

Govt. Polytechnic, Nanakpur (Panchkula)

Electrical Engineering Department

Lesson plan (for odd-semester as per revised curriculum and study scheme)

Name of Faculty	Mr. Neeraj Kamboj
Discipline	Electrical Engineering
Semester	3rd (odd- semester)
Subject	Non- Conventional Energy Sources
Lesson Plan Duration	From July 2019 to Nov 2019
Work load (Theory + Practical) Per Week	(04+00)

Week	Day	Topics
1 st	1	Discussion of Course Objective of NCES subject/ Syllabus
	2	Unit :1 Introduction to Basics of Energy
	3	Classification of Energy-primary and secondary energy
	4	commercial and non-commercial energy
2 nd	1	Unit :1 Importance of non-conventional energy sources
	2	Present scenario, Future Prospectus
	3	Energy Scenario in India, Sector-wise energy consumption (domestic, industrial, agriculture etc)
	4	Revision and problem related to 1st unit/ discussion related to topic
3 rd	1	Unit : 2 Introduction to Solar Energy
	2	Principle of conversion of solar radiation into heat, photo-voltaic cell
	3	Electricity generation
	4	Application of Solar Energy like solar water heaters
4 th	1	Unit: 2 Solar Furnaces
	2	Solar Cookers
	3	Solar lighting, Solar pumping
	4	Class Test of 1 st unit
5 th	1	Unit: 3 Bio- energy
	2	Bio-mass conversion technologies-wet and dry processes
	3	Revision and problem related to 2 nd Unit/ discussion related to topic
	4	Quiz Test
6 th	1	Unit: 3 Methods for obtaining energy from biomass
	2	Power generation by using gasifiers
	3	Revision and problem related to 3 rd unit
	4	Class Test of 2 nd unit
7 th	1	Unit : 4 Introduction to Wind energy
	2	Wind Energy Conversion
	3	Windmills
	4	Electricity generation from wind- Types of wind mills
8 th	1	Unit: 4 Local Control
	2	Energy storage
	3	Revision and problem related to 4 th Unit/ discussion related to topic
	4	Class Test of 3 rd unit, Conduct of 1 st Sessional test (tentative)
9 th	1	Display of 1 st sessional marks and identification of weak students.
	2	Unit: 5 Introduction to Geo-thermal and Tidal Energy, Geo-thermal sources
	3	Ocean thermal electric conversion

	4	Open and Closed cycles
10 th	1	Unit : 5 Hybrid cycles
	2	Prime movers for geo-thermal energy conversion
	3	Steam Generation and electricity generation
	4	Revision and problem related to 5 th unit/ discussion related to topic
11 th	1	Unit :- 6 Introduction to MHD
	2	Magneto hydro Dynamic (MHD)
	3	Revision and problem related to 5 th unit
	4	Class Test of 5 th unit
12 th	1	Unit : 7 Fuel Cells
	2	Design and operating Principles of a fuel cell
	3	Conversion Efficiency
	4	Revision and problem related to 6 th unit, Conduct of 2 nd Sessional test (tentative)
13 th	1	Display of 2 nd sessional marks and identification of weak students.
	2	Unit : 7 Work output and e.m.f of fuel cells, Applications
	3	Revision and problem related to 6 th unit
	4	Class Test of 6 th unit
14 th	1	Unit : 8 Hydro Energy
	2	Mini & micro hydro plants
	3	Revision and problem related to 7 th unit/ discussion related to topic
	4	Class Test of 7 th unit
15 th	1	Revision and problem related to 8 th unit
	2	Discussion of old question paper of HSBTE.
	3	Conduct of 3 rd Sessional test (tentative)
	4	Display of 3 rd Sessional marks
16 th	1	Identification of weak students
	2	Viva-voice related to subject
	3	Revision/Review/Test of old HSBTE Papers
	4	Revision/Review/Test of old HSBTE Papers

