

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER 2026)

TH-1 METROLOGY AND MEASUREMENT (COURSE CODE: MEPC203)

Discipline: Mechanical Engineering	Semester: 5 th	No. of periods available: 45	Name of the Teaching Faculty : RAJENDRA SETHY
Subject: Metrology and Measurement	No. of days/ per week class allotted: 3p/week		Semester From: 02 ND JULY 2026 to 05 TH NOV 2026 No. of Weeks: 15 weeks
Week	Class Day		Theory Topics
1	1 st	1	Unit-I: Introduction to measurements; Definition of measurement; Significance of measurement
	2 nd	1	Methods of measurements: Direct & Indirect; Generalized measuring system
	3 rd	1	Standards of measurements: Primary & Secondary; Factors influencing selection of measuring instruments
2	4 th	1	Terms applicable to measuring instruments: Precision and Accuracy
	5 th	1	Sensitivity and Repeatability, Range, Threshold, Hysteresis, Calibration
	6 th	1	Errors in Measurements: Classification of errors, Systematic and Random error
3	7 th	1	Measuring instruments: Introduction; Thread measurements: Thread gauge micrometer
	8 th	1	Angle measurements: Bevel protractor, Sine Bar
	9 th	1	Gauges: Plain plug gauge, Ring gauge, Snap gauge, Limit gauge
4	10 th	1	Comparators: Characteristics of comparators, Types of comparators
	11 th	1	Surface finish: Definition, Terminology of surface finish
	12 th	1	Talysurf surface roughness tester
5	13 th	1	Co-ordinate measuring machine
	14 th	1	Unit-II: Transducers and Strain gauges: Introduction; Transducers: Characteristics
	15 th	1	Classification of transducers; Two coil self-inductance transduce
6	16 th	1	Piezoelectric transducer; Strain Measurements: Strain gauge, Classification
	17 th	1	Mounting of strain gauges; Strain gauge rosettes: Two and three elements
	18 th	1	Measurement of force, torque, and pressure: Introduction
7	19 th	1	Force measurement: Spring Balance, Proving ring, Load cell
	20 th	1	Torque measurement: Prony brake, Eddy current dynamometer
	21 st	1	Hydraulic dynamometer; Pressure measurement: McLeod gauge
8	22 nd	1	Revision / Doubt Clearing Session (Unit I & II)
	23 rd	1	PROGRESSIVE ASSESSMENT – 1 (Units I & II)
	24 th	1	Unit-III: Applied mechanical measurements: Speed measurement; Classification of tachometers
9	25 th	1	Revolution counters; Eddy current tachometers
	26 th	1	Displacement measurement: Linear Variable Differential Transformers (LVDT)
	27 th	1	Flow measurement: Rotameters, Turbine meter
10	28 th	1	Temperature measurement: Resistance thermometers, Optical Pyrometer
	29 th	1	Miscellaneous measurements: Humidity measurement: Hair hygrometer
	30 th	1	Biomedical measurement: Sphygmomanometer

11	31 st	1	Unit-IV: Limits, Fits & Tolerances: Concept of Limits, Fits, and Tolerances
	32 nd	1	Selective Assembly; Interchangeability; Hole and Shaft Basis System
	33 rd	1	Taylor's Principle; Design of Plug and Ring Gauges
12	34 th	1	S 919-1993 (Limits, Fits & Tolerances Gauges); IS 3477-1973
	35 th	1	Concept of multi gauging and inspection; Angular Measurement: Concept
	36 th	1	Instruments for Angular Measurements; Working and Use of Universal Bevel Protractor, Sine Bar, Spirit Level
13	37 th	1	Principle of Working of Clinometers; Angle Gauges (With Numerical on Setting of Angle Gauges)
	38 th	1	Screw thread Measurements: ISO grade and fits of thread; Errors in threads; Pitch errors
	39 th	1	Measurement of different elements such as major diameter, minor diameter, effective diameter, pitch; Two wire method
14	40 th	1	Thread gauge micrometer; Working principle of floating carriage dial micrometer
	41 st	1	ROGRESSIVE ASSESSMENT – 2 (Units III & IV)
	42 nd	1	Revision / Doubt Clearing Session (Unit III & IV)
15	43 rd	1	Unit-V: Gear Measurement and Testing: Analytical and functional inspection
	44 th	1	15 44th 1 Rolling test; Measurement of tooth thickness (constant chord method); Gear tooth vernier.
	45 th	1	Overall Revision / Doubt Clearing / Model Question Discussion

Rajendra Saha

Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSONPLAN (WINTER-2026)

TH-2 Design of Machine Element (COURSE CODE: MEPC303)

