LessonPlan

Nameofthefaculty: Mrs. Ritika Arora   **Discipline:**   Electrical

Semester: 4th

Subject: Utilization of electrical engineering

Lesson Plan Duration :   15weeks

Workload(Lecture/Practical)perweek(Lectures-04)

Week	Theory	
	Lectureday	**Topic(Includingassignment/test)**
1st	Ist	Introduction, Natureoflight,visibilityspectrumcurveofrelativesensitivityofhumaneyeandwavelengthof light
	2nd	Definition: Luminous flux, solid angle, luminous intensity, illumination, luminous efficiency,depreciationfactor,coefficientofutilization,spacetoheightratio,reflection factor, glare, shadow,lux.
	3rd	Lawsofilluminationsimplenumerical,Differenttypeoflamps,constructionandworkingof incandescent , fittings required for filament lamp,
2nd	Ist	constructionandworkingofdischargelamps–theircharacteristics,mercuryvaporsodiumlamp, fluorescent lamp, halogenlamp,neonlampconstructionandworking,compactfilamentlamp(CFL),
	2nd	LEDLamp,comparisonofincandescent,fluorescent,CFL&LEDCalculationofnumberoflight points for interior illumination,
	3rd	calculationofilluminationatdifferentpoints,considerationsinvolvedinsimpledesignproblems.
3rd	Ist	Illumination schemes; indoor and outdoor illumination levels,
	2nd	Mainrequirementsofproperlighting, absenceofglare,contrastandshadow
	3rd	Awarenessabouttimeswitches,streetlighting,floodlighting,monumentlightinganddecorative lighting,lightcharacteristicsetc.
4th	Ist	Advantagesofelectricalheating,Resistanceheating–directandindirectresistanceheating, electric ovens, their temperature range, properties of resistance heating elements
	2nd	Domestic water heaters and other heating appliances,thermostatcontrolcircuit .Inductionheating;principleofcoretypeandcorelessinductionfurnace,theirconstructionandapplications .
	3rd	Electricarcheating;directandindirectarcheating,construction,workingandapplicationsofarc furnace . Dielectricheating,applicationsinvariousindustrialfields
5th	Ist	Infra-redheatinganditsapplications(constructionandworkingoftwoappliances,Microwave heating and its applications (construction and working of two appliances .
	2nd	SolarHeatingCalculationofresistanceheatingelements(simpleproblems)
	3rd	revision&Copycheck
6th	Ist	Advantagesofelectricwelding .Weldingmethod3.2.1Principlesofresistancewelding,types– spot,projection,seamandbuttwelding,
	2nd	weldingequipments

	3rd	Principle of arc production, electric arc welding, characteristics of arc; carbon arc, metal arc, hydrogen arc welding method and their applications.
7th	Ist	Power supply requirement. Advantages of using coated electrodes, comparison between AC and DC arc welding, welding control circuits, welding of aluminum and copper
	2nd	revision & Copycheck
	3rd	Electrolytic Processes: 4.1 Need of electro-deposition 2 Laws of electrolysis,
8th	Ist	Process of electro-deposition-clearing, operation, deposition of metals, polishing and buffing.
	2nd	Equipment and accessories for electroplating, Factors affecting electro-deposition .
	3rd	Principle of galvanizing and its applications . 6 Principles of anodizing and its applications
9th	Ist	Electroplating of non-conducting materials 4.8 Manufacture of chemicals by electrolytic process Power supplies for electroplating
	2nd	revision
	3rd	Advantages of electric drives. Characteristics of different mechanical loads
10th	Ist	Types of motors used as electric drive.
	2nd	Electric braking Plugging, Rheostatic braking. Regenerative braking
	3rd	General idea about the methods of power transfer by direct coupling by using devices like belt drive, gears, chain drives etc.
11th	Ist	Examples of selection of motors for different types of domestic loads. Selection of drive for applications such as general workshop, textile mill, paper mill, steel mill, printing press, crane and lift etc.
	2nd	Application of flywheel., Specifications of commonly used motors e.g. squirrel cage motors, Specifications of commonly used motors slip ring induction motors,
	3rd	Specifications of commonly used motors AC series motors, Specifications of commonly used motors Fractional kiloWatt (FKW) motors
12th	Ist	Selection of motors for Domestic Appliances
	2nd	revision & Copycheck
	3rd	Electric Traction, Advantages of electric traction over other types of traction.
13th	Ist	Different systems of electric, traction, DC and AC systems, diesel electric system, Types of services – urban, sub-urban, and main line and their speed-time curves. Factors affecting scheduled speed
	2nd	Different accessories for track electrification; such as overhead centenary wire, conductor rail system, current collector-pantographs.
	3rd	Electrical block diagram of an electric locomotive with description of various equipment and Accessories used.
14th	Ist	Types of motors used for electric traction, Power supply arrangements. Starting and braking of electric locomotives
	2nd	Introduction to EMU and metro railways. Train Lighting Scheme Note: Students should be taken for visits to one are s electrified railway track and railway station to study the electric traction system.
	3rd	revision & Copycheck
15th	Ist	revision
	2nd	revision
	3rd	revision

Electrical Engineering Department

Lesson plan

Name ofFaculty	Abhishek Kumar
Discipline	Electrical Engineering
Semester	Fourth Sem (4th sem)
Subject	Electrical Machine-II
LessonPlanDuration	From January 2025
Workload [Theory+Practical]PerWeek	[03+02]

Week	Day	TheoryTopic/Assignment/Test	No.	Practical
1st	1	Unit1:Synchronous Machine	1	To plot relationship between no load terminal voltage and excitation current in a synchronous generator at constant speed
	2	Construction of 3-Phase Synchronous Machine		
	3	Excitation in Synchronous Machines, E.M.F. Equation of Alternator		
2nd	1	Generation of E.M.F.	2	Revision/CheckingofFiles
	2	Armature Winding		
	3	Voltage Generate in a Distributed Short Pitch Winding, Armature Reaction and its effects		
3rd	1	Equivalent Circuit and Phasor Diagram of Synchronous Generator	3	Determination of the relationship between the voltage and load current of an alternator, keeping excitation and speed constant
	2	Voltage Regulation		
	3	Parallel operation, Procedure of Synchronizing		
4th	1	Synchronous Power and Torque	4	Revision/CheckingofFiles
	2	Effect of change in excitation and input power		
	3	Synchronous Motor: Working Principle & Equivalent Circuit, Loading in Synchronous Motor		
5th	1	V-Curve and Inverted V-Curve In Synchronous Motor	5	Determination of the regulation and efficiency of alternator from the open circuit and short circuit test
	2	Synchronous Condenser		
	3	Starting of Synchronous Motor, Hunting in Synchronous Motor, Applications of Synchronous Motors		
6th	1	Revision/Problemsolution	6	Revision/CheckingofFiles
	2	ClassTest/Assignment		
	3	Unit 2: 3-Phase Induction Motors, Classification of AC Motors		
7th	1	Construction of 3 phase Induction Motor	7	Determination of the effect of variation of excitation on

	2	Comparison of Squirrel Cage and Wound Rotor			performance of a synchronous motor
	3	Production of Rotating Magnetic Field,Principle of operation, slip and its significance			
8th	1	Similarity between Induction Motor and Transformer	8		Revision/CheckingofFiles
	2	Equivalent Circuit of Induction Motor			
	3	Torque developed in Induction Motor, Condition for Maximum Starting Torque			
9th	1	Relation between Full load torque, Starting Torque and Maximum Torque	9		Determination of efficiency by (a) no load test and blocked rotor test on an induction motor (b) direct loading of an induction motor (refer BIS code)
	2	Torque Slip Curve			
	3	Power flow diagram of an induction motor, Starting of Induction Motors			
10th	1	Speed Control of Induction Motors	10		Revision/CheckingofFiles
	2	Crawling, Cogging and Skewing			
	3	Applications of 3- phase Induction motor, Revision/Problemsolution			
11th	1	ClassTest/Assignment	11		Determination of effect of rotor resistance on torque speed curve of an induction motor
	2	Unit 3: Single Phase Motors- Single phase induction motors; Construction characteristics, specifications and applications,			
	3	Nature of field produced in single phase induction motor-double revolving field theory.			
12th	1	Split phase induction motor	12		Revision/CheckingofFiles
	2	Alternating current series motor and universal motors, construction, working principle and operation, application.			
	3	Single phase synchronous motor: Reluctance Motor & Hysteresis Motor, Revision/Problemsolution			
13th	1	Special Purpose Machines	13		Observe the performance of a ceiling fan (Single Phase) induction motor) without capacitor Determine the effect of change in capacitor on the performance of 1-phase induction motor and reverse the direction of motor.
	2	Linear induction motor & Stepper motor			
	3	AC Servomotor & Submersible Motor			
14th	1	Revision of Old Question Papers	14		Revision/CheckingofFiles
	2	Revision of Old Question Papers			