Govt. Polytechnic Nanakpur(Panchkula) Haryana

Electrical Engineering Department

Lesson Plan

Name of the Faculty		Sh. Neeraj Kamboj
Discipline		Electrical engineering
Semester		3rd
Subject		Computer Applications in Electrical Installation
Lesson Plan Duration		From July 2019 to Nov2019
Workload (Theory/Practical) per week/3hours		(Theory 00 / Practical 02), Day (Group1+group2)
Week	Day	Practical
1	1	Unit -1 Introduction MATLAB and SCILAB
	2	MATLAB Programming – input/output
2	1	Types of graphs, functions,
	2	
3	1	Loops, structures
	2	
4	1	MATLAB Simulink.
	2	
5	1	Programming and simulation examples and solution
	2	
6	1	Assignment /Revision/File check
	2	
7	1	Mid-term viva-voice evaluation
	2	
8	1	Unit -2: Introduction to LABVIEW
	2	
9	1	Graphical Programming using LabVIEW including creation of VIs, sub VIs
	2	
10	1	structures, arrays, clusters, charts and graphs, strings, File I/Os
	2	
11	1	Practice on NI ELVIS and other DAQ hardware
	2	
12	1	Assignment /Revision/ File check
	2	
13	1	Mid-term viva-voice evaluation
	2	
14	1	Unit3: Utility of EPLAN software
	2	
15	1	Assignment /Revision/ File check
	2	
16	1	Internal Practical
	2	

Govt. Polytechnic, Nanakpur(Panchkula)
Electrical Engineering Department
Lesson Plan (for odd semester)

Name of Faculty				
Discipline		Electrical Engineering		
Semester		3 rd		
Subject		Electronics-II		
Lesson Plan Duration		From July 2019 to Nov 2019		
Workload (Theory + Practical) Per Week		[03 + 02] Group 1 & 2		
Week	Day	Theory Topic/ Assignment/ Test	No.	Practical
1 st	1	Unit:1 Transistor Audio Power Amplifier	1	To study the effect of coupling capacitor on lower cut off frequency and upper cut off frequency by plotting frequency response curve of a two stage RC coupled amplifier
	2	Difference between voltage and power amplifier		
	3	Terms in Power Amplifier, collector efficiency, distortion and dissipation capability		
2 nd	1	Classification of power amplifier class A, B and C	2	To measure (a) optimum load (b) output power (c) signal handling capacity of a push-pull amplifier
	2	Class A single-ended power amplifier, its working and collector efficiency Impedance matching in a power amplifier using transformer		
	3	Heat sinks in power amplifiers, Push-pull amplifier: circuit details working and advantages		
3 rd	1	Principles of the working of complementary symmetry push-pull amplifier	3	To measure (a) voltage gain (b) input and output impedance for an emitter follower circuit
	2	Revision/Assignment of 1 st unit		
	3	Class test of 1 st unit		
4 th	1	Unit-2 Introduction to tuned voltage amplifier	4	Practical Quiz No.2/ Revision and file checking
	2	Series and parallel resonance, Single and double tuned voltage amplifiers		
	3	Frequency response of tuned voltage amplifiers, Applications of tuned voltage amplifiers		
5 th	1	Revision/Assignment of 2 nd unit	5	To measure frequency generation in (a) Hartley (b) R-C Phase Shift oscillator
	2	Class test of 2 nd unit		
	3	Unit3: Feedback in Amplifiers positive and negative feedback and their need		
6 th	1	Voltage gain of an amplifier with negative feedback $A = A/(1+\beta A)$	6	Practical Quiz No.3/ Revision and file checking
	2	Effect of negative feedback on voltage gain, stability, distortion, band width		
	3	Output and input impedance of an amplifier		

7 th	1	Typical feedback circuits	7	To observe the differentiated and integrated square wave on a CRO for different values of R-C time constant
	2	Effect of removing the emitter by-pass capacitor on a CE transistor amplifier		
	3	Emitter follower and its applications		
8 th	1	Revision/Assignment of 3 rd unit		Clipping of both portion of sine-
	2	Unit4: Sinusoidal oscillators amplifier positive		

		feedback	8	wave using: diode and dc source/ Zener diodes
	3	Difference between an oscillator and an alternator		
9 th	1	Essentials of an oscillator, Circuit details and working of LC oscillators	9	Clamping a sine-wave to: Negative dc voltage Positive dc voltage
	2	Tuned Collector, Hartley		
	3	and Colpitt's oscillators, R-C oscillator circuits		
10 th	1	phase shift and Wein bridge oscillator circuits	10	Practical Quiz No.3/ Revision and file checking
	2	Introduction to piezoelectric crystal and crystal oscillator circuit		
	3	Revision/Assignment of 4 th unit		
11 th	1	Wave-Shaping and Switching Circuits	11	To generate square-wave using an astable multivibrator and to observe the wave form on a CRO
	2	Concept of Wave-shaping circuits		
	3	R-C differentiating and integrating circuits		
12 th	1	Diode clipping circuits, Diode clamping circuits	12	To observe triggering and working of a bistable multivibrator circuit and observe its output wave form on a CRO
	2	Applications of wave-shaping circuits, Transistor as a switch		
	3	Collector coupled astable, monostable, Bistable multivibrator circuits		
13 th	1	Working and applications of transistor inverter circuit using power transistors	13	Practical Quiz No.3/ Revision and file checking
	2	Revision/Assignment of 5 th unit		
	3	Unit6: Working Principles of different types of power supplies viz. CVTs		
14	1	IC voltage regulators(78xx,79xx)	14	Op-Amp (IC 741) as inverting and non-inverting amplifier, adder Comparator, integrator and differentiator verify using p-spice
	2	Revision/Assignment of 6 th unit		
	3	Unit7: Operational Amplifier, differential amplifier		
15 th	1	Emitter coupled differential amplifier Offset even voltages and currents	15	To study the pin configuration and working of IC 555 and its use as mono stable and astable multivibrator
	2	Integrator and differentiator, Summer, Subtractor		
	3	Familiarization with specifications and pin configuration of IC 741		
16 th	1	Block diagram and operation of 555 IC timer	16	Internal Practical/viva-voice evaluation
	2	HSBTE old paper solution		

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	HSBTE old paper solution		
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Govt. Polytechnic, Nanakpur (Panchkula)

Electrical Engineering Department

Lesson plan (for odd-semester as per revised curriculum and study scheme)

Name of Faculty	
Discipline	Electrical Engineering
Semester	3rd (odd- semester)
Subject	Electrical and Electronics Engineering Materials
Lesson Plan Duration	From July2019 to Nov2019
Work load (Theory + Practical) Per Week	(04+00)

Week	Day	Topics
1st	1	Introduction to Classification of materials
	2	Classification of Conducting ,semi conducting and insulating materials based on atomic structure
	3	Classification based on energy bands
	4	Revision and Class test of 1st unit
2nd	1	Introduction to Conducting Materials Resistance and factors affecting it Such as alloying and temperature
	2	Classification of conducting material as low resistivity and high resistivity materials
	3	low resistance materials Copper: General properties as conductor resistivity, temperature coefficient and density
	4	Mechanical properties of hard-drawn and annealed copper corrosion, contact resistance
3rd	1	Application of copper in the field of electrical engineering.
	2	Aluminium: General properties as resistivity, temperature coefficient, density
	3	Mechanical properties of hard and annealed aluminium, solder ability, contact resistance
	4	Applications in the field of electrical engineering.
4th	1	Steel: Mechanical properties of steel
	2	Applications in the field of electrical engineering.
	3	Introduction to bundle conductors and its applications
	4	Low resistivity copper alloys Brass, Bronze and their applications
5th	1	Applications of special metals e.g. Silver, Gold, Platinum etc
	2	High resistivity materials and their applications manganin, constantan,
	3	Nichrome, mercury, platinum, carbon and tungsten
	4	Superconductors and their applications
6th	1	Revision and problem related to 2nd unit
	2	Class Test of 2nd unit
	3	Review of Semi-conducting Materials, Semi-conductors and their properties
	4	Materials used for electronic components like resistors, capacitors, diodes, transistors and inductors etc
7th	1	Revision and problem related to 3rd unit
	2	Class Test of 3rd unit
	3	Insulating materials; General Properties
	4	Electrical Properties :Resistivity, surface resistance, dielectric loss, dielectric strength
8th	1	Physical Properties Hygroscopicity, tensile and compressive strength, abrasive resistance, brittleness
	2	Thermal Properties: Heat resistance, classification according to permissible temperature rise

	3	Chemical Properties: Solubility, chemical resistance, weather ability
	4	Mechanical properties, mechanical structure, tensile structure
9 th	1	Revision and problem related to 4th unit, 1st Sessional Test
	2	Class Test of 4th unit
	3	Introduction to Insulating Materials and their applications
	4	Plastics Definition and classification
10 th	1	Thermosetting materials: Bakelite, amino resins, epoxy resins their important properties and applications
	2	Thermo-plastic materials: PVC, Polyethelene, silicones, their important properties and applications
	3	Natural insulating materials, properties and their applications
	4	Mica and Mica products, Asbestos and asbestos products, Ceramic materials
11 th	1	Glass and glass products Cotton, silk, jute, paper, Rubber, Bitumen
	2	Mineral and insulating oil for transformer, insulating varnish for coating and impregnation
	3	Gaseous materials; Air, Hydrogen, Nitrogen, SF their properties and applications
	4	Revision and problem related to 5th unit
12 th	1	Class Test of 5th unit
	2	Magnetic Materials: Introduction, Ferromagnetic materials, permeability
	3	B-H curve, magnetic saturation, hysteresis loop including coercive force and residual magnetism
	4	Concept of eddy current and hysteresis loss, Curie temperature, magnetostriction effect.
13 th	1	Soft Magnetic Materials: Alloyed steels with silicon: High silicon alloy steel for transformers
	2	low silicon alloy steel for electric rotating machines
	3	Cold rolled grain oriented steels for transformer, Non-oriented steels for rotating machine, Nickel-iron alloys, Soft Ferrites
	4	Hard magnetic materials Tungsten steel, chrome steel , hard ferrites cobalt and Steel applications. 2nd Sessional test.
14 th	1	Revision and problem related to 6th unit
	2	Class Test of 6th unit
	3	Special Materials Thermocouple, bimetals
	4	leads soldering and fuses material and their applications
15 th	1	Revision and problem related to 7th unit
	2	Introduction of various engineering materials necessary for fabrication of electrical machines
	3	such as motors, generators, transformers etc.
	4	Revision and problem related to 8th unit, Final sessional Test
16 th	1	Class Test of 8th unit
	2	Viva-voice related to subject
	3	Revision/Review/Test of old HSBTE Papers
	4	Revision/Review/Test of old HSBTE Papers

Govt. Polytechnic Nanakpur(Panchkula) Haryana
Electrical Engineering Department
Lesson Plan

Name of the Faculty		Neeraj Kumar
Discipline		Electrical Engineering
Semester		3rd
Subject		EEDD-I
Lesson Plan Duration		From July 2019 to Nov 2019
Work Load (Theory/Practical) per week /3hours		(Theory 00 / Practical 06) (Group1+group2)
Week	Day	Practical
1st	1	Unit 1 : Introduction Symbols and Signs Conventions
	2	Drawing sheet1: Various Electrical Symbols used in Domestic and Industrial Installation and Power System
2nd	1	Unit2: Wiring diagram introduction , Drawing sheet2 :Wiring Diagram of light
	2	Drawing sheet: Wiring Diagram of fan
3rd	1	Drawing sheet: Wiring Diagram bell and alarm circuits
	2	Drawing sheet: Wiring Diagram Staircase
4th	1	Drawing sheet: Wiring Diagram go down wiring
	2	Checking and correction in Drawing sheet
5th	1	Unit 3: Introduction Panels/Distribution Boards
	2	Two Drawing sheet : panels/Distribution board using MCB and EICB and change over switches for domestic installation
6th	1	Drawing sheet: industrial and commercial installation
	2	Checking and correction in Drawing sheet
7th	1	Unit4: Introduction to orthographic projections of Simple Electrical Parts
	2	Drawing sheet of Bus bar post/ Kit Kat
8th	1	Drawing sheet of Pin type and shackle type insulator (Pin Type 11kV/66kV)
	2	Checking and correction in Drawing sheet ,1st Sessional Test
9th	1	Drawing sheet of Bobbins of a small transformer / choke
	2	Drawing sheet of Stay insulators/Suspension type insulators
10th	1	Checking and correction in Drawing sheet
	2	Drawing sheet of Rotor of a squirrel cage induction motor
11th	1	Drawing sheet of Motor body (induction motor) as per IS Specifications (using outside dimensions)
	2	Checking and correction in Drawing sheet
12th	1	Drawing sheet of Slip rings of 3-phase induction Motor

	2	Drawing sheet of Stator of 3 phase Induction motor (Sectional View) ,Second Sessional test
13 th	1	Checking and correction in Drawing sheet
	2	Unit 5: Introduction to AutoCAD Drawing sheet1 Prepare wiring diagram and block diagrams for circuits/systems using any Engineering Graphic package (preferably CAD)
14 th	1	Checking and correction in Drawing sheet
	2	Checking and correction in Drawing sheet
15 th	1	Revision/checking
	2	Revision/checking ,3 rd Sessional test
16 th	1	Quiz/Checking and correction in Drawing sheet
	2	Viva-voice and Internal Practical

Lesson Plan

Name of the Faculty:	Neeraj Kumar		
Discipline:	Electrical engg.		
Semester:	3rd		
Subject:	Estimating & Costing in Electrical Engg. (Theory-4 Practical-2)		
Lesson Plan Duration: 15 weeks (from July, 2019 to Nov 2019)			
Week	Theory		
	Lecture day	Topic(including assignment/test)	
1st	1st	<input type="checkbox"/> Will Discuss Learning outcomes of Estimating & Costing in Electrical Engg.	
		<input type="checkbox"/> Introduction to complete syllabus of Estimating & Costing in Electrical Engg.	
	2nd	Unit-1: Purpose of estimating and costing,	
		<input type="checkbox"/> Proforma for making estimates, <input type="checkbox"/> Preparation of materials schedule	
	3rd	<input type="checkbox"/> Costing, price list, <input type="checkbox"/> Preparation of tender document	
		4th	<input type="checkbox"/> Net price list, <input type="checkbox"/> Market survey,
	2nd		1st
2nd		<input type="checkbox"/> Electrical point method and fixed percentage method, <input type="checkbox"/> contingency,	
		3rd	<input type="checkbox"/> Profit, <input type="checkbox"/> purchase system,
4th			<input type="checkbox"/> Enquiries, <input type="checkbox"/> Eomparative statements
		3rd	1st
2nd			
			3rd

		<input type="checkbox"/> Cleat, batten, wiring,
	4 th	<input type="checkbox"/> casing capping and <input type="checkbox"/> conduit wiring,
4 th	1 st	<input type="checkbox"/> Comparison of different wiring systems.
	2 nd	<input type="checkbox"/> Design of wiring schemes for particular situation of domestic installation.
	3 rd	<input type="checkbox"/> Design of wiring schemes for particular situation Industrial Installation.

	4 th	<input type="checkbox"/> Selection of wires and cables,
5 th	1 st	<input type="checkbox"/> Wiring accessories used for Electrical Installation
	2 nd	<input type="checkbox"/> Use of protective devices i.e. MCB, ELCB etc.
	3 rd	<input type="checkbox"/> Use of wire-gauge and tables (to be prepared/arranged)
	4 th	<input type="checkbox"/> Revision/ queries of unit-1,2 ; <input type="checkbox"/> First assignment will be given
6 th	1 st	<input type="checkbox"/> Assignment –I check <input type="checkbox"/> Tentative 1 st sessional test <input type="checkbox"/> Evaluation of sessional marks etc.
	2 nd	<input type="checkbox"/> Assignment –I check <input type="checkbox"/> Tentative 1 st sessional test <input type="checkbox"/> Evaluation of sessional marks etc.
	3 rd	<input type="checkbox"/> Display and analysis of sessional marks
	4 th	Unit-3 Estimating & costing: 3.1 Domestic installations; <input type="checkbox"/> description of various tests to test the wiring installation before commissioning,
7 th	1 st	<input type="checkbox"/> Standard practice as per IS and IE rules. <input type="checkbox"/> Planning of circuits, sub circuits.
	2 nd	<input type="checkbox"/> Position of different accessories, <input type="checkbox"/> Electrical layout of Domestic Installation

	3rd	<input type="checkbox"/> Preparing estimates including cost as per schedule rate pattern and actual market rate (for house of two room set along with layout sketch)
	4th	3.2 Industrial installations; <input type="checkbox"/> Relevant IE rules and IS standard practices,
8th	1st	<input type="checkbox"/> Planning of installation for single phase motors of different rating.
		<input type="checkbox"/> designing for single phase motors of different ratings
	2nd	<input type="checkbox"/> Estimation of installation for single phase motors of different ratings,
		<input type="checkbox"/> Electrical circuit diagram for Industrial installations ,
3rd	<input type="checkbox"/> Starters for Industrial installations.	
	<input type="checkbox"/> Preparation of list of materials for Industrial installations,	
4th	<input type="checkbox"/> Estimating and costing exercises on workshop with single-phase motor load, Ist sessional test	

9th	1st	<input type="checkbox"/> Estimating and costing exercises on workshop with 3-phase motor load and the light load (3-phase supply system)
	2nd	3.3 Service line connections estimate for domestic upto 10 KW from pole to energy meter.
	3rd	<input type="checkbox"/> Service line connections estimate for Industrial loads upto 20 KW over-head connection from pole to energy meter.
	4th	<input type="checkbox"/> Service line connections estimate for Industrial loads upto 20 KW underground connections from pole to energy meter.
<input type="checkbox"/> Second assignment will be given		
10th	1st	<input type="checkbox"/> Revision/ queries of unit-3
	2nd	<input type="checkbox"/> Assignment –II check
		<input type="checkbox"/> Tentative 2 nd sessional test
		<input type="checkbox"/> Evaluation of sessional marks etc.
3rd	<input type="checkbox"/> Assignment –II check	

		<input type="checkbox"/> Tentative 2 nd sessional test
		<input type="checkbox"/> Evaluation of sessional marks etc.
	4 th	<input type="checkbox"/> Display and analysis of sessional marks
11 th	1 st	Unit-4 :-Estimating the material required 4(a): <input type="checkbox"/> Transmission and distribution lines overhead planning and designing of lines with different fixtures based on unit cost calculations
	2 nd	<input type="checkbox"/> Transmission and distribution lines overhead planning and designing of earthing etc.
	3 rd	<input type="checkbox"/> Transmission and distribution lines underground planning and designing of lines with different fixtures, based on unit cost calculations
	4 th	<input type="checkbox"/> Transmission and distribution lines underground planning and designing of lines with earthing etc.
12 th	1 st	4(b) Substation: <input type="checkbox"/> Types of substations, <input type="checkbox"/> substation schemes and components
	2 nd	<input type="checkbox"/> Estimate of 11/0.4 KV pole mounted substation up to 200 KVA rating,
	3 rd	<input type="checkbox"/> Methods of earthing of substations,
		<input type="checkbox"/> Key Diagram of 66 KV/11KV
	4 th	<input type="checkbox"/> Key Diagram of 11 KV/0.4 KV Substation Second Sessional Test

13 th	1 st	<input type="checkbox"/> Single line diagram, layout sketching of outdoor, indoor 11kV sub-station
	2 nd	
	3 rd	Unit 5 Preparation of Tender Documents At least 2-3 exercises, tender – constituents finalization
	4 th	At least 2-3 exercises, specimen tender
14 th	1 st	<input type="checkbox"/> 3 rd assignment will be given

		<input type="checkbox"/> Revision/ queries of unit-4
	2nd	<input type="checkbox"/> Assignment –III check <input type="checkbox"/> Tentative 3 rd sessional test <input type="checkbox"/> Evaluation of sessional marks etc.
	3rd	<input type="checkbox"/> Assignment –III check <input type="checkbox"/> Tentative 3 rd sessional test <input type="checkbox"/> Evaluation of sessional marks etc
	4th	<input type="checkbox"/> Display/analysis of 3 rd sessional test
15th	1st	<input type="checkbox"/> Remedial will be taken if any shortcomings found <input type="checkbox"/> Previous state boards question will be carried out, any other left out topic
	2nd	<input type="checkbox"/> Seminal/group discussion as per evaluation scheme
	3rd	<input type="checkbox"/> Seminal/group discussion as per evaluation scheme
	4th	<input type="checkbox"/> Seminal/group discussion as per evaluation scheme, Final Sessional test