ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-1 INTRODUCTION TO ELECTRIC GENERATION SYSTEMS (COURSE CODE: EEPC201)

Discipline: Electrical Engineering	Semester :3RD	No. of periods available: 45	Name of Teaching Faculty: BHABANI SANKAR BEHERA
Subject: INTRODUCTION TO ELECTRIC GENERATION SYSTEMS	No. of Days/ per week class allotted : 3periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks : 15
Week	Class Day		Theory Topics
1st	1st	1	**UNIT 1:Thermal Power Plants**: Coal, Gas/Diesel and Nuclear-based Layout and working of a typical thermal power plant (coal based) with steam turbines and electric generators.
	2nd	1	1.2 Properties of conventional fuels used in the energy conversion equipment used in thermal power plants: Coal based
	3rd	1	1.3 safe practices of coal based thermal power plant.
2nd	4th	1	1.4. Layout and working of gas/diesel based thermal power plant
	5th	1	1.5. Properties of conventional fuel used and safe practices of gas and diesel based thermal power plant. And diesel based thermal power plant.
	6th	1	1.6. Layout and working of nuclear based thermal power plant
3rd	7th	1	1.7. Properties of conventional fuel used and safe practices of nuclear based thermal power plant.
	8th	1	1.8. constituents of thermal power plant
	9th	1	Coal fired boilers: fire tube and water tube
4th	10th	1	1.9.2 Gas/diesel based combustion engines
	11th	1	1.9.3 Types of nuclear reactors :Disposal of nuclear waste and nuclear shielding
	12th	1	Disposal of nuclear waste and nuclear shielding
5th	13th	1	Revision
	14th	1	**UNIT 2:Large Hydropower Plants** Energy conversion process of hydro power plant (kinetic energy to electrical energy)
	15th	1	2.2. Classification of hydro power plant: High ,medium and low head

6th	16th	1	2.3Construction and working of hydro turbines used in different types of hydro power plant
	17th	1	working of hydro turbines used in different types of hydro power plant
	18th	1	High head-Pelton turbine
7th	19th	1	2.3.2. Medium head-Francis turbine
	20th	1	2.3.3. Low head-Kaplan turbine
	21st	1	2.4 Safe Practices for hydro power plants
8th	22nd	1	2.5 Locations of these different types of large hydro power plants in India
	23rd	1	Revision
	24th	1	Class Test 2 (Units I-II)
9th	25th	1	Revision 1 (Units I-II)
	26th	1	**UNIT 3:Micro-Hydropower Plants** **Lay out of micro hydro power plants**
	27th	1	3.2Different types of micro-hydro turbines for different heads: Pelton turbines
10th	28th	1	3.2.2 Francis turbines
	29th	1	3.2.3 Kaplan turbines
	30th	1	3.3 Locations of these different types of micro-hydro power plants in India
11TH	31st	1	3.4 safe practices for micro hydro power plant
	32nd	1	**UNIT 4: Economics of Power Generation and Interconnected Power System**
	33rd	1	4.1.1 Related terms: connected load, firm power, cold reserve
12TH	34th	1	4.1.2 hot reserve, spinning reserve. Base load and peak load plants
	35th	1	4.1.3 Load curve, load duration curve, integrated duration

			curve
	36th	1	4.2Cost of generation: Average demand, maximum demand, demand factor,
13TH	37th	1	4.2.2 plant capacity factor, plant use factor, diversity factor, load factor and plant load factor
	38th	1	4.3 Choice of size and number of generator units
	39th	1	4.4Combined operation of power station Causes, Impact and reasons of Grid system fault
14TH	40 th	1	4.4.2 State grid, national grid, brownout and blackout
	41 st	1	4.4.3 Sample blackouts at national and international level.
	42nd	1	Revision
15th	43rd	1	Revision
	44th	1	Class Test 2 (Units III-IV)
	45th	1	Revision 1 (Units III-IV)

Bhabanisankar Behera.

Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-2 ELECTRICAL CIRCUIT (COURSE CODE: EEPC201)

Discipline: Electrical Engineering	Semester :3RD	No. of periods available: 45	Name of Teaching Faculty**:** ANITA DAS
Subject: ELECTRICAL CIRCUITS	No. of Days/ per week class allotted : 3periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks : 15
Week	Class Day		Theory Topics
1st	1st	1	**UNIT 1:Single Phase A.C Series Circuits** 1.1 Generation of alternating voltage 1.2 Phasor representation of sinusoidal quantities R, L, C circuit elements its voltage and current response
	2nd	1	1.4 R-L combination of A.C series circuit 1.4.1 Impedance, reactance, impedance triangle 1.4.2 Power factor, active power, reactive power, apparent power Power triangle and vector diagram
	3rd	1	1.4 R-L combination of A.C series circuit 1.4.4 Resonance, Bandwidth Quality factor and voltage magnification in series R-L circuit
2nd	4th	1	1.4 R-C combination of A.C series circuit 1.4.1 Impedance, reactance, impedance triangle 1.4.2 Power factor, active power, reactive power, apparent power Power triangle and vector diagram
	5th	1	1.4 R-C combination of A.C series circuit 1.4.4 Resonance, Bandwidth Quality factor and voltage magnification in series R-C circuit
	6th	1	1.4 R-L-C combination of A.C series circuit 1.4.1 Impedance, reactance, impedance triangle 1.4.2 Power factor, active power, reactive power, apparent power Power triangle and vector diagram
3rd	7th	1	1.4 R-L-C combination of A.C series circuit 1.4.4 Resonance, Bandwidth Quality factor and voltage magnification in series R-L-

			C circuit
	8th	1	**UNIT 2:Single Phase A.C Parallel Circuits** 2.1 R-L parallel combination of A.C. circuits Impedance, reactance, phasor diagram, impedance triangle
	9th	1	2. Single Phase A.C Parallel Circuits 2.1 R-L parallel combination of A.C. circuits 2.1.2 Power factor, active power, apparent power, reactive power, power triangle
4th	10th	1	2.1 R-C parallel combination of A.C. circuits Impedance, reactance, phasor diagram, impedance triangle
	11th	1	2.1 R-C parallel combination of A.C. circuits 2.1.2 Power factor, active power, apparent power, reactive power, power triangle
	12th	1	2.1 R-L-C parallel combination of A.C. circuits Impedance, reactance, phasor diagram, impedance triangle
5th	13th	1	2.1 R-L-C parallel combination of A.C. circuits 2.1.2 Power factor, active power, apparent power, reactive power, power triangle
	14th	1	2.2 Resonance in parallel R-L, R-C, R-L-C circuit
	15th	1	2.3 Bandwidth, Quality factor and voltage magnification
6th	16th	1	Class Test 2 (Units I-11)
	17th	1	Revision 1 (Units I-II)
	18th	1	**UNIT 3:Three Phase Circuits** 3.1 Phasor and complex representation of three phase supply Phase sequence and polarity
7th	19th	1	3.2 Types of three-phase connections 3.3 3.4 Phase and line quantities in three phase star system
	20th	1	3.4 Phase and line quantities in three phase delta system 3.5 3.5 Balanced and unbalanced load (Cond.)
	21 st	1	3.6 Balanced and unbalanced load 3.7 3.6 Neutral shift in unbalanced load
8th	22nd	1	3.7 Three phase power, active, reactive and apparent power in star and delta system
	23rd	1	**UNIT 4: Network Reduction and Principles of Circuit Analysis**

			Source transformation
	24th	1	4.2 Star/delta and delta/star transformation (Cont.) 4.2 Star/delta and delta/star transformation
9th	25th	1	4.3 Mesh Analysis
	26th	1	4.4 Node Analysis
	27th	1	**UNIT 5:Network Theorems** Superposition theorem(Contd.)
10th	28th	1	Superposition theorem
	29th	1	5.2 The venin's theorem (Contd.)
	30th	1	5.2 The venin's theorem
11TH	31st	1	5.3 Norton's theorem (Contd.)
	32nd	1	5.3 Norton's theorem
	33rd	1	5.4 Maximum power transfer theorem (Contd.)
12TH	34th	1	5.4 Maximum power transfer theorem
	35th	1	5.5 Reciprocity Theorem
	36th	1	**UNIT 6:Two Port Network** Open Circuit Impedance Parameters (Contd.)
13TH	37th	1	Open Circuit Impedance Parameters (Contd.)
	38th	1	6.2 Short Circuit Admittance Parameters
	39th	1	6.2 Transmission Parameters
14TH	40 th	1	6.2 Hybrid Parameters
	41 st	1	6.3 Interrelationship of Two Port Network
	42nd	1	6.3 Interrelationship of Two Port Network
15th	43rd	1	6.4 Inter Connection of Two Port Network
	44th	1	Class Test 2 (Units III-VI)
	45th	1	Revision 1 (Units I-II)

