KGCE IN ELECTRICAL ENGINEERING - MODEL CURRICULUM

Programme Title : KGCE in Electical Engineering

Notional Hours: 2880

COURSE NAME & CODE	TOPIC / MODULE	THEORY (Hrs)	PRACTICAL (Hrs)	OBJECTIVE OF MODULE	OUTCOME OF MODULE	METHEDOLOGY	TOOLS REQUIRED
				YEAR 1			
BASIC MATHEMATICS & SCIENCE **(XX - XX)**	**Module M1** Basic Mathematics calculations & Algebra	40	0	OB 1.1 To understand principles of basic mathematics and calculation including Fraction, Ratio & Proportions, Basic Algebra	**Will be able to:** MO-1.1 Perform basic mathematical calculations in Fraction, Ratio & Proportions, Basic Algebra	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M2 Mensuration and Trigonometry	40	0	OB 2.1 To understand principles of Mensuration and Trigonometry	MO-2.1 Perform basic mathematical calculations and solve sample probles related to Mensuration and Trigonometry	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M3 Basic Science	40	0	OB 3.1 To understand principles of basic Science including System of units, Unit Conversion Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	MO-3.1 Understand the concepts of basic science including : System of units, Unit Conversion MO-3.2 Define - Mass/weight/volume/density, Work/power/energy, Velocity/Speed, elasticity	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
	Module M4 Basic Science	40	0	OB 4.1 To understand principles of basic Science including Heat, Pressure & Temperature and their applications. OB 4.2 To Understand the concepts of Basic electricity - AC/DC/Voltage, Current , Resistance, Ohms law	MO-4.1 Define - Heat, Pressure & Temperature and their applications MO-4.2 Explain - AC/DC/Voltage, Current , Resistance, Ohms law	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents

Engineering Drawing **(XX - XX)**	**Module M1** Introduction to Engineering Drawing Practice	8	0	OB 1.1 To understand different instruments used in engineering drawing	MO-1.1 List various instruments used in engineering drawing MO-1.2 State uses of various drawing instruments MO-1.3 Use various instruments to draw sample exercises	- Lecture - Demonstration	- Scales, Compass, Drawing board, Clips, Mini drafter, Pencils, Drawing sheets, Stencils, Instrument box - Laptop & Projector
		10	0	OB 1.2 To understand freehand sketching, lettering and dimensioning	MO-1.4 Understand the application of freehand sketching, lettering and dimensioning, Layouting and title block MO-1.5 List various dimensioning methods MO-1.6 Solve problems based on different dimensioning methods	- Lecture - Demonstration	
	Module M2 Geometrical Drawing	20	0	OB 2.1 To understand Geometric constructions and drawings of various objects and shapes	MO-2.1 Draw lines, angles, triangles, squares, polygons, threads, fasteners based on sample exercises	- Lecture - Demonstration	
	Module M3 Orthographic Projection	20	0	OB 3.1 To draw orthographic projections of various objects	MO-3.1 State the concept of quadrants in engineering drawing MO-3.2 Differentiate first angle and third angle projection MO-3.3 Prepare orthographic projection of given sample objects	- Lecture - Demonstration	
	Module M4 Shop floor drawing	22	0	OB 4.1 To undestrand and draw shop floor drawings	MO-4.1 State the importance of shop floor drawing in industry MO-4.2 Prepare isometric drawings of given sample objects MO-4.3 Prepare assembly drawing of given sample products	- Lecture	
		3	0	OB 1.1 To understand the Importance of electrical Safety	**Will be able to:** MO-1.1 Identify the Safety measures to be adopted	- Lecture - Use of smart class rooms - Use of instructional guidelines	- Laptop & Projector - Guideline documents
		6		OB 1.2 To understand various Types of accident injury or hazard,basic First aid OB 1.2 To understand various types of safety symbols	MO-1.2 Identify the Safety symbols and its types	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector - Fire extinguisher - Fire buckets