	3	**Revision of Old Question Papers**		
15th	1	**Revision of Old Question Papers**	**15**	**Revision/CheckingofFiles**
	2	**Revision of Old Question Papers**		
	3	**Revision of Old Question Papers**		

Lesson Plan

Name of the Faculty : Mr. Mandip Singh
Discipline : Electrical Engineering
Semester : 4th Semester
Subject : Programming Skills
Lesson Plan Duration : 14-15 Week

Week	Theory		Practical	
	Lecturer day	Topic	Practical Day	Topic
	1	Introduction to electrical CAD interface		
	2	Adding a Drawing, Create a new Drawing,		
	3	insert wire,		
	4	Insert a Electrical Component,		
	5	Connecting a component		
	6	Introduction to MATLAB		
	7	MATLAB Programming – input/output		
	8	types of graphs		
	9	functions, loops, structures, MATLAB Simulink.		
	10	MATLAB Simulink.		
	11	Different program based on matlab		
	12	Graphical Programming using LabVIEW including creation of VIs		
	13	subVIs,		
	14	structures, arrays, clusters, charts and graphs, strings, File I/Os		
	15	File check And Vice versa		

Faculty		: Mr. Vikram Singh	
Discipline		: ELECTRICAL ENGINEERING	
Semester		: 4th	
Subject		: ECEE	
Duration		: WEEKS (w.e.f 15/01/ 2026)	
Work Load (Lecture) per week (in hours)		:Theory- 03; Practical:02	
Week		**Theory**	
	Lecture Day	**Topic**	
1st	**1st**	Introduction to the subject and the marks distribution	Introduction to the subject and the marks distribution
	2nd	Essentials of Estimation and Costing	
	3rd	1.1 Introduction :Purpose of estimating and costing, proforma for making estimates	
2nd	**1st**	preparation of materials schedule, costing, price list, net price list, market survey, overhead charges, labour charges, electrical point method and fixed percentage method, contingency, profit	1. Prepare a tender notice for purchasing a transformer of 200 KVA for commercial installation.
	2nd	1.2 Tenders and Quotations-Type of tender, tender notice, preparation of tender document, and method of opening of tender, Quotation-quotation format, comparison between tender and quotation, Comparative statement, format comparative statement. Earnest money deposit (EMD), purchase system, orders for supply, payment of bills	
	3rd	Test of Chapter No. 01	
3rd	**1st**	Domestic Installation 2.1 Wiring and accessories: Introduction, types of wiring: Cleat, batten, casing capping and conduit wiring,	2. Prepare a quotation for purchasing different electrical material required.
	2nd	comparison of different wiring systems, selection and design of wiring schemes. Selection of wires and cables, wiring accessories and use of protective devices i.e. MCB, ELCB etc. Use of wire-gauge and tables (to be prepared/arranged).	
	3rd	2.2 Domestic installations: standard practice as per IS and IE rules	
4th	**1st**	Planning of circuits, sub-circuits and position of different accessories, electrical layout, preparing estimates including cost as per schedule rate pattern and actual market rate (single story and multi- story buildings having similar electrical load).	3. Prepare a comparative statement for above material. Prepare purchase order for the same.
	2nd	Test of Chapter No. 02	
	3rd	Industrial Installation 3.1 Industrial installations: relevant IE rules and IS standard practices, planning, designing and estimation of installation for single phase motors of different ratings,	

5th	1st	electrical circuit diagram, starters, preparation of list of materials, estimating and costing exercises on workshop with singe-phase, 3-phase motor load and the light load (3-phase supply system).	4. Prepare an estimate for a Two room residential building as per given plan.
	2nd	Continued	
	3rd	Assignment no. 01	
6th 6th	1st	3.2 Design electrical installation scheme of factory/ small industrial unit, Preparation of material schedule and detailed estimation.	Quiz No. 01 and Viva Voce
	2nd	Continued	
	3rd	Test of Chapter No. 3	
7th	1st	Street Lighting Installation 4.1 Classification of outdoor installations streetlight/ public lighting installation,	5. Design electrical installation scheme for any one factory / small industrial unit. Draw detailed wiring diagram. Prepare material schedule and detailed estimate. Prepare report and draw sheet
	2nd	Continued	
	3rd	Street light pole structures. Selection of equipments, sources used in street light installations. Cables, recommended types and sizes of cable. Control of street light installation.	
8th	1st	Continued	Continued
	2nd	4.2 Design, estimation and costing of streetlight, Preparation of tenders.	
	3rd	Continued	
9th	1st	Continued	6. Estimate with a proposal of the electrical Installation of streetlight scheme for small premises after designing.
	2nd	Test of Chapter No. 4.1	
	3rd	Test of Chapter No. 4.2	
10th	1st	Distribution Line and LT Substation	7. Prepare an estimate for service connection for residential building having connected load kW.
	2nd	Continued	
	3rd	Transmission and distribution lines (overhead and underground)	
	1st	Continued	Quiz No. 02 and Viva

