (e.g. biogas) power plant:</p>
8 th (2 (24 Sept. – 30Sept.)	UNIT– III SOLAR AND BIOMASS BASED POWER PLANTS	<p>e. Layout of a Thermo-chemical based (e.g. Municipal waste) power plant</p> <p>f. Layout of an Agro-chemical based (e.g. bio-diesel) power plant, Features of the solid, liquid and gas biomasses as fuel for biomass power plant.</p>
9 th (01Oct. – 08 Oct.)	UNIT– IV WIND POWER PLANTS	<p>Wind Map of India: Wind power density in watts per square meter Layout of Horizontal axis large wind power plant:</p> <p>Geared wind power plant. Direct-drive wind power plant.</p>
10 th (09 Oct. – 16 Oct.)	UNIT– IV WIND POWER PLANTS	<p>Salient Features of electric generators used in large wind power plants:</p> <p>Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG), Wound Rotor Induction Generator (WRIG)</p>
Class Test – 2		In Third Week of October 2024.
11 th (18 Oct. – 24 Oct.)	UNIT– IV WIND POWER PLANTS	<p>Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG), permanent magnet synchronous generator (PMSG)</p>
12 th (25 Oct. – 01 Nov.)	UNIT– V ECONOMICS OF POWER GENERATION AND INTERCONNECTED POWER SYSTEM	<p>Related terms: connected load, firm power, cold reserve, hot reserve, spinning reserve. Base load and peak load plants; Load curve, load duration curve, integrated duration curve</p>
House Test		In Second Week of November 2024.
13 th (02Nov. – 08Nov.)	UNIT– V ECONOMICS OF POWER GENERATION AND INTERCONNECTED POWER SYSTEM	<p>Cost of generation: Average demand, maximum demand, demand factor, plant capacity factor, plant use factor, diversity factor, load factor and plant load factor.</p> <p>Choice of size and number of generator units, combined operation of power station Causes</p>
14 th (11 Nov. – 18 Nov.)	UNIT– V ECONOMICS OF POWER GENERATION AND INTERCONNECTED POWER SYSTEM	<p>Impact and reasons of Grid system fault: State grid, national grid, brown out and black out;</p>

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<p>15th (19 Nov- 25 Nov)</p>	<p>UNIT- V ECONOMICS OF POWER GENERATION AND INTERCONNECTED POWER SYSTEM</p>	<p>sample blackouts at national and international level.</p>
	<p>Revision</p>	<p>Revision and doubt clearance</p>