Module M1 Introduction to ELECTRICAL SAFETY AND EARTHING	6		OB 1.3 To understand Types of accident injury or hazard,basic First aid	MO-1.3 Describe accidents,hazards & first aid procedure	- Demonstration - Use of smart class rooms - Role play	- First Aid kit - Laptop & Projector
	6	0	OB 1.4 To understand the safety gadgets used for electrical Safety	MO-1.4 List the electrical safety gadgets to be used at an installation such as Fuses , Circuit Breakers, RCCB	- Lecture - Use of smart class rooms	- Laptop & Projector
	9	0	OB 1.5 To understand the involvement of Earthing in electrical safety OB 1.6 The selection of proper conductor size for a specific earthing application.	MO- 1.5 Describe the importance of earthing, Types of earthing, MO-1.6 Identify the importance of lightning arrester, Safety and protection equipment such as fire extinguisher, safety instrument and clothing MO-1.7 Define earth efficiency MO-1.8 List the factors effecting the earthing efficiency MO-1.9 Summarise the common earthing methods followed in Domestic & Industrial applications	- Lecture - Use of smart class rooms	- Laptop & Projector
	9		OB 1.7 Explain The selection of proper conductor size for a specific earthing application. OB 1.8 Identify the factors responsible for electric fire and its remedies	OB 1.10 MO1.10 Describe the selection of proper conductor size for a specific earthing application. MO 1.11 Calculate conductor size of an earth conductor MO 1.12 identify the main causes of fire and the methods adopted to confine the fire. MO 1.13 identify proper fire extinguishere	- Lecture - Use of smart class rooms	- Laptop & Projector
Module M2 BASICS OF ELECTRICITY & MAGNETISM	12	0	OB 2.1 To understand Electricity as a source of energy	MO-2.1 Define electricity & power	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector
	12	0	OB 2.2 To understand various Electrical quantities & units - Current, Voltage & Resistance etc OB 2.3 To understand Types of Electricity OB 2.4 To understand Basic Electric circuit & Essential components	MO 2.2 Identify the basic electrical parameters and the Units used MO-2.3 Compare AC & DC electricity MO-2.4 Describe simple electrical circuit along with essential components.	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector

		12	0	OB 2.5 Explain Series and parallel connections, simple network problems OB 2.6 To understand Open ,closed and short circuit conditions OB 2.7 To understand ohms law with simple problems	MO-2.5 Compare the circuit characteristics of Series & Parallel circuits MO-2.6 Identify the circuit conditions such as open, closed & short MO-2.7 Solve sample calculations on Ohms law. MO-2.8 Calculate power using Ammeter Voltmeter readings.	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector -
		10		OB 2.7 To understand Energy consumption of appliances. watt meter & Energy meter connections, Calculation of electric bill	MO-2.9 Define Power rating of loads MO-2.10 Describe Power measurement methods MO-2.11 Calculate power using Ammeter Voltmeter readings.	- Lecture - Use of smart class rooms	- Laptop & Projector
		10		OB 2.8 Explain Megger working principle ,Constructional details , uses OB 2.9 To understand Magnets, types and properties of magnetism	MO -2.12 Describe construction and working of megger MO -2.13 Illustrate the use of megger as insulation tester MO -2.14 Describe the concept of magnetic field MO -2.15 Compare magnetic circuit and electric circuit MO -2.16 Describe the formation flux around a current carrying conductor MO -2.17 State Flemings grip rule •Identify the direction of magnetic lines of force around a conductor	- Lecture - Use of smart class rooms	- Laptop & Projector
Professional Knowledge-I		16		OB 2.9 To understand Magnets classification - Natural & Artificial,Construction of a simple electromagnet	MO -2.16 Classify magnets into natural & artificial MO -2.17 Explain the formation of Electro Magnets MO -2.18 Identify the use of core to increase the magnetic properties. MO -2.19 Define Faradays laws of electromagnetic induction. MO -2.20 Define self and mutual induction MO -2.21 Identify electrical instruments working on the principle of mutual & self Induction	- Lecture - Use of smart class rooms	- Laptop & Projector Magnets