Discipline: Mechanical Engineering	Semester:5 th	No. of periods available: 45	Name of the Teaching Faculty: Sudhir Kumar Mahapatra
Subject: Design of Machine Element	No. of days/per week class allotted:3p/week		SemesterFrom:02 ND JULY 2026 to05 TH NOV 2026 No. of Weeks:15 weeks
Week	Class Day		Theory Topics
1	1 st	1	Unit-I Introduction to Design
	2 nd	1	stress, Strain, Stress -Strain Diagram for Ductile and Brittle Materials, Types of Stresses; Bearing pressure Intensity; Crushing; Bending and Torsion;
	3 rd	1	Creep strain and Creep Curve; Fatigue; S-N curve; Endurance Limit; Factor of Safety, Stress Concentration
2	4 th	1	Properties of Engineering materials
	5 th	1	Use of design data book; Use of standards In design and preferred number series
	6 th	1	Theories of Elastic Failures; Principal normal stress theory; Maximum shear stress theory & Maximum distortion energy theory.
3	7 th	1	Unit-II Cotter Joint and Knuckle joint
	8 th	1	Problems on cotter joint
	9 th	1	Design of C-Clamp; Off-set links; Overhang Crank; Arm of Pulley
4	10 th	1	Problems on Knuckle joint.
	11 th	1	Classification of Bearings; Sliding contact & Rolling contact Terminology of Ball bearings: Life Load relationship.
	12 th	1	Problem solving on bearings
5	13 th	1	Unit-III Design of Shafts
	14 th	1	Types of Shafts; Shaft materials; Standard Sizes; Design of Shafts (Hollow and Solid) using strength, and rigidity criteria.
	15 th	1	Problems on shaft.
6	16 th	1	Design of key.
	17 th	1	Problems on key joint.
	18 th	1	Design of Sunk Keys; Effect of Key-ways on strength of shaft.
7	19 th	1	Design of Couplings - Muff Coupling, Protected type Flange Coupling, Bush-pin type.
	20 th	1	Lewis equation for static beam strength of spur gear teeth; Power transmission capacity of spur gears in bending.
	21 st	1	Problems on Coupling
8	22 nd	1	Problems on protected type coupling.
	23 rd	1	Problems on Flange type coupling.
	24 th	1	Overall summary on Unit -III
9	25 th	1	Unit-IV Design of Power Screws.
	26 th	1	Thread Profiles used for power Screws.

	27 th	1	Self-locking and over hauling property; Efficiency of power screws
10	28 th	1	Types of stresses induced; Design of Screw Jack; Toggle Jack
	29 th	1	Problems on Screw jack.
	30 th	1	Design of spring and types.
11	31 st	1	Stresses in springs; Wahl's correction factor. And simple problems
	32 nd	1	Design of Helical Spring
	33 rd	1	Problems on Helical Spring
12	34 th	1	Governor springs; Leaf springs: Construction and Application
	35 th	1	Problems on Leaf Spring
	36 th	1	Overall summery on Unit -IV
13	37 th	1	Unit-V Design of Fasteners
	38 th	1	Stresses in Screwed fasteners; Bolts of Uniform Strength
	39 th	1	Stresses in Screwed fasteners; Bolts of Uniform Strength
14	40 th	1	Design of Bolt Joint
	41 st	1	Problems on bolt joint
	42 nd	1	Design of Parallel and Transverse fillet welds
15	43 rd	1	Merits and demerits of screwed and welded joints. Ergonomics & Aesthetic consideration In design.
	44 th	1	Ergonomics of Design: Man-Machine relationship; Design of Equipment for control, environment & safety; Aesthetic considerations regarding shape, size, color & surface.
	45 th	1	Overall Revision / Doubt Clearing / Model Question Discussion

Sudhikuma Mahapatra
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH:3(A) INDUSTRIAL ENGINEERING AND MANAGEMENT (COURSE CODE: MEPC303(A))

Discipline: Mechanical Engineering	Semester:5 th	No. of periods available: 45	Name of the Teaching Faculty: SUDHIR KUMAR MAHAPATRA
Subject: Industrial engineering and management	No. of days/per week class allotted:3p/we ek		Semester From:02 ND JULY 2026 to05 TH NOV 2026 No. of Weeks:15 weeks
Week	Class Day		Theory Topics
1	1 st	1	Unit-I Plant; Selection of site of industry; Plant layout; Principles of a good layout;
	2 nd	1	Types Process; Product and Fixed position; Techniques to improve Layout; Principles o Material handling equipment; Plant
	3 rd	1	maintenance; Importance; Break down maintenance
2	4 th	1	Preventive maintenance and Scheduled maintenance
	5 th	1	Importance; Accident: Causes and Cost of an Accident, Accident Proneness, Prevention of Accidents; Industrial dispute
	6 th	1	Prevention of Accidents; Industrial disputes
3	7 th	1	Industrial disputes; Settlement of Industrial disputes
	8 th	1	Collective bargaining; Conciliation; Mediation
	9 th	1	Arbitration; Indian Factories Act 194B and it5 provisions related to health, welfare and safety
4	10 th	1	Unit-II Definition; Objectives; Selection of job for method study Basic procedure for conduct of Method study; Tools used; Operation process chart; Flow process chart
	11 th	1	Basic procedure for conducts of Method study; Tools used; Operation process chart; Flow
	12 th	1	process chart
5	13 th	1	Man Machine chart; String diagram and flow diagram
	14 th	1	Definition; Basic procedure in making a time study
	15 th	1	Employees rating factor
6	16 th	1	Application of time allowances: Rest, Personal, Process, Special and Policy
	17 th	1	Allowances; Calculation of standard time; Numerical Problems; Basic concept of production study
	18 th	1	Synthesis from standard data; Analytical Estimating and Predetermined Motion Time System (PMTS).
7	19 th	1	Unit-III Production Planning and Control: Introduction; Major functions of Production Planning and Control; Preplanning Methods of forecasting; Routing and Scheduling; Dispatching and Controlling; Concept of Critical Path Method (CPM); Types of Production: Mass Production, Batch Production and Job Order Production; Characteristics; Economic Batch Quantity (EBQ); Principles of Product and Process Planning; Make