11th	**2nd**	Assignment no. 02	Voce
	3rd	planning and designing of lines with different fixtures, earthing etc. based on unit cost calculations	
12th	**1st**	Service line connections estimate for domestic and industrial loads (overhead and underground connections) from pole to energy meter.	8. Estimate with a proposal of the L.T. line installation. Prepare report and draw sheet.
	2nd	Substation: Types of substations, substation schemes and components,	
	3rd	estimate of 11/0.4 kV pole mounted substation up to 200 kVA rating, earthing of substations.	
13th	**1st**	Test of Chapter no. 05	9. Estimate with a proposal of the 500 KVA, 11/0.433 KV outdoor substation and prepare a report. 10. Visit a nearby substation and list the components with diagram
	2nd	Assignment no. 03	
	3rd	Revision test of Chapter No. 01	
14th	**1st**	Revision test of Chapter No. 02	Internal assessment and Viva Voce
	2nd	Revision test of Chapter No. 03	
	3rd	Revision test of Chapter No. 4	
15th	**1st**	Revision test of Chapter No. 5	Internal assessment and Viva Voce
	2nd		
	3rd		

Government Polytechnic Panchkula, Sector 26		
Name of Faculty: Dr.Sunita Saini		
Discipline: Electrical Engg.		
Semester: 4th		
Subject: PLC and Microcontroller		
Lesson Plan Duration: 15 Weeks		
Week	**Theory**	
	Lecture Day	**Topic**
Week 1	**Day 1**	**Unit1: Fundamentals of PLC**
	Day 2	1.1 Definition and advantages
	Day 3	1.2 Building blocks of PLC
Week 2	**Day 4**	1.3 CPU and memory organization
	Day 5	1.4 Speciality I/O modules
	Day 6	1.5 Power supply and module selection criterion
Week 3	**Day 7**	1.6 Interfacing different I/O modules
	Day 8	**Unit 2: PLC INSTRUCTION AND PROGRAMMING**
	Day 9	2.1 Relay type instruction
Week 4	**Day 10**	2.2 Timer instructions
	Day 11	2.3 Counter instruction
	Day 12	2.4 Logical instruction
Week 5	**Day 13**	Sessional 1
	Day 14	2.5 Comparison instruction and Data handling instruction
	Day 15	2.6 Arithmetic instruction
Week 6	**Day 16**	2.7 Simple programming examples using ladder logic
	Day 17	2.8 Timer counter
	Day 18	2.9 logical comparison arithmetic and data handling instructions
Week 7	**Day 19**	**Unit 3: Applications of PLC**
	Day 20	3.1 Motor sequence controller
	Day 21	3.2 Motor in forward and reverse directions
Week 8	**Day 22**	3.3 Star- Delta DOL STARTERS
	Day 23	3.4 Traffic light control

	Day 24	3.5 Elevator control and Conveyor system
Week 9	**Day 25**	Sessional 2
	Day 26	3.6 Stepper motor control, packaging etc
	Day 27	**Unit 4: Architecture of microcontroller 8085**
Week 10	**Day 28**	4.1 Difference between microprocessor and microcontroller
	Day 29	4.2 Block diagram of 8085 and function of each block
	Day 30	4.3 Pin diagram and function of each pin
Week 11	**Day 31**	4.4 Concept of internal memeory and external memory
	Day 32	4.5 Internal RAM structure
	Day 33	4.6 Reset and clock circuit, Various registers and SFRS
Week 12	**Day 34**	**Unit 5: Microcontroller instruction and programming**
	Day 35	5.1 Instruction set and addressing modes
	Day 36	5.2 Timer and serial port operation
Week 13	**Day 37**	5.3 Interrupts and data transfer operation
	Day 38	5.4 Input/ output operations
	Day 39	5.5 Design and interface Keypadinterface
Week 14	**Day 40**	5.6 Seven segment interface
	Day 41	5.7 LCD interfacing
	Day 42	5.8 Stepper motor interfacing and applications
Week 15	**Day 43**	Sessional 3
	Day 44	Revision and assessment
	Day 45	Revision and assessment