(Trade Theory) **(XX - XX)**		18		OB 2.10 To understand Single loop generator & production of AC Wave and various terms associated	MO -2.20 Explain the working principle & construction of a single loop generator MO -2.21 Define the terms -Peak value, half cycles, Time period, Frequency MO -2.22 Describe the production of DC electricity MO -2.23 Distinguish DC & AC generators based on slip ring and split ring, wave form	- Lecture - Use of smart class rooms	- Laptop & Projector
		16		OB 2.11 To understand the Generation of 3 phase AC ,Placement of coils at 120 degree electrical separation,Wave Form	MO -2.24 Describe the construction of a 3 phase generator by placement of coils at 120 electrical degree MO -2.25 Describe 3 phase connections - star and delta, MO-2.26 Identify relation ship of Line and phase voltage and current MO -2.27 Solve simple problems on star & delta connections	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector
		16		OB 2.12 Describe the Types of electrical loads, Power Factor , Calculations	MO -2.28 Classify different types of electrical load MO -2.29 Define resistance and reactance, & impedance MO -2.30 Define actual,apparent power,power factor MO -2.31 Solve simple problems on power	- Lecture - Use of smart class rooms	- Laptop & Projector
		16	0	OB 3.1 To understand Types of wiring in all types of buildings.	MO-3.1 Describe different types of wiring MO-3.2 State the merits and demerits of different wiring methods and application of various types of wiring electrical instruments working on the principle of mutual & self Induction	- Lecture - Use of smart class rooms - Demonstration	- Laptop & Projector Wiring models
		8	0	OB 3.2 To understand Wiring materials & accessories Current rating of various accessories & Cables	MO-3.3 Describe various wiring materials and accessories with their specification MO-3.4 Calculate the current rating of various accessories & Cables.	- Lecture - Demonstration	- Laptop & Projector

	Module M3 ELECTRICAL WIRING - DESIGNING ESTIMATION & COSTING	20	0	OB 3.3 To understand Motor Installation OB 3.4 To understand Service Connection and electrical wiring rules OB 3.5 To understand Essential properties of conductors, Copper & Aluminium, Comparison. ACSR and insulating materials	MO-3.5 List out the estimation for installation of the motor. MO-3.6 Calculate the connected load, total load current and select the type of service connection MO-3.7 Recall important wiring rules prevailing. MO-3.8 List selection criteria for the conductor material. MO-3.9 List Physical & chemical properties of Copper,Aluminium,ACSR MO -3.10 Identify different types of insulating materials and their applications on various fields.	- Demonstration - Practical exercises	- Laptop & Projector
		8	0	OB 3.5 To understand Electrical cables and its specifications. Different types of electrical cables. Cable preparation methods	MO-3.11 State the specification of electrical cable MO-3.12 Explain the termination of UG cables using accessories •List different types of electrical cables •Describe the method of cable preparation	- Lecture - Demonstration	- Laptop & Projector
		12	0	OB 3.6 To understand Selection & Termination of UG cables.	MO-3.13 Select UG Cables for a given application. •Explain the termination of UG cables using accessories MO-3.14 Define coating factor MO-3.15 Describe the characteristics of flux coating on electrodes	- Lecture	- Laptop & Projector
		3	0	OB 4.1 Classification of cells - Primary & Secondary cells	MO-4.1 Classify Primary cells Secondary cells with examples MO-4.2 Classify cells for specified voltage and current under different conditions ous parts in lathe	- Lecture - Demonstration	- Laptop & Projector
		4	0	OB 4.2 To understand Charging & Discharging of batteries used in electric vehicles	MO-4.3 Summarise charging parameters for secondary cells used in electric vehicles such as Lead acid, NiCd, NiMh, Li ion	- Lecture - Demonstration	- Laptop & Projector

	Module M4 CELLS & BATTERIES	3	0	OB 4.3 To understand Care & Upkeep of Secondary cells-Preparation and testing of electrolyte	•Describe the preparation of electrolyte for battery •Explain the procedure for testing of specific gravity of electrolyte MO-4.4 List different operations which can be performed in lathe MO-4.5 State the importance of cutting speed, feed, depth of cut in turning MO-4.6 Explain various taper turning methods	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
		5	0	OB 4.4 To understand functions of various lathe attachments & accessories	MO-4.7 Describe the preparation of electrolyte for battery MO-4.8 Explain the procedure for testing of specific gravity of electrolyte	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector

	Module M1 Electrical safety	0	100	OB 1.1 To be familiar with different safety procedures OB 1.2 TO familarise with earthing OB 1.3 Familarise the usage of fire extinguisher	MO-1.1 Prepare charts of safety symbols MO-1.2 Demonstrate the use of first aid to provide the basic first aid MO-1.3 Install safety gadgets in a circuit & demonstrate the use of safety and protection equipment MO-1.4 Test the earth resistance at a place MO-1.5 Perform the methods to improve the earthing MO-1.6 Execute the earthing procedure to be observed during the establishment of earthing MO-1.7 Execute the Sample calculation of conductor size.	- Demonstration - Practical Exercises	Safety equipments Earth tester
			10	OB 1.5 Familarise the usage of fire extinguisher	MO-1.8 Simulate an artificial fire and carryout fire extinguishing practice.	- Demonstration - Practical Exercises	Fire extinguisher
	Module M2 Electricity and Magnetism	0	60	OB 2.1 Illustrating a simple electrical circuit along with essential components.	MO-2.1 Identify presence of electricity & power in electrical appliances such as electric fan, TV, Refrigerator MO-2.2 Show the concept of Voltage, Current and Resistance by conducting simple experiments MO-2.3 Construct a simple electric circuit and list all the components..	- Demonstration - Practical Exercises	- General hand tools & equipments used in sheet metal section
			100	OB 2.2 Distinguishing the circuit characteristics of Series & Parallel circuits OB 2.3 Applying Ohms law on simple circuits	MO-2.4 Build a series and parallel circuit and identify the circuit charecteristics. MO-2.5 Calculate the Total resistance, voltage drop on each load, current through each branch MO-2.6 Simulate open,closed & short circuit conditions in a simple circuit to glow a lamp MO-2.7 Verify Ohm's law using simple experiments MO -2.8 Calculate power using Ammeter Voltmeter method	- Demonstration - Practical Exercises	Ammeter Voltemter

Professional Skill-I (Trade Practical) **(XX - XX)**			100	OB 2.3 To familarise power and energy measurement OB 2.4 To familarise working of earth megger	MO -2.9 Calculate power using Ammeter Voltmeter method MO -2.10 Find out the Power of a given load using a wattmeter. MO -2.11 Perform Energy meter calibration MO -2.12 Test insulation resistance between conductors, Conductor & earth		'Ammeter Voltemter Earth tester
			80	OB 2.5 To familarise with the concept of magnetic field and different types of magnets OB 2.6 To familarise with Faradays laws of electromagnetic induction.	MO -2.13 Collection of various types of magnets, Plotting of magnetic lines of force MO -2.14 Experiment to prove the presence of magnetism around a conductor. Observe the change of flux by changing the current intensity. MO -2.15 Collect various materials for the construction of an electro magnet and observe the functions MO -2.16 Verification of Faradays laws of electromagnetic induction. MO -2.17 Demonstrate Electrical instruments working on the principle of Mutual & self Induction		Magnets
			60	OB 2.7 To familarise with working of generators and its waveform	MO -2.18 Observe the graphical output of an ac generator and familiarise the terms related MO -2.19 Observe the graphical output of an dc generator and familiarise the terms related MO -2.20 Observe a 3 phase generator output wave MO -2.21 dentification of coil ends of 3phase pairs. Finding out the starting and ending of coils. Connecting them in star and Delta methods.		Ammeter Voltemter
			20	OB 2.8 To familarise with different electrical loads	MO -2.22 Calculation of power factor of various types of loads		'Ammeter Voltemter Wattmeter