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ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-3 ELECTRICAL AND ELECTRONICS MEASUREMENT (COURSE CODE: EEPC205)

Discipline: Electrical Engineering	Semester :3RD	No. of periods available: 45	Name of Teaching Faculty: JAYANTA PANDA
Subject: ELECTRICAL AND ELECTRONICS MEASUREMENT	No. of Days/ per week class allotted : 3periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks : 15
Week	Class Day		Theory Topics
1st	1st	1	**UNIT 1: Fundamentals of Measurements** 1.1 Measurement: Significance, units, fundamental quantities and standards
	2nd	1	1.2 Classification of Instrument Systems
	3rd	1	1.3 Null and deflection type instruments
2nd	4th	1	1.4 Absolute and secondary instruments
	5th	1	1.5 Analog and digital instruments
	6th	1	1.6 Static and dynamic characteristics, types of errors
3rd	7th	1	1.7 Calibration: need and procedure
	8th	1	1.8 Classification of measuring instruments: indicating, recording and integrating instruments
	9th	1	1.9 Essential requirements of an indicating instruments
4th	10th	1	Revision
	11th	1	**UNIT 2: Measurement of voltage and current** 2.1 DC Ammeter: Basic, Multi range, Universal shunt
	12th	1	2.2 DC Voltmeter: Basic, Multi-range, concept of loading effect and sensitivity
5th	13th	1	2.3 AC voltmeter: Rectifier type (half wave and full wave), CT and PT: construction, working and applications
	14th	1	Class Test 1(Units I-II)
	15th	1	Revision (Units I-II)
6th	16th	1	**UNIT 3: Measurement of Electric Power** 3.1 Analog meters: Permanent magnet moving coil (PMMC) and Permanent magnet moving iron (PMMI) meter, their construction, working, salient features,

			merits and demerits
	17th	1	3.2 Dynamometer type wattmeter: Construction and working
	18th	1	3.3 Errors and compensations of PMMI,PMMC and Dynamometer type wattmeter
7th	19th	1	3.4 Active and reactive power measurement: One, two and three wattmeter method
	20th	1	3.5 Effect of Power factor on wattmeter reading in two wattmeter method
	21st	1	3.6 Maximum Demand indicator(Definition only)
8th	22nd	1	**UNIT 4: Measurement of Electric Energy** 4.1 Single and three phase electronic energy meter: Constructional features and working principle
	23rd	1	4.2 Errors and their compensations
	24th	1	4.3 Calibration of single-phase electronic energy meter using direct loading.
9th	25th	1	Revision
	26th	1	Revision
	27th	1	**UNIT 5: Circuit Parameter Measurement, CRO and Other Meters**
10th	28th	1	5.1 Measurement of resistance
	29th	1	5.1.1 Low resistance: Kelvin's double bridge,
	30th	1	5.1.2 Medium Resistance: Voltmeter and ammeter method
11TH	31st	1	Medium Resistance: ammeter method
	32nd	1	5.1.3 High resistance: Megger and Ohm meter: Series and shunt
	33rd	1	High resistance: Ohm meter: Series and shunt
12TH	34th	1	5.2 Measurement of inductance using Anderson bridge (no derivation and phasor diagram)
	35th	1	5.3 Measurement of capacitance using Schering bridge (no derivation and phasor diagram)
	36th	1	5.4 Single beam/single

