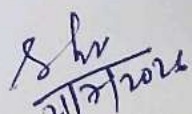


LESSON PLAN				
ACADEMIC LESSON PLAN FOR SESSION: 2026-27				
DISCIPLINE	YEAR		NAME OF THE TEACHING FACULTY	
MECHANICAL ENGG. & ELECTRICAL ENGG	1ST		MISS SINDHUJA PANIGRAHI, LECT(ELECT)	
SUBJECT: FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGG (TH-6)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 02		SEMESTER FROM 17/08/2026 TO 17/04/2027 NO. OF WEEKS : 32 NOS.
WEEKS	CLASS DAYS	UNITS	THEORY TOPICS	
1st Week	1ST	Unit I: Electric and Magnetic Circuits	Define Electrical and electronics. Need of electrical and electronics.	
	2ND		Definition of EMF, Current, Potential Difference; Ohm's law and its relation with temp., concept of source and load	
2nd Week	1ST		relation of V, I & R in series and parallel circuit, voltage and current division rule, Power and Energy	
	2ND		Concept of KCL, KVL: simple problems	
3rd Week	1ST		Basic Definition of M.M.F, magnetic force, flux, permeability, reluctance, permeance	
	2ND		Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Self and mutual inductance, leakage factor	
4th Week	1ST		Hysteresis loop and BH curve, Analogy between electric and magnetic circuits	
	2ND		AC fundamentals: Definitions of Cycle, Frequency, Periodic time, Amplitude, Angular velocity	
5th Week	1ST	Unit II: A.C. Circuits	RMS value, Average value, Form Factor Peak Factor, phase angle	
	2ND		Mathematical and phasor representation of alternating emf and current	
6th Week	1ST		Voltage and Current relationship in Star and Delta connections	
	2ND		A.C in resistors, inductors circuit	
7th Week	1ST		A.C in Capacitive Circuit, A.C in R-L series Circuit	
	2ND		R-C series, R-L-C series Circuit	
8th Week	1ST		A.C in R-L parallel	
	2ND		A.C in R-C Parallel, R-L-C Parallel Circuit.	
9th Week	1ST	Unit III: Transformer and DC Machines	Power in A. C. Circuits, power triangle	
	2ND		Concept of Fleming's rules and explain it	
10th Week	1ST		Construction and Working principle of DC machines	
	2ND		EMF equations of DC machines and applications	
11th Week	1ST		General construction and principle of different types of Transformer	
	2ND		Classification of transformer with construction and principle	
12th Week	1ST		Emf equation of single phase transformers	
	2ND		Transformation ratio of transformers	
13th Week	1ST	Unit IV: Measuring instrument	revision of the above topic	
	2ND		Introduction to measuring instruments	
14th Week	1ST		Explain and classify the types of torques (concept only)	
	2ND		concept of PMMC and MI type instruments and its uses	
15th Week	1ST		Explain 1-phase Ammeter, Voltmeter with connection diagram	

	2ND	s, Wiring & Power billing	Explain wattmeter, energy meter with connection diagram
16th Week	1ST		Types of wiring for domestic installation (concept only)
	2ND		calculate energy consumption in a small electric installation
17th Week	1ST		simple numerical on Wiring & Power billing
	2ND		
18th Week	1ST	Unit V: Overview of Basic Electronics & Components	Basic Concept of Electronics and its application
	2ND		Basic Concept of voltage, current and power & Electronics components and their classification
			Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors and their Applications. (Concept and simple problems of Resistance, Capacitor & Inductor)
19th Week	1ST		Concept of energy band in solids. Classify the solid material.
	2ND		Define Semiconductor and classify the types. Explain intrinsic and extrinsic semiconductors
20th Week	1ST		Definition, Classification and Working of Diode (PN junction, LED, Zener)
	2ND		Transistor: BJT, Concept of FET, MOS and CMOS (Definition, Types, Symbol & Terminals)
21st Week	1ST		of signal waveforms
	2ND		Define Signals. Explain basic concept of alternating current and direct current
22nd Week	1ST	Unit VI: Overview of Signals & Analog Circuits	Classification of signals. And definitions of different types of signals. And explain it. Difference between AC and DC
	2ND		Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources. (Definitions)
23rd Week	1ST		Diode as rectifier – half wave and full wave rectifier (center taped & bridge)
	2ND		Introduction to Clippers & Clampers (Definitions only) and explain the types.
24th Week	1ST		Explain the working of Transistor as an amplifier
	2ND		Working of RC Coupled amplifier, Oscillator (only definition & types)
25th Week	1ST		Introduction to ICs, advantages & uses
	2ND		Introduction to Operational Amplifiers. Pin configuration of OPAMP
26th Week	1ST	Unit VII: ICs & OP-Amps	Basic concept of Ideal OPAMP & Practical OPAMP, Characteristics of Ideal OPAMP
	2ND		Explain Open loop and closed loop configuration of OPAMP
27th Week	1ST		Explain the different applications of OPAMP
	2ND		Concept of ADDER with the diagram and derive the output voltage
28th Week	1ST		Explain differentiator circuit, derive the output voltage and application of it
	2ND		Explain integrator circuit, derive the output voltage and application of it
29th Week	1ST		Introduction to Number system (Binary, Octal, Hexadecimal) and Simple problems of Number system
	2ND		Introduction to Logic Gates and explain each gate with Circuit symbol & Truth table
30th Week	1ST	Unit VIII: Overview of Digital Electronics	Explain Universal Logic gates and Realization of each gate by using this
	2ND		State De' Morgans Law
31st Week	1ST		Introduction to Boolean Algebra
	2ND		Electronic implementation of Boolean operation
32nd Week	1ST		Implementation of Boolean expression using logic gates (simple problem)
	2ND		Discussion of the above topic


 Tailor
 [G.F. ELECT]


 21/7/2024
 HOD (ELECTRICAL)
 GOVT. POLY
 GAJAPATI

LESSON PLAN FOR SESSION:2026-27

DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRICAL ENGG.		3RD	MISS SINDHUJA PANIGRAHI, LECT(ELECT.)	
<u>SUBJECT:</u> Leadership Management Skill (TH-5)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 03		SEMESTER FROM 01/07/2026 TO 05/11/2026
				NO. OF WEEKS : 15 NOS.
WEEKS	CLASS DAYS	UNITS	THEORY TOPICS	
1ST WEEK	1ST	UNIT-1: Leadership & Management, concept, principles	Definition of leadership, management	
	2ND		Leadership theories	
	3RD		Leadership characteristics	
2ND WEEK	1ST		Leadership characteristics	
	2ND		Principles of management	
	3RD		Principles of management	
3RD WEEK	1ST		Managerial functions	
	2ND		Leader v/s Manager, Leader/Manager traits and character	
	3RD		Leader v/s Manager, Leader/Manager traits and character	
4TH WEEK	1ST	UNIT-2: Human Resource Management in Organizations	Discussion of assigned topics in class on leadership and management principles and theories	
	2ND		Human Resource Management: Meaning, Nature, Objectives, Scope	
	3RD		Human Resource Management: Meaning, Nature, Objectives, Scope	
5TH WEEK	1ST		Human Resource Management: Meaning, Nature, Objectives, Scope	
	2ND		Job & Job analysis	
	3RD		Job & Job analysis	
6TH WEEK	1ST		Staff Development: Need and Objectives of Staff Development, Approaches	
	2ND		Staff Development: Need and Objectives of Staff Development, Approaches	
	3RD		Training & development	
7TH WEEK	1ST	UNIT-3: Personal disposition, skills & abilities of leader	Organizational Development: Components of OD process & Learning organization	
	2ND		Organizational Development: Components of OD process & Learning organization	
	3RD		Self-awareness	
8TH WEEK	1ST		Leadership characteristics, traits	
	2ND		Leadership skills & abilities	
	3RD		Emotional intelligence & its components, importance in leadership	
9TH WEEK	1ST		Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening	
	2ND		Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening	
	3RD		Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening	
10TH WEEK	1ST	UNIT-4: Leader's role in Motivating, Inspiring and Transformative leadership, nurturing team-work	Leading & Mentorship – Influencing & mentoring	
	2ND		Leading & Mentorship – Influencing & mentoring	
	3RD		Goal setting & leadership	
11TH WEEK	1ST		Transformative Leadership, vision & envisioning	
	2ND		Transformative Leadership, vision & envisioning	
	3RD		Motivational role of leader in people management	
12TH WEEK	1ST		Group & team	
	2ND		Team dynamics	
	3RD		Conflict management, strategies in managing conflicts	
13TH WEEK	1ST	UNIT-5: Change Management & Leadership	Conflict management, strategies in managing conflicts	
	2ND		Models of change	
	3RD		Forces driving change	
14TH WEEK	1ST		Forces driving change	
	2ND		Change Management – process, goal, importance	
	3RD		The process of change happening in an organization	
15TH WEEK	1ST		Key aspects of leadership in change management – responsibilities of a change leader.	
	2ND		Key aspects of leadership in change management – responsibilities of a change leader.	
	3RD		Key aspects of leadership in change management – responsibilities of a change leader.	

S. S. S.
21/07/26
[G.F. ELECT]

S. S. S.
21/7/2026
MOD (ELECTRICALS)
GOVT. POLY
GAJAPATI

DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRICAL		3RD	MISS.SINDHUJA PANIGRAHI(PTGF)	
SUBJECT:E&EM LAB		NO. OF DAYS PER WEEK CLASS ALLOTTED : 04	SEMESTER FROM 01/07/2026 TO 05/11/2026	
			NO. OF WEEKS : 15 NOS.	
WEEKS	CLASS DAYS	THEORY TOPICS		
1ST WEEK	1ST	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale		
	2ND	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale		
	3RD	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale ,with record check and rubrics		
	4TH	Identify measuring instruments on the basis of symbols on dial, type, accuracy, class position and scale ,with record check and rubrics		
2ND WEEK	1ST	Identify the components of PMMC and MI instruments		
	2ND	Identify the components of PMMC and MI instruments		
	3RD	Identify the components of PMMC and MI instruments,with record check and rubrics		
	4TH	Identify the components of PMMC and MI instruments,with record check and rubrics		
3RD WEEK	1ST	Extend range of ammeter and voltmeter by using shunt and multiplier		
	2ND	Extend range of ammeter and voltmeter by using shunt and multiplier		
	3RD	Extend range of ammeter and voltmeter by using shunt and multiplier ,with record check and rubrics		
	4TH	Extend range of ammeter and voltmeter by using shunt and multiplier ,with record check and rubrics		
4TH WEEK	1ST	Use electro-dynamic watt-meter for measurement of power in a single phase circuit		
	2ND	Use electro-dynamic watt-meter for measurement of power in a single phase circuit		
	3RD	Use electro-dynamic watt-meter for measurement of power in a single phase circuit ,with record check and rubrics		
	4TH	Use electro-dynamic watt-meter for measurement of power in a single phase circuit ,with record check and rubrics		
5TH WEEK	1ST	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load		
	2ND	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load		
	3RD	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load,with record check and rubrics		
	4TH	Use single three phase wattmeter for measurement of active and reactive power of three phase-balanced load ,with record check and rubrics		
6TH WEEK	1ST	Use two wattmeters for measuring active power of three-phase balanced load		
	2ND	Use two wattmeters for measuring active power of three-phase balanced load		
	3RD	Use two wattmeters for measuring active power of three-phase balanced load ,with record check and rubrics		
7TH WEEK	4TH	Use two wattmeters for measuring active power of three-phase balanced load,with record check and rubrics		
	1ST	Calibrate single-phase electronic energy meter by direct loading		
	2ND	Calibrate single-phase electronic energy meter by direct loading		
	3RD	Calibrate single-phase electronic energy meter by direct loading ,with record check and rubrics		
	4TH	Calibrate single-phase electronic energy meter by direct loading ,with record check and rubrics		
8TH WEEK	1ST	Use Kelvin's double bridge for measurement of low resistance		
	2ND	Use Kelvin's double bridge for measurement of low resistance		
	3RD	Use Kelvin's double bridge for measurement of low resistance ,with record check and rubrics		
	4TH	Use Kelvin's double bridge for measurement of low resistance,with record check and rubrics		
	1ST	Use voltmeter and ammeter method for measurement of medium resistance		
	2ND	Use voltmeter and ammeter method for measurement of medium resistance		

WEEKS	CLASS DAYS	THEORY TOPICS
9TH WEEK	3RD	Use voltmeter and ammeter method for measurement of medium resistance, with record check and rubrics
	4TH	Use voltmeter and ammeter method for measurement of medium resistance, with record check and rubrics
10TH WEEK	1ST	Use Megger for insulation resistance measurements
	2ND	Use Megger for insulation resistance measurements
	3RD	Use Megger for insulation resistance measurements, with record check and rubrics
	4TH	Use Megger for insulation resistance measurements, with record check and rubrics
11TH WEEK	1ST	Use earth tester for measurement of earth resistance
	2ND	Use earth tester for measurement of earth resistance
	3RD	Use earth tester for measurement of earth resistance, with record check and rubrics
	4TH	Use earth tester for measurement of earth resistance, with record check and rubrics
12TH WEEK	1ST	Use Tri-vector meter for measuring kW, kVAr and Kva of a powerline
	2ND	Use Tri-vector meter for measuring kW, kVAr and Kva of a powerline
	3RD	Use Tri-vector meter for measuring kW, kVAr and Kva of a powerline, with record check and rubrics
	4TH	Use Tri-vector meter for measuring kW, kVAr and Kva of a powerline, with record check and rubrics
13TH WEEK	1ST	Study of Resolution and sensitivity of Digital Instrument
	2ND	Study of Resolution and sensitivity of Digital Instrument
	3RD	Study of Resolution and sensitivity of Digital Instrument, with record check and rubrics
	4TH	Study of Resolution and sensitivity of Digital Instrument, with record check and rubrics
14TH WEEK	1ST	Measure the unknown frequency and phaseangle, using CRO by Lissajous figure
	2ND	Measure the unknown frequency and phaseangle, using CRO by Lissajous figure
	3RD	Measure the unknown frequency and phaseangle, using CRO by Lissajous figure, with record check and rubrics
	4TH	Measure the unknown frequency and phaseangle, using CRO by Lissajous figure, with record check and rubrics
15TH WEEK	1ST	Practice of previous experiments, with record check and rubrics
	2ND	Practice of previous experiments, with record check and rubrics
	3RD	Practice of previous experiments, with record check and rubrics
	4TH	Practice of previous experiments, with record check and rubrics

Sachin
21/07/26
(G.F. ELECT)

S. hr
21/7/2026
HOD (ELECTRICAL)
GOVT. POLY
GAJAPATI

LESSON PLAN			
ACADEMIC LESSON PLAN FOR SESSION: 2026-27			
DISCIPLINE	YEAR	NAME OF THE TEACHING FACULTY	
MECHANICAL ENGG. & ELECTRICAL ENGG.	1ST	MISS SINDHUJA PANIGRAHI, LECT (ELECT.)	
SUBJECT: FUNDAMENTALS OF ELECTRICAL & ELECTRONICS ENGG LAB (PR-7)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 02	SEMESTER FROM 17/08/2026 TO 17/04/2027
		NO. OF WEEKS : 32 NOS.	
WEEKS	CLASS DAYS	THEORY TOPICS	
1st Week	1ST	Determine the permeability of magnetic material by plotting its B-H curve	
2nd Week	1ST	Measure voltage, current and power in 1-phase circuit with resistive load	
3rd Week	1ST	Study of 1-phase transformer (structure)	
4th Week	1ST	Connect single phase transformer and measure input and output quantities. Also determine the transformation ratio(K).	
5th Week	1ST	Connect single phase transformer and measure input and output quantities. Also determine the transformation ratio(K), check the lab records and conduct the viva.	
6th Week	1ST	Study of different parts of DC machines.	
7th Week	1ST	Study of PMMC, MI types of instruments (ammeter, voltmeter).	
8th Week	1ST	Study of PMMC, MI types of instruments (ammeter, voltmeter), check the lab records and conduct the viva.	
9th Week	1ST	Study of PMMC, MI types of instruments (wattmeter, energy meter)	
10th Week	1ST	Wiring Connection of Fluorescent lamp/tube light	
11th Week	1ST	Wiring Connection of Fluorescent lamp/tube light, check the lab records and conduct the viva.	
12th Week	1ST	Prepare an electrical switch board to control one light point, one plug point, one fan point and a fuse.	
13th Week	1ST	Prepare an electrical switch board to control one light point, one plug point, one fan point and a fuse, check the lab records and conduct the viva.	
14th Week	1ST	Prepare a report on power billing(monthly) of a domestic single phase wiring system	
15th Week	1ST	Prepare a report on power billing(monthly) of a domestic single phase wiring system, check the lab records and conduct the viva.	
16th Week	1ST	Identify various passive and active electronics components	
17th Week	1ST	Connect resistors in series and parallel combination and measure its value using digital multimeter	
18th Week	1ST	Connect resistors in series and parallel combination and measure its value using digital multimeter, check the lab records and conduct the viva.	
19th Week	1ST	Connect capacitors in series and parallel combination and measure its value using multimeter	
20th Week	1ST	Use multimeter to measure the value of given resistor and determine the value to confirm with colour code	
21st Week	1ST	Use multimeter to measure the value of given resistor and determine the value to confirm with colour code, check the lab records and conduct the viva.	
22nd Week	1ST	Test the PN-junction diode and LED using digital multimeter	
23rd Week	1ST	Test the performance of PN-junction diode	
24th Week	1ST	Test the performance of PN-junction diode, check the lab records and conduct the viva.	
25th Week	1ST	Test the performance of Zener diode	
26th Week	1ST	Test the performance of Zener diode, check the lab records and conduct the viva.	
27th Week	1ST	Construct the half wave rectifier and analyze the waveform	
28th Week	1ST	Construct the full wave rectifier and analyze the waveform	
29th Week	1ST	Construct the full wave rectifier and analyze the waveform, check the lab records and conduct the viva.	
30th Week	1ST	Identify three terminals of a transistor using digital multimeter	
31st Week	1ST	Familiarization with different types of logic gates.	
32nd Week	1ST	Familiarization with different types of logic gates, check the lab records and conduct the viva.	

For
21/08/26
(G.F. ELECT)

S. S.
21/8/2026
MOD (ELECTRICAL)
GOVT. POLY
GAJAPATI

LESSON PLAN FOR SESSION:2026-27				
DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRICAL ENGG.		5TH	MISS SINDHUJA PANIGRAHI,LECT(ELECT.)	
SUBJECT: ELECTRICAL TRACTION (TH-3C)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 03		SEMESTER FROM 01/07/2026 TO 05/11/2026
				NO. OF WEEKS : 15 NOS.
WEEKS	CLASS DAYS	UNITS	THEORY TOPICS	
1ST WEEK	1ST	UNIT-1: <u>Basics of Traction</u>	General description of electrical traction system in India	
	2ND		Electric drive, diesel-electric drive and battery drive – advantages and disadvantages	
	3RD		Problems associated with AC traction systems and remedies	
2ND WEEK	1ST		Voltage balance and current balance in traction systems	
	2ND		Production of harmonics and induction effects	
	3RD		Metro rail system and its features	
3RD WEEK	1ST		Introduction to Traction Power Supply System – Need for traction supply, basic arrangement and 25-kV AC traction system	
	2ND		Traction Substation – Layout, incoming supply, transformer and major equipment	
	3RD		Substation Equipment and Functions – Circuit breaker, isolator, transformer, CT, PT/CVT, lightning arrester, relay, etc.	
4TH WEEK	1ST	UNIT-2: <u>Power Supply Arrangements</u>	Feeding Post (FP) – Purpose, equipment and functions	
	2ND		Feeding and Sectioning Arrangements – Feeding arrangements, neutral sections and electrical isolation	
	3RD		Sectioning and Paralleling Post (SP) – Construction, equipment and operation	
5TH WEEK	1ST		Sub-sectioning and Paralleling Post (SSP) – Purpose, arrangement and operation	
	2ND		Sub-sectioning Post and Elementary Section – Elementary section, isolation and switching arrangements	
	3RD		Protection System and Control/Switching Station – Protection of traction transformer and 25-kV catenary; miscellaneous equipment at control/switching station; revision	
6TH WEEK	1ST		Introduction to Overhead Equipment (OHE) – Purpose, requirements and different types of OHE	
	2ND		Pentagonal OHE Catenary Construction – Arrangement and components of catenary system	
	3RD		Types of Catenary According to Speed Limit – Conventional and high-speed arrangements	
7TH WEEK	1ST	UNIT-3: Overhead Equipment	OHE Supporting Structures – Poles, portals, headspans and other supporting arrangements	
	2ND		Cantilever Assembly – Construction, components and function	
	3RD		Overhead System and Current Collectors – Trolley collector, bow collector and pantograph collector	
8TH WEEK	1ST		Pantograph – Types and Construction	
	2ND		Revision and Application of OHE – Maintenance aspects, fault identification and complete chapter revision	
	3RD		Classification and Nomenclature of Electric Locomotives – Classification, coding and nomenclature	
9TH WEEK	1ST	UNIT-4: <u>Electric Locomotive</u>	Block Diagram of AC Locomotive – Main power path and major components	
	2ND		Power Circuit of AC Locomotive – Current path from OHE to traction motors	
	3RD		Auxiliary Circuit of AC Locomotive – Auxiliary equipment and their functions	
10TH WEEK	1ST		Auxiliary Equipment and Control System – Functions and operation of major auxiliary equipment	
	2ND		Locomotive Bogie Classification – Wheel arrangements and nomenclature	
	3RD		Maintenance of AC Locomotive – Routine maintenance, inspection and safety	
11TH WEEK	1ST		Revision and Application – Complete locomotive system, diagrams and assessment	
	2ND		Desirable Characteristics of Traction Motors – Mechanical, electrical and operating requirements	
	3RD		Types of Motors Used for Traction – DC series, AC motors and other suitable traction motors	

WEEKS	CLASS DAYS	UNITS	THEORY TOPICS
12TH WEEK	1ST	<u>UNIT-5:</u> <u>Traction Motors and</u> <u>Train Lighting</u>	Control of Traction Motors – Speed control, voltage control and methods of motor control
	2ND		Requirements and Types of Braking – Mechanical, electrical and regenerative braking
	3RD		Electric Braking and Regenerative Braking – Principle, operation, advantages and limitations
13TH WEEK	1ST		Train Lighting – Single Battery System – Arrangement, components and working
	2ND		Double Battery Parallel Block System – Arrangement, charging and operation
	3RD		SG, HOG and End-on Generation – Systems of train power supply and comparison; revision
14TH WEEK	1ST	<u>UNIT-6: Signalling</u> <u>and Supervisory</u> <u>Control</u>	Requirements of Signalling Systems – Purpose, objectives and basic principles of railway signalling
	2ND		Types of Railway Signals – Classification, colour-light signals, semaphore signals and applications
	3RD		Track Circuits – Principle, construction, operation and applications
15TH WEEK	1ST		Remote Control Systems – Need, advantages and basic arrangement of remote control
	2ND		Systems and Equipment of Remote Control – Control equipment, communication network and supervisory arrangements
	3RD		Metro Rail Signalling and Revision – Metro rail systems, advantages and schemes in India; chapter revision

Scanned
21/07/2026
[G.F. ELECT]

Sh
21/7/2026
HOD (ELECTRICAL)
GOVT. POLY
GAJAPATI