		0	30	OB 3.1 To be familiarise different types of wiring	MO-3.1 Preperation of a wiring diagram according to a designed layout. Construction of simple wiring .	- Demonstration - Practical Exercises	- General hand tools used in Wiring
	Module M3 Elctrical wiring		300	OB 3.2 Finding out the current rating of various accessories & Cables.6. Fillet joint	MO-3.2 observe and calculate current rating of various accessories & Cables MO-3.3 adopt esimation ,connection &testing MO-3.4 Demonstrate the methods to select the type of service wires. MO-3.5 Make awareness of the wiring rules. MO-3.6 Demonstrate the crimping of electrical cable. Attach a lug to the end of the cable. MO-3.7 Practice Cable termination using Gland,Ferrule, Crimping Lug etc. MO-3.8 Study of various Insulating materials and their applications on various fields. MO-3.9 Selection criteria for the conductor material. Physical & chemical properties behind.Application of conductors for indoor and out door uses.	- Demonstration - Practical Exercises	'- General hand tools & equipments used in Wiring
	Module M4 Cells and Batteries	0	100	OB 4.1 To be familiar with different types of batteries and their charging	MO-4.1 Carryout charging of various secondary cells such as Lead acid, NiCd, NiMh, Li ion of various ampere hour capacity MO-4.2 Practice on routine, care/ maintenance and testing of batteries.	- Demonstration - Practical Exercises	Batteries
YEAR 2							
	Module M1 Electrical measuring instrument	10	0	OB 1.1 To understand the different classification of instruments	MO-1.1 Classify measuring Instruments. MO-1.2 List electrical parameters & instruments used for the measurement of each. MO-1.3 Describe internal structure of a Voltmeter and ammeter	- Lecture - Use of smart class rooms	- Laptop & Projector
		15	0	OB 1.2 To understand the range extention and range selection of meters	MO-1.4 Illustrate the method of extending the range of the instrument MO-1.5 Explain the construction of ohhmmeter MO-1.6 Describe the range selection methods MO-1.7 •Identify the use of a multimeter for various measurements, •Identify the range selection methods	- Lecture - Use of smart class rooms	- Laptop & Projector

		15		OB 1.3 To understand the working of wattmeter and energy meter	MO-1.8 Describe the internal connection diagram of a wattmeter MO-1.9 Describe the internal connection diagram of an Energy meter, MO-1.10 Illustrate the connection of an wattmeter and energymeter to a load	Lecture - Use of smart class rooms	- Laptop & Projector
		10		OB 1.4 To understand different types of generating stations	MO-1.11 Draw layout of hydel and thermal power plant and identify function of different layout elements. MO-1.12 Compare low ,medium & high head hydel power generating stations. MO-1.13 Draw line diagram of a Generating Station with major components	Lecture - Use of smart class rooms	- Laptop & Projector
		10		OB 1.5 To understand high voltage transmission system	MO-1.14 Identify possible methods of transmitting the generated voltage MO-1.15 Describe usage of high voltage AC for overcoming the losses . MO-1.16 Describe various types of type of feeders, distributors & service mains .	Lecture - Use of smart class rooms	- Laptop & Projector
		10	0	OB 2.1 To understand different cables, wires,switch gears	MO-2.1 Specify proper sizes, grades of solid & stranded conductors MO-2.2 Describe the use of wire gauge MO-2.3 Specify switch gears for various application	- Lecture	- Laptop & Projector
		15	0	OB 2.2 To understand different pannel board wiring and bus bar calculation OB 2.3 To understand Trunk wiring	MO-2.4 Draw the lay out of a panel as per the requirement MO-2.5 Describe the method of trunk wiring MO-2.6 Calculate size of Busbar MO-2.7 Explain the wiring of heavy machines with a panel board	- Lecture - Use of smart class rooms	- Laptop & Projector - Sample models

Professional Knowledge-II (Trade Theory) **(XX - XX)**	**Module M2** INDUSTRIAL WIRING & ILLUMINATION	15	0	OB 2.4 To understand Classification and application of lighting systems OB 2.5 To understand Trunk wiring	MO-2.8 Classify the lamps according to the function MO-2.9 Describe the principle of operation of lamps MO-2.10 Draw connection diagrams of various lighting systems MO-2.11 List application of various types of lamps.	- Lecture - Demonstration - Use of smart class rooms	Different lamps
		20	0	OB 2.6 To understand Energy efficient lighting systems - LED Lighting - new trends.	MO-2.12 Define illumination efficiency of lamps. •Identify unit of light intensity MO-2.13 Compare LED with Incandescent lamp MO- 2.14 Describe the use of LED / HPSV, MH, lamps for indoor ,outdoor lighting MO-2.15 Explain the connections of HID lamps with Choke & Ignitor MO-2.16 Identify parts for the assembling of LED Bulb,Tee Bulb,Tube lights MO-2.17 Describe the operation of an automatic street light.	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector

Module M3 ELECTRICAL MACHINES	20	0	OB 3.1 To understand the classification and application of Dc machines OB 3.1 To understand Single Phase ac motors principle, types & applications OB 3.2 AC Motors, Principle of rotating magnetic field	MO - 3.1 Describe the construction of a DC Generator & Motor MO - 3.2 Compare of series, shunt motors based on characteristics & applications. MO-3.3 Describe the concept of split phasing MO-3.4 Summarise the method of self starting of single phase motor MO-3.5 Explain the construction and change in starting torque of single phase ac motor for different applications. MO-3.6 Describe the production of rotating magnetic field in AC mtor MO-3.7 Explain the construction of a squirrel cage rotor	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
	20		OB 3.1 To understand I phase & 3 phase motor classification OB 3.2 To understand Motor starters, DOL, Star Delta etc OB 3.3 To understand Transformer types, transformation ratio, Efficiency & Losses OB 3.4 To understand New trends in Electrical Machine	MO - 3.1 Classify AC motors and give examples ,applications MO - 3.2 State the importance of starters in terms of starting current MO-3.3 Describe various starting Methods and selection of proper starter MO-3.4 Define transformation ratio and solve simple problems MO-3.5 Classify transformers on the basis of transformation ratio. MO-3.6 Calculate losses and efficiency of transformer MO-3.7 List the application of BLDC motor,Permanent magnet synchronous motor	- Lecture - Demonstration - Use of smart class rooms	#NAME?

	Module M4 BASIC ELECTRONICS	20	0	OB 4.1 To understand the classification of active and passive componens	MO-4.1 Recognise the importance of electronics MO-4.2 Classify active and passive components MO-4.3 Identify types of resistors, capacitors and inductor MO-4.4 State the specifications of Resistors as per wattage and value using color coding. MO-4.5 Identify specifications of Capacitors	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
		20		OB 4.2 To understand the basics of semiconductor elecctronics	MO-4.6 Classify materials according to conductivity MO-4.7 Describe basic atomic theory of semi conductors. MO-4.8 Explain the formation of P & N type semi conductors by doping MO-4.9 Draw diode forward and reverse biasing characteristics. MO-4.10 Describe the use of diode for the rectification of AC -half, full & bridge rectifiers MO-4.11 Describe the use of Zener diode as voltage regulator MO-4.12 Identify the use of Transistor as switch and Amplifier •List the applications of transistor in electronic circuits	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector

Employability Skills & Entrepreneurship **(XX - XX)**	**Module M1** English & Communication	5	10	OB 1.1 To understand communication and self management skills OB 1.2 To understand English Literacy - functional English, reading & writing	MO-1.1 Demonstrate knowledge of various methods of communication - verbal, non-verbal-visual; Greetings & self introduction, Asking & responding to question, formal & informal communication MO-1.2 Demonstration of writing sentences and paragraphs on topics related to the subject, discussions on current happenings	- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews	- Laptop & Projector
	Module M2 Communication & Behavioral Skills	5	10	OB 2.1 To understand Behavioral skills - Personal strength analysis, social responsibility, role modeling	MO-2.1 Identify specific do's and don'ts for avoiding common body language mistakes MO-2.2 Execute time management and planning skills, Skills to crack interviews MO-2.3 Demonstration of impressive appearance and groomed personality, ability to self- explore MO-2.4 Display professionalism at the institute and workplace	- Lecture - Demonstration - Use of smart class rooms - Mock discussions, Interviews	- Laptop & Projector
	Module M3 Information Technology	20	40	OB 3.1 To understand Information and communication technology skills OB 3.2 To be familiar with internet and its applications	MO-3.1 Understand the basics of computers, Operating system, MS-Word, MS-Excel software's MO-3.2 Create simple documents like - resume, letter writing, job application etc., MO-3.3 Printing document, Familiar with usage of shortcuts, Creating and Editing of Text, Formatting the Text. MO-3.4 Use Web browsers and search engines, Creating & using e-mail id for communication	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector
	Module M4 Entrepreneurship	25	5	OB 4.1 To understand Entrepreneurial skills	MO-4.1 Describe the significance of entrepreneurial values and attitude. MO-4.2 Demonstrate the knowledge of attitudinal changes required to become an entrepreneur MO-4.3 Explain the ways to set up an enterprise and different aspects involved viz., legal, compliances, Marketing aspect, Budgeting, etc	- Lecture - Demonstration - Use of smart class rooms	- Laptop & Projector