13TH	37th	1	trace CRO (Working principle and block diagram only)
	38th	1	5.5 Digital storage Oscilloscope: Basic block diagram, working, Cathode ray tube
	39th	1	electrostatic deflection, vertical amplifier, time base generator, horizontal amplifier,
14TH	40 th	1	Measurement of voltage/ amplitude/ time period/ frequency/ phase angle delay line, specifications.
	41 st	1	5.6 Other meters: Earth tester, Digital Multimeter; L-C-R meter, Frequency meter (ferromagnetic and Weston type),
	42nd	1	Phase sequence indicator, power factor meter (single phase and three phase dynamometer type), Synchro scope, Tri-vector meter
15th	43rd	1	5.7Signal generator: need, working and basic block diagram
	44th	1	Class Test 2 (Units III-V)
	45th	1	Revision (Units III-V)

Jayanta Panda

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ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-4 DC MACHINES AND TRANSFORMERS (COURSE CODE: EEPC207)

Discipline: Electrical Engineering	Semester :3RD	No. of periods available: 45	Name of Teaching Faculty: : PRADOSH MOHAPATRA
Subject: DC MACHINES AND TRANSFORMERS	No. of Days/ per week class allotted : 3periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks : 15
Week	Class Day		Theory Topics
1st	1st	1	**Unit 1: DC Generators** 1.1 D.C. generator: construction, parts, materials and their functions
	2nd	1	1.2 Principle of operation of DC generator
	3rd	1	1.2.1 Fleming's right hand rule
2nd	4th	1	1.2.2 Derive the emf equation of DC Generator
	5th	1	1.2.3 Schematic diagrams of different types of DC generator
	6th	1	1.2.3 Schematic diagrams of different types of DC generator
3rd	7th	1	1.2.4 Armature reaction
	8th	1	1.2.5 Commutation
	9th	1	1.2.6 Applications of D.C. generators
4th	10th	1	Revision
	11th	1	**UNIT 2:D.C. Motors** 2.1 D.C. motor: Types of DC motors 2.1.1 Fleming's left hand rule
	12th	1	2.1.2 Principle of operation of Back e.m.f. and its significance, 2.1.3 Voltage equation of DC motor
5th	13rd	1	2.1.4 Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency
	14th	1	2.1.4 Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency

	15th	1	2.2 DC motor starters: Necessity, two point and three point starters
6th	16th	1	2.3 Speed control of DC shunt and series motor: Flux and Armature control
	17th	1	2.4 Brushless DC Motor: Construction and working
	18th	1	Class Test 1 (Units I-II)
7th	19th	1	**UNIT 3:Single Phase Transformers** 3.1 Types of transformers: Shell type and core type
	20th	1	3.2 Construction: Parts and functions 3.3 Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
	21st	1	3.4 Transformer: Principle of operation 3.5 EMF equation of transformer: Derivation, Voltage transformation ratio
8th	22nd	1	3.5 EMF equation of transformer: Derivation, Voltage transformation ratio
	23rd	1	3.6 Significance of transformer ratings
	24th	1	3.7 Transformer No-load and on-load phasor diagram, Leakage reactance
9th	25th	1	3.8 Equivalent circuit of transformer: Equivalent resistance and reactance
	26th	1	3.9 Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
	27th	1	Revision
10th	28th	1	**UNIT 4:Three Phase Transformers** 4.1 Bank of three single phase transformers,(Y-Y,Δ-Δ ,Δ-Y, Y- Δ)
	29th	1	4.2 Single unit of three phase transformer
	30th	1	4.3 Distribution and Power transformers: Construction and cooling,
11TH	31st	1	4.3 Distribution and Power transformers: Construction and cooling,
	32nd	1	4.4 Criteria for selection of distribution transformer, and power transformer
	33rd	1	4.5 Need of parallel operation of three phase

			transformer
12TH	34th	1	4.6 Conditions for parallel operation
	35th	1	4.7 Polarity tests on mutually inductive coils and single phase transformers
	36th	1	4.8 Polarity test, Phasing out test on Three-phase transformer
13TH	37th	1	**UNIT 5: Special Purpose Transformers** 5.1 Single phase and three phase autotransformers: Construction
	38th	1	5.1 Single phase and three phase autotransformers: Construction
	39th	1	5.1 Single phase and three phase autotransformers: working
14TH	40 th	1	5.1 Single phase and three phase autotransformers: working
	41 st	1	5.1 Single phase and three phase autotransformers: applications.
	42nd	1	5.2 Isolation transformer: Constructional Features and applications
15th	43rd	1	5.2 Isolation transformer: Constructional Features and applications
	44th	1	Class Test 2 (Units III-V)
	45th	1	Revision (Units III-V)

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ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-5 RENEWABLE ENERGY POWER PLANTS (COURSE CODE: EEPC209)

Discipline: Electrical Engineering	Semester :3RD	No. of periods available: 50	Name of Teaching Faculty: LAXMI KANTA PATEL
Subject: RENEWABLE ENERGY POWER PLANTS	No. of Days/ per week class allotted : 3periods /week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks : 15
Week	Class Day		Theory Topics
1st	1st	1	**Unit 1: Solar PV and Concentrated Solar Power Plants** 1.1 Solar Map of India: Global solar power radiation, Solar PV
	2nd	1	1.2 Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough, Parabolic Dish, Fresnel Reflectors
	3rd	1	1.2 Concentrated Solar Power (CSP) plants, construction and working of: Power Tower, Parabolic Trough,
2nd	4th	1	Parabolic Dish, Fresnel Reflectors
	5th	1	1.3 Solar Photovoltaic (PV) power plant:, components layout construction, working. Roof top solar PV power system
	6th	1	Revision
3rd	7th	1	**Unit 2: Large Wind Power Plants** 2.1 Wind Map of India: Wind power density in watts per square meter Lift and drag principle; long path theory.
	8th	1	2.1 Wind Map of India: Wind power density in watts per square meter Lift and drag principle; long path theory.
	9th	1	2.2 Geared type wind power plants: components, layout and working. Direct drive type wind power plants: components, layout and working
4th	10th	1	2.2 Geared type wind power plants: components, layout and working, Direct drive type wind power plants: components, layout and working
	11th	1	2.3 Constant Speed Electric Generators: Squirrel Cage Induction Generators (SCIG),

	12th	1	2.4 Wound Rotor Induction Generator (WRIG)
5th	13th	1	2.4 Variable Speed Electric Generators: Doubly-fed induction generator (DFIG), wound rotor synchronous generator (WRSG)
	14th	1	2.4 permanent magnet synchronous generator (PMSG).
	15th	1	Revision
6th	16th	1	Class Test 1 (Units I-II)
	17th	1	Revision
	18th	1	Revision
7th	19th	1	**UNIT 3:Small Wind Turbines** 3.1 Horizon axis small wind turbine: direct drive type, components and working
	20th	1	Horizontal axis small wind turbine: geared type, components and working
	21 st	1	3.1 Horizon axis small wind turbine: direct drive type, components and working Horizontal axis small wind turbine: geared type, components and working
8th	22nd	1	3.1 Horizon axis small wind turbine: direct drive type, components and working Horizontal axis small wind turbine: geared type, components and working
	23rd	1	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields
	24th	1	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields
9th	25th	1	3.2 Vertical axis small wind turbine: direct drive and geared, components and Working Types of towers and installation of small wind turbines on rooftops and open fields
	26th	1	3.3 Electric generators used in small wind power plants
	27th	1	3.3 Electric generators used in small wind power plants
10th	28th	1	3.3 Electric generators used in small wind power plants
	29th	1	Revision
	30th	1	Revision

11TH	31st	1	**UNIT 4: Biomass-based Power Plants** 4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
	32nd	1	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
	33rd	1	4.1 Properties of solid fuel for biomass power plants: bagasse, wood chips, rice husk, municipal waste
12TH	34th	1	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, biodiesel gobar gas
	35th	1	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, biodiesel gobar gas
	36th	1	4.2 Properties of liquid and gaseous fuel for bio mass power plants: Jatropha, biodiesel gobar gas
13TH	37th	1	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	38th	1	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
	39th	1	4.3 Layout of a Bio-chemical based (e.g. biogas) power plant:
14TH	40 th	1	4.4 Layout of a Thermo-chemical based (e.g. Municipal waste) power plant
	41 st	1	4.4 Layout of a Thermo-chemical based (e.g. Municipal waste) power plant
	42nd	1	4.5 Layout of a Agro-chemical based (e.g. Bio-diesel) power plant
15th	43rd	1	4.5 Layout of a Agro-chemical based (e.g. Bio-diesel) power plant
	44th	1	Class Test 2 (Units III-IV)
	45th	1	Revision (Units III-IV)

Laxmikanta patel

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