			or Buy decision; Numerical problems.
	20 th	1	Preplanning Methods of forecasting; Routing and Scheduling; Dispatching and Controlling
	21 st	1	CPM and PERT
8	22 nd	1	Problems on CPM and PERT
	23 rd	1	Types of Production: Mass Production, Batch Production and Job Order Production; Characteristics; Economic Batch Quantity (EBQ)
	24 th	1	Principles of Product and Process Planning; Make or Buy decision
9	25 th	1	Quality Control: Definition; Objectives; Types of Inspection
	26 th	1	Measurements; Method of Variables; Method of Attributes; Uses X, R, P and C charts; Operating Characteristics curve (O.C curve);
	27 th	1	Concept of Sample Planning
10	28 th	1	Unit-IV Principle of management
	29 th	1	Function of manager
	30 th	1	TQM and its related problems
11	31 st	1	Leadership and Quality of Leadership
	32 nd	1	Principle of Human Recourse Management
	33 rd	1	Job rating and Evaluation
12	34 th	1	Objective and Importance of projects Evaluation
	35 th	1	Concept of wages and wages fixation
	36 th	1	Numerical Problems
13	37 th	1	Unit-V Financial Management: Fixed and Working Capital; Resources of Capital
	38 th	1	Debentures; Type of debentures; Public Deposits; Factory Costing: Direct Cost; direct Cost; Factory Overhead; Selling Price or a product
	39 th	1	Profit; Numerical Problems Depreciation
14	40 th	1	Causes; Methods: Straight line, sinking fund and percentage or diminishing.
	41 st	1	Value Method; Numerical Problems' Method; Numerical Problems.
	42 nd	1	Material Management
15	43 rd	1	Objectives of good stock control system; ABC analysis of Inventory; Procurement and Consumption cycle.
	44 th	1	Minimum Stock, Lead Time, Reorder Level-Economic Order Quantity problems; Supply Chain
	45 th	1	Overall Revision / Doubt Clearing / Model Question Discussion

Seetha Kum Mahapatra
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER 2026)

TH-4(A) Power Plant Engineering (COURSE CODE: MEPE 303)

Discipline: Mechanical Engineering	Semester: 5 TH	No. of periods available: 45	Name of the Teaching Faculty : PRIYARANJAN PATTANAIK
Subject: Power Plant Engineering	No. of days/ per week class allotted: 3p/week		Semester From: 02 ND JULY 2026 to 05 TH NOV 2026 No. of Weeks: 15 weeks
Week	Class Day		Theory Topics
1	1 st	1	UNIT:1 INTRODUCTION TO POWER PLANT / Introduction to power plant; Indian Energy scenario
	2 nd	1	Location of power plant; Choice of Power plant
	3 rd	1	Classification of power plants; Layout of thermal power plant
2	4 th	1	UNIT:2 ECONOMICS OF POWER PLANT / Terminology used in power plant – Peak load, Base load, Load factor, Load curve
	5 th	1	Various factors affecting the operation of power plant
	6 th	1	Methods of meeting the fluctuating load in power plant
3	7 th	1	Load sharing – Cost of power – Tariff methods
	8 th	1	Performance and operating characteristics of power plant
	9 th	1	UNIT:3 HYDRO POWER PLANT / Introduction to Hydroelectric power plant; Rainfall, Runoff and its measurement
4	10 th	1	Hydrograph; Flow duration curve
	11 th	1	Selection of sites for hydroelectric power plant
	12 th	1	General layout of Hydroelectric power plant and its working
5	13 th	1	Classification of Hydroelectric Plant – Run off river plant, Storage river plant
	14 th	1	Pumped storage plant
	15 th	1	Advantages and disadvantages of hydroelectric power plant
6	16 th	1	PROGRESSIVE ASSESSMENT – 1 (Units: I, II & III) Class Test-1
	17 th	1	UNIT:4 DIESEL AND GAS TURBINE PLANT / