

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**  
**SIRDA POLYTECHNIC SUNDERNAGAR**  
**DISTT.- MANDI (H.P.) - 175019**

**LESSON PLAN**

Program Name	Electrical & Electronics Engineering
Subject Name	Electrical testing and Commissioning
Subject Code	EEEEPE206
Semester	4th
Subject Teacher Name	Er. Tanu Kumari

**Evaluation Scheme**

S. No.	Subject Name	Study Scheme (Hrs/week)		Marks Distribution in Evaluation Scheme					
				Internal Assessment			External Assessment		
		Th	Pr	Th	Pr	Total	Th	Pr	Total
1	Electrical Testing and commissioning	4	4	40	0	40	60	0	100
2	Electrical Testing and commissioning	0	4	0	40	40	0	60	100

**Reference Books**

Electrical Testing and commissioning

**Teaching Plan**

	Name of Topic	Proposed Date	Actual Date	Remarks
<b>UNIT-I</b> Electrical Safety and Insulation	Do's & Don't regarding safety in domestic electrical appliances	27-01-2026		
	Electrical Safety in industry/Power station / Sub-stations	29-01-2026		
	Fire Detection Alarm	30-01-2026		
	Fire Fighting Equipments	31-01-2026		
	Factors affecting life of Insulating Materials	03-02-2026		
	Classifications of Insulating Materials	05-02-2026		
	Measuring Insulation Resistance by Different methods	06-02-2026		
	Reconditioning of Insulation	07-02-2026		
	Insulating oil	10-02-2026		
	Properties of Insulating oil	12-02-2026		
	Causes of Deterioration of oil	13-02-2026		
	Testing of Transformer Oil	17-02-2026		
<b>Unit-II</b> Installation and Erection	Concept of foundation for installation of machinery	19-02-2026		
	Requirements of foundation for static and rotating electrical machinery	20-02-2026		
	Concept of leveling and aligning	21-02-2026		
	Procedure for leveling and aligning	24-02-2026		
	Alignment of direct coupled Drive	26-02-2026		
	Effects of mis-alignment	27-02-2026		
	Installation of Transformer	28-02-2026		
	Procedure of installation of Transfer	03-03-2026		
	Requirements of Installations of pole mounted transformers	05-03-2026		
	Requirements of installations of rotating electrical machines	06-03-2026		
	Devices and tools required for loading, unloading and carrying heavy equipments	07-03-2026		
	<b>CT-1</b>	10-03-2026		
	Precaution to be taken while handling devices and tools	12-03-2026		

Unit-III Testing and Commsioning	Concept of testing	13.03.2026		
	Objective of testing	17.03.2026		
	Roles of ISS in testing of electrical equipments	19.03.2026		
	Types of Test and concepts	20.03.2026		
	Routing Test	24.03.2026		
	Supplimentary test	27.03.2026		
	Special test	28.03.2026		
	Methods of testing	02.04.2026		
	Direct/Indirect/regenerative test	04.04.2026		
	CT-2	07.04.2026		
	Tolerences for the various items for equipment	09.04.2026		
	Test before Commsioning of Transformers	10.04.2026		
	Testing of Transformer	16.04.2026		
	Testing of Three Phase Induction Motor	17.04.2026		
	Testing of single Phase Induction motor	17.04.2026		
Testing of Synchronous and DC Machine	18.04.2026			
Unit-IV Trouble Shooting Plan	Internal and external causes for failure/ abnormal operatrion of equipments	21.04.2026		
	List of Mechanical, Electrical and Magnetic Faults, Remedies and applications	23.04.2026		
	Use of tools	24.04.2026		
	Common troubles in electrical equipments and machines	25.04.2026		
	Preperation of trouble shooting	28.04.2026		
	charts for D.C. & A.C. Machines	30.04.2026		
	Charts for Transformers	30.04.2026		
Unit-V Maintenance	PTM	02.05.2026		
	Concept of Maintenance	12.05.2026		
	Types of Maintenance	14.05.2026		
	Causes of Failure of Electrical Machines	15.05.2026		
	Preventive Maintenance	15.05.2026		
	Procedure or Deevloping Maintenance	16.05.2026		
	Schedules for Electrical machines	19.05.2026		
	Factors affecting preventive maintenance schedules	21.05.2026		
	concept of TPM, Pillers of TPM	22.05.2026		
	Identification of different types of Faults developed	23.05.2026		
	Maintenance Schedules of Distribution transformers, 1 Phase & 3 Phase IM, batteries	26.05.2026		

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Principal  
SIRDA Polytechnic Sundernagar  
SIRDA Distt. Mandi (H.P.)  
Naulakha, P. O. Kanald  
Sunder Nagar, Mandi (HP)

# SIRDA Polytechnic Vill Naulakha, Sundernagar, Distt Mandi (H.P) -175019

Department of Electrical and Electronics Engineering

## Lesson plan

Session :Jan-July 2026

Start From : 27/01/2026

Semester : Fourth

S.No	MONTH	WEEK	Chapter	CONTENTS	REMARKS
1	January	Week-4	IC Fabrication and Circuit Configuration for Linear IC	Introduction. Advantages of ICs over discrete components	
	February	Week-1		Manufacturing process of monolithic IC's, Construction of monolithic bipolar transistor – Monolithic diodes – Integrated Resistors, Monolithic Capacitors – Inductors. Current mirror and current sources, Current sources as active loads	
		Week-2		Voltage sources, Voltage References, BJT Differential amplifier with active loads, General operational amplifier stages	
		Week-3		internal circuit diagrams of IC 741, DC and AC performance characteristics, slew rate, Open and closed loop Configurations.	
	Week-4	Applications of Operational Amplifiers		Sign Changer, Scale Changer, Phase Shift Circuits, Voltage Follower, V-to-I and I-to-V converters, adder, subtractor	
2	March	Week-1	Analog Multiplier and PLL	Instrumentation amplifier, Integrator, Differentiator, Logarithmic amplifier, Antilogarithmic amplifier, Comparators, Schmitt trigger	Class Test -I
		Week-2		Precision rectifier, peak detector, clipper and clamper, Low-pass, high-pass and band-pass Butterworth filters.	
		Week-3	Analog Multiplier and PLL	Analog Multiplier using Emitter Coupled Transistor Pair - Gilbert Multiplier cell – Variable transconductance technique	
		Week-4		analog multiplier ICs and their applications, Operation of the basic PLL, Closed loop analysis, Voltage controlled oscillator	
3	April	Week-1	Analog to digital and digital to analog converters	Monolithic PLL IC 565, application of PLL for AM detection, FM detection, FSK modulation and demodulation and Frequency synthesizing.	Class Test -II
		Week-2		Analog and Digital Data Conversions, D/A converter – specifications - weighted resistor type, R-2R Ladder type	
		Week-3	Waveform generators and special function Ics	Voltage Mode and Current-Mode R2R Ladder types switches for D/A converters, high speed sample-and-hold circuits, A/D Converters specifications	
		Week-4		Flash type- Successive Approximation type - Single Slope type – Dual Slope type - A/D Converter using Voltage-to- Time Conversion - Over-sampling A/D Converters.	
		Week-5		Sine-wave generators, Multivibrators and Triangular wave generator, Saw-tooth wave generator, ICL8038 function generator, Timer IC 555	
4	May	Week-2	Waveform generators and special function Ics	<b>House Test</b>	
		Week-3		IC Voltage regulators – Three terminal fixed and adjustable voltage regulators - IC 723 general purpose regulator Monolithic switching regulator, Switched 46 capacitor filter IC MF10, Frequency to Voltage and Voltage to Frequency converters	
		Week-4		Audio Power amplifier, Video Amplifier, Isolation Amplifier, Opto-couplers and fibre optic IC.	