	Module 1 ELECTRICAL MEASUREMENT	0	200	OB 1.1 To perform different electrical measurement	MO-1.1 Proper selection of Instrument MO-1.2 Make Connection of a voltmeter and ammeter in a circuit with proper range. MO-1.3 Demostrate Measurement of Resistance MO-1.4 Use of a multimeter for various measurements, and proper range selection methods MO-1.5 Demonstrate Power measurement of a given load using a wattmeter. MO-1.6 Demonstrate Energy measurement of a given load , Calibration of an energy meter	- Demonstration - Practical Exercises	Ammeter Voltemter Wattmeter Energy meter
		0	40	OB 1.2 To be familiar with different generating station	MO-1.7 Make a field visit Visit to transmission / distribution substation. Draw actual circuit diagram of substation visited and indicate various components.MO-1.8 Make a field visit Visit to Hydel Power generatin stations / distribution substation. Draw actual circuit diagram of substation visited and indicate various components.	- Demonstration - Practical Exercises	
			30	OB 1.3 To be familiar with Substation	MO-1.7 Field visit to the substation, document the type of conductors & cables used,feeders,distributors & service mains.	#NAME?	
		0	170	OB 2.1 To be familiar with types of wires and switch gears OB 2.2 To be familiar with control panel and trunk wiring	MO-2.1 Calculation & selection of cables and switch gears MO-2.2 Assemble,wireup & test a control panel MO-2.3 Demonstrate Trunk wiring MO - 2.4 Perform connection and operation of Heavy electrical machines	- Demonstration - Practical Exercises	General wiring tools

	Module 2 INDUSTRIAL WIRING & ILLUMINATION	0	170	OB 2.3 To be familiar with types of lamps and lighting system OB 2.4 To be familiar with control panel and trunk wiring	MO-2.5 Perform Connections of various lighting systems MO-2.6 Demonstrate Connections of various lamps. Testing and operating of lamps MO-2.7 Make Connections of HID lamps with Choke & Ignitor MO-2.8 Assembling of various types of LED Lamps, LED Bulb, Tee Bulb, Tube light. Checking the performance. MO-2.7 Make Connections of HID lamps with Choke & Ignitor	- Demonstration - Practical Exercises	Lamps and other accessories
Professional Skill-II (Trade Practical) **(XX - XX)**	**Module 3** ELECTRICAL MACHINES	0	30	OB 3.1 To understand DC machines operation	MO-3.1 Make a study of DC Motor charecteristics and suggest for various field of application.	- Demonstration - Practical Exercises	Ammeter Voltemeter Rheostat
		0	60	OB 3.2 To be familiar with Single Phase ac motors principle, types & applications OB 3.3 To be familiar with starters	MO-3.2 Demonstrate Method of self starting by split phasing, construction and change in starting torque for diferent applications. MO-3.3 Measurement of starting current, Current setting of starters,Connection of motor windings to the starters	- Demonstration - Practical Exercises	Ammeter Voltemeter Starters
			60	OB 3.4 To be familiar with transformer operation OB 3.5 To be familiar with BLDC motor	MO-3.4 Perform measurement of various parameters of Step up & step down transformers MO-3.5 Demonstrate the working of a BLDC motor	- Demonstration - Practical Exercises	Ammeter Voltmeters
	Module 4 BASIC ELECTRONICS	0	200	OB 4.1 To familiar with different types of electronic components and their application	MO 4.1 Identification of types of resistors, capacitors and inductors and decoding their numerical value MO 4.2 Identification of diode polarity , testing of forward & reverse biasing. MO 4.3 Construction of different rectifier combinations, check the wave forms, ripple, filteration methods. MO 4.4 Demonstrate Zener diode in reverse bias MO 4.5 Demonstrate Transistor as switch and Amplifier	- Demonstration - Practical Exercises	- General Electronic components

Project Work **(XX - XX)**	1.Students Project Work	0	160	OB 7.1.1 To be familiar with current technological developments,industrial standards,safety aspects & organizational structure	MO-1.1 Identify on-field application of theoretical concepts gathered from classroom MO-1.1 Identify/execute maintenance requirements/activities in industrial/Govt/NGO/Rural sectors	- Demonstration - Industrial Visit	
				OB 7.2.1 To be familiar with working in groups to achieve common goals	MO-7.3 Develop creative ideas and skills for achieving a common goal MO-7.4 Make a useful product	Demonstration- Industrial Visit	