

PLANNED SYLLABUS COVERAGE(Theory)

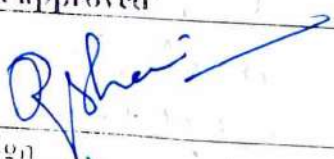
G P Kangra		Department: <u>EE</u>		Subject <u>E-EM</u>		
SYLLABUS COVERAGE		Course <u>Diploma</u>		Duration <u>3 Years</u>		
		Total Periods		Theory <u>56</u>		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1	10 (1-10)	Fundamentals of Measurements.	Measurement - Significance, units, fundamental quantities & standards classification of Instrument systems: Null & deflection type instruments absolute & secondary instruments analog & digital Instruments. Static & dynamic characteristics, types of errors calibration, Need & procedure, classification of measuring instruments; indicating, recording & Integrating instruments. Essential requirements of an indicating instrument.	Theraja B.L. Theraja A.K.A Text Book of Electrical Technology Vol -1 (Basic Electrical Engg) S. Chandra & Co New Delhi. ISBN: 9788121924405.	Sawhrey A.K. Electrical & Electronics Measurements & Instrumentation, Dharparai Rai ardn and Sons, New Delhi ISBN 9780000279744	
2	10 (11-20)	Measurement of voltage	DC Ammeter. Basic	-do-		

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
		4 current.	Multi range, universal shunt, DC voltmeter Basic, Multi-range, concept of loading effect & sensitivity AC voltmeter; Rectifier type (half & full wave) CT & PT construction Working & application Clamp-On-meter.			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01-08-2026	HOD Sign 
Date	Principal Sign 

Additional sheets (if required).

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>EE</u> Subject <u>E & EM</u>				
SYLLABUS COVERAGE		Course <u>Diploma</u> Duration <u>3 Years</u>				
		Total Periods _____ Theory <u>56</u>				
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
<u>3</u>	<u>12</u> (21-32)	Measurement of Electric Power.	Analog meters - Permanent magnet moving coil (PMMC) + Permanent magnet moving iron (PMMI) meter their construction, working, salient features, merits & demerits. Dynamometer type wattmeter: Construction & working Range: Multiplying factor & extension of range using CTS PT Errors & compensations, Active & reactive power measurement - one, two & three wattmeter method - Effect of Power factor on wattmeter reading in two wattmeter method. Maximum Demand indicators.	Edwards Hughes Electrical Technology. Pearson Education, New Delhi ISBN-13 978-0582405196		
<u>4</u>	<u>8</u> (33-40)	Measurement of Electric Energy.	Single & three phase Electronic	-do-		

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
5	16 (41-56)	Circuit Parameter Measurement CRO & other Meters	Energy meter - Constructional features & working principle - Errors & their compensations - Calibration of single phase electronic energy meter using direct loading Measurement of resistance, low resistance, kelvin double bridge, Medium Resistance.			

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Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

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PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: EE		Subject E & EM		
SYLLABUS COVERAGE		Course Diploma		Duration 3 Years		
		Total Periods		Theory		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remark
			voltmeter & ammeter method, High resistance, Megger & ohm meter, Series & shunt Measurement of inductance using Apley's Bridge (No derivation & phasor diagram). Measurement of capacitance using Schering bridge (No derivation & phasor diagram) single beam/single trace CRO, Digital storage oscilloscope, Basic block diagram working, cathode ray tube, electrostatic deflection, vertical amplifier, time base generator, horizontal amplifier, measurement of voltage/amplitude/ time period/ frequency/ phase angle delay line, specification.	Rajput R.K Electrical & Electronic Measurement & Instrumentation S. Chand & Co New Delhi		

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			Other meters- Earth tester, Digital Multi-meter, L-C-R meter, Frequency meter (ferro-magnetic & Weston type), Phase sequence Indicator, power factor meter (single phase & three phase dynamometer type), Synchroscope, Tri-vector meter, Signal generator need, working & basic block diagram. Function generator need, working & basic block diagram. Function of synchroscope.			

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Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

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Date 01-08-2016	HOD Sign Covered
Date	Principal Sign

* Use additional sheets (if required).

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Electrical Engg.</u>		Subject <u>Electrical Motors & Transformer</u>		
SYLLABUS COVERAGE		Course <u>Diploma (PC)</u>		Duration <u>.03 year (06-months)</u>		
		Total Periods	<u>70</u>	Theory	<u>70 (14x5 = 70)</u>	
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1-10	D.C. Generators	D.C. generators Construction, parts, materials & their functions. Principle of operation of D.C. generator. Fleming's right hand rule, schematic diagram, emf equation, armature reaction, commutation & application of D.C. generators.			
2.	11-24	D.C. motors	DC-motors: Types, Fleming's left hand rule, Principle, Back emf & its significance, voltage equation of motors, Torque & speed. Armature torque, shaft torque, BHP, Brake test, losses, efficiency. DC motor starters: Necessity, two point & three point starters. Speed control of DC shunt & series motor. Flux & armature control, Brushless D.C. motor, construction & working.			
3.	25-38	Single phase transformer	Types of transformers: Shell type & core type, construction: parts & functions, material used: CRGO, CRNGO, HRCO, amorphous cores. Transformer emf equation & principle derivations, voltage transformation ratio, Significance of transformer ratings. Transformer no load & on-load, phasor diagram, leakage reactance, equivalent circuit of transformer, equivalent resistance & reactance. Voltage regulation &			

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	39-60	Three phase Transformer	Efficiency, Direct loading, OC/SC test All day efficiency. Bank of three 1-ϕ transformer, single unit of three phase transformer, Distribution & power transformer, construction, cooling, 3-ϕ transformer connections, 3-ϕ to 2-ϕ conversion (Scott connection), Selection of transformer, Criteria for selection of distribution transformer power transformer, Amorphous core type distribution transformer, specifications, Need of parallel operations, conditions, Polarity test on mutually inductive coils & 1-ϕ transformer, phasing out test			
5.	61-70	Special purpose Transformers	Single phase & 3-ϕ Autotransformers: Construction, working & applications. Instrument transformers: Construction, working & applications of current transformer & potential transformer, Isolation transformer, 1-ϕ welding transformer: construction & applications, Pulse transformer: construction & applications, K factor of transformer: overheating due to non-linear loads & harmonics.			

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Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 03-08-2026	HOD Sign 
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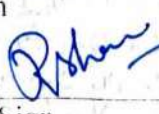
G P Kangra		Department: <u>E.E.</u> Subject <u>ED & C</u>				
SYLLABUS COVERAGE		Course <u>Diploma</u>	Duration <u>3 years</u>			
		Total Periods <u>56</u>	Theory <u>56</u>			
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1-11	Chapter 1: Semi Conductor And Diodes	Definition, Extrinsic/Intrinsic N-type & P-Type. PN Junction Diode-Forward and Reverse Bias Characteristics. Zener Diode-Principle, Characteristics, Construction, and working. Diode Rectifiers-Half Wave and Full Wave. Filters-C, LC, and PI Filters.	Electronic Devices & Circuits By S.K. Sahdev	Us By Internet	
2.	12-24	Chapter-2 Bipolar Junction Transistor (BJT)	NPN and PNP Transistor -Operation and characteristics. Common Base Configuration-Characteristics and working. Common Emitter Configuration- Characteristics and working. Common Collector Configuration- Characteristics and working. High frequency model of BJT. Classification of amplifiers, negative feedback.	Analog Circuits By A.K. Maini	Published. Khanna	
3.	25-36	Chapter-3 Field Effect Transistors	FET-Working Principle. Classification. MOSFET Small model N-channel/P-Channel MOSFETs characteristics, enhancement and depletion mode, MOSFET as a switch. Common Source Amplifiers. Uni-			

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	37-48	Chapter - 4 SCR DIAC & TRIAC: SCR	Junction Transistor - equivalent circuit and operation. Construction, operation, working characteristics. DIAC - Construction, Operation, working, characteristics. TRIAC - Construction, operation, working, characteristics. SCR and MOSFET as a switch, DIAC as bidirectional switch. Comparison of SCR, DIAC, TRIAC, MOSFET.			
5.	49-56	Chapter - 5 Amplifiers And Oscillators	Feedback Amplifiers - Properties of negative feedback, impact of feedback on different parameters. Basic Feedback Amplifier Topologies: Voltage Series, Voltage shunt, Current Series, Current shunt, Oscillators Basic principles. Crystal oscillators Non-linear / Pulse Oscillators.			

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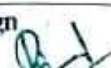
G P Kangra		Department: <u>Electrical Engg.</u> Subject <u>IEGS</u>				
SYLLABUS COVERAGE		Course <u>Program Core</u>		Duration <u>03 years</u>		
		Total Periods <u>56</u>		Theory <u>56</u>		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	(10) 1-10	Thermal Power Plants Coal/Gas / Diesel & Nuclear Based	Layout of & working of TPP ; properties of conventional fuels used in TPP: Coal / Gas / Diesel / nuclear fuels fission & fusion action. Safe practices & working of coal based, gas based, diesel based & nuclear based. Functions of major auxiliaries, coal feed, fire tube & water tube boilers combustion engines type of nuclear reactor	Power Plant Engineering P. K. Nag Mc Graw Hill, New Delhi	A course in Electrical Power - J. B. Gupta, J. K. Kataria & Sons; New Delhi	
2.	(10) (11-20)	Large & Micro Hydro Power Plants	Energy conversion, classification construction & working of various hydro power plants, safe practices, types of Micro Hydro Power Plants, turbines & other the locations of micro hydro power plants in Himalal.	- do -	- do -	
3.	(12) (21-32)	Solar & Biomass based Power Plants	Solar map of India, solar power technology - CSP plants, construction & working (along with types) solar photovoltaic plants layout, construction & working, layout of Biogas power plant, layout of Thermo-chemical based power plant. layout of Biochemical based plant			

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4.	12 (33-44)	Wind Power Plants	Wind map of India, Wind Power density, Layout of HAWPP, Gearless Direct drive WPP, Salient features of generators, SCIG, WRIG, DFIG, WRSG, PMSG	- do -	- do -	
5.	12 (45-56)	Economics of Power Generation & Interconnected Power System	Terms - connected load, firm power, cold & hot reserve, spinning reserve, base and peak load, load curve, load duration curve, integrated duration curve, cost of generation, Avg. Demand, Max demand, Demand factor, Capacity factor, Plant use factor, choice & size of generator units, Causes impacts of reasons of grid system fault, black start of national and international level.			

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PLANNED SYLLABUS						
G P Kangra		Department: <u>Electrical Engg</u>		Subject <u>Electrical Circuits</u>		
		Course <u>Diploma (PC)</u>		Duration <u>03 year (06-months)</u>		
SYLLABUS COVERAGE		Total Periods <u>70</u>		Theory <u>70 (14x5=70)</u>		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1 - 13	Single phase AC series circuit	Generation of alternating voltage, Phasor representation of sinusoidal quantities R, L, C circuit element its voltage & current response, RL, RC, RLC combination of A.C series circuit, impedance, reactance , impedance triangle, Power (quality) factor, active power, reactive power, apparent power, power triangle & vector diagram, resonance, bandwidth, quality factor, & voltage magnification in series RL, RC & RLC circuit.	Networks & Systems by Ashfaq Hussain, B.L. Theraja, Matthew No. Sadiku, & Charles K. Alexander	MATLAB Simulations	
2.	14 - 27	Single phase A.C. parallel Circuits	RL, RC & RLC parallel combination of A.C circuits, Impedance, reactance, phasor diagram, impedance admittance triangle, RL, RC, RLC parallel AC circuits power factor, active power, apparent power, reactive power, power triangle, Resonance in parallel RL, RC, RLC circuit, bandwidth, quality factor & voltage current magnification.			

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
3.	28-44	Three phase circuit System	Phasor & complex representation of 3- ϕ supply, phase sequence & polarity, types of 3- ϕ connections, phase & line quantities in 3- ϕ star & delta system, balance & unbalanced load, neutral shift in unbalanced load, 3- ϕ power, active, reactive & apparent in star delta system.			
4.	45-56	Network reduction & principles of circuit analysis	source transformation, star/delta & delta/star transformation, mesh analysis, node analysis			
5.	57-70	Network Theorems	superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, reciprocity theorem, duality in electric circuits.			

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