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**Department of Electrical and Electronics Engineering**

**Lesson plan**

Semester : Fourth

Session : Jan-July 2026

Start From : 27/01/2026

S.No	MONTH	WEEK	Chapter	CONTENTS	REMARKS
1	January	Week-4	Power Electronic Devices	Introduction to Power electronic devices Power transistor: construction, working principle, V-I characteristics and uses.	
		Week-1		IGBT: Construction, working principle, V-I characteristics and uses. Concept of single electron transistor (SET) - aspects of Nano-technology.	
	February	Week-2	Thyristor Family Devices	SCR: construction, two transistor analogy, types, working and characteristics, SCR mounting and cooling.	
		Week-3		Types of Thyristors: SCR, LASCR, SCS, GTO, UJT, PUT, DIAC and TRIAC Thyristor family devices: symbol, construction, operating principle and V-I characteristics.	
		Week-4		Protection circuits: over-voltage, over-current, Snubber, Crowbar.	
2	March	Week-1	Turn-on and Turn-off Methods of Thyristors	SCR Turn-On methods: High Voltage thermal triggering, Illumination triggering, dv/dt triggering, Gate triggering.	
		Week-2		Gate trigger circuits - Resistance and Resistance-Capacitance circuits. SCR triggering using UJT, PUT: Relaxation Oscillator and Synchronized UJT circuit.	Class Test -I
		Week-3		Pulse transformer and opto-coupler based triggering. SCR Turn-Off methods: Class A Series resonant commutation circuit, Class B-Shunt Resonant commutation circuit, Class C-Complimentary	
		Week-4		Symmetry commutation circuit, Class D - Auxiliary commutation, Class E- External pulse commutation, Class F- Line or natural commutation.	
3	April	Week-1	Phase Controlled Rectifiers	Phase control: firing angle, conduction angle.	
		Week-2		Single phase half controlled, full controlled and midpoint controlled rectifier with R,	Class Test -II
		Week-3		RL load: Circuit diagram, working, input- output waveforms, equations for DC output and effect of freewheeling diode.	
		Week-4		Different configurations of bridge controlled rectifiers: Full bridge, half bridge with common anode, common cathode, SCRs in one arm and diodes in another arm.	
		Week-5		Applications: Burglar's alarm system, Battery charger using SCR, Emergency light system	
4	May	Week-2	Industrial Control Circuits	<b>House Test</b>	
		Week-3		Temperature controller using SCR and; Illumination control / fan speed control TRIAC, SMPS.	
		Week-4		UPS: Offline and Online SCR based AC and DC circuit breakers.	

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SIRDA Polytechnic VIII Naulakha, Sundernagar, Distt Mandi (H.P.)-175019

Department of Electrical &amp; Electronics Engineering

## LESSON PLAN

Program Name	Electrical & Electronics Engineering			
Subject Name	Induction ,Synchronous & Special Electric Machines			
Subject Code	EEEEPC210			
Semester	4th			
Subject Teacher Name	Er. Om Prakash			
S.N.	TOPIC	Proposed Date	Actual Date	REMARKS
1	Three Phase Induction Motor			
2	Working principle: production of rotating magnetic field,	27/01/2026 - 29/01/2026		
3	Synchronous speed,			
4	rotor speed and slip,			
5	Constructional details of 3 phase induction motors:	02/02/2026- 05/02/2026		
6	Squirrel cage induction motor			
7	and Slip ring induction motor			
8	Rotor quantities:	09/02/2026- 12/02/2026		
9	frequency, induced emf, power factor at			
10	starting and running condition.			
11	Characteristics of torque versus slip (speed), Torques:	16/02/2026- 19/02/2026		
12	starting, full load and maximum with relations among them, Induction motor as a			
13	generalized transformer with phasor diagram,			
14	Four quadrant operation, Power flow			
15	diagram Starters: need and types;	23/02/2026- 26/02/2026		
16	stator resistance,			
17	auto transformer, star delta, rotor			
18	resistance and soft starters.			
19	Speed control methods: stator voltage,	02/03/206- 05/03/2026		
20	pole changing, rotor resistance and VVVF.			
21	Motor selection for different applications as per the load torque-speed requirements,			
22	Maintenance of three phase induction motors.			
23	Single phase induction motors	09/03/2026- 12/02/2026		
24	Double field revolving theory, principle of making these motors self-start.			
25	Construction and working. Resistance start induction run.			CT-1
26	, capacitor start induction run, capacitor start	16/03/2026- 19/03/2026		
27	capacitor run, shaded pole, repulsion type,			
28	series motor, universal motor,			
29	hysteresis motor,			
30	Torque - speed characteristics for all of the above motors,	23/03/2026- 26/03/2026		
31	motor selection for different			
32	applications as per the load torque-speed requirements			
33	Maintenance of single phase	30/03/2026- 02/04/2026		
34	induction motors.			
35	Three phase Alternators			
36	Principle of working, moving and stationary armatures,	06/04/2026- 09/04/2026		
37	distribution factor,			
38	factors affecting the terminal voltage of alternator; Armature			
39	resistance and leakage reactance drops,			
40	Armature reaction at various power factors			
41	synchronous impedance Voltage regulation	13/04/2026- 16/04/2026		
42	direct loading and synchronous impedance methods.			
43	Maintenance of alternators.			
44	Synchronous motors	20/04/2026-		

45	Principle of working / operation, significance of load angle.	23/04/2026		
46	running torque, pull in torque, pull out torque.			
47	Synchronous motor on load with constant	27/04/2026-		
48	effect of excitation at constant load (numerical), V-Curves and	30/04/2026		
49	inverted V-Curves, Hunting and Phase swinging.			
50	Methods of Starting of Synchronous			
51	Motor, Losses in synchronous motors and efficiency (no numerical). Applications areas			House Test
52	Fractional horse power (FHP) Motors	04/05/2026-		
53	Construction and working: Synchronous Reluctance Motor, Switched Reluctance Motor.	14/05/2026		
54	BLDC, Permanent Magnet Synchronous Motors.			
55	Fractional horse power (FHP) Motors			
56	Fractional horse power (FHP) Motors	18/05/2026-		
57	BLDC, Permanent Magnet Synchronous Motors.	19/05/2026		
Revision		20/05/2026-		
		26/05/2026		

  
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**LESSON PLAN**

Program Name	EEE
Subject Name	Essence of Indian Knowledge and Tradition
Subject Code	AU202
Semester	4th
Subject Teacher Name	Promila Sharma

	Name of Topic	Proposed Date	Actual Date	Remarks
<b>Unit -I Indian Knowledge system</b>	Introduction and function of Indian Knowledge system	28-01-2026		
	The basic structure of Indian knowledge system	02-02-2026		
	The four Vedas , namely rig Veda, yajurveda, samveda, atharvaved	04-02-2026		
	The four upavedas, namely Ayurveda dhanur Veda gandharv beta sthaptya Veda	09-02-2026		
	the six vedangas namely Shiksha Kalpa vyakaran chandas nirukta and jyotisha	11-02-2026		
	itihaas (Ramayana and Mahabharata) and Purana Vishnu Purana bhagavata Purana Purana	16-02-2026		
	Dharma Shastra (manusmriti, Yajanvalkya samriti Darshan	18-02-2026		
	nyaya(logic and epistemology	23-02-2026		
<b>Unit-II Modern science</b>	modern science: introduction, characteristics importance and examples	25-02-2026		
	difference between modern science and Indian knowledge system	02-03-2026		
	CT.1	09-03-2026		
	role of Indian knowledge system in modern science	11-03-2026		
<b>Unit-III Traditional knowledge</b>	traditional knowledge: definition, nature characteristics, scope and importance	16-03-2026		
	Indigenous knowledge: characteristics	18-03-2026		
	traditional knowledge vis-a-vis indigenous knowledge	23-03-2026		
	traditional knowledge vs Western knowledge	25-03-2026		
	the need for protecting traditional knowledge	30-03-2026		
<b>Unit IV yoga and holistic healthcare</b>	Yoga :meaning and importance of yoga	01-04-2026		
	Yoga and physical health, yoga and psychological health, yoga and intellectual health, yoga and spiritual health,	06-04-2026		
	CT-2	08-04-2026		
	Pranayama and its type; active lifestyle and stress management through yoga	13-04-2026		
	Physical fitness ,health and wellness :meaning and importance of wellness	20-04-2026		
	components of wellness health and physical fitness	22-04-2026		
	traditional sports and regional games for promoting wellness	27-04-2026		
	leadership through physical activities and sports ; introduction to first aid. History culture heritage / tradition comma customs and manners	29-04-2026		
	04-05-2026			

Unit V Himachal Pradesh: basic information	history culture heritage / tradition comma customs and manners	06-05-2026		
	reasonal knowledge geographical knowledge features constitutional history	11-05-2026		
	tourism place and scope	13-05-2026		
	festivals and fears	18-05-2026		
	Revision	20-05-2026		
	Revision	25-05-2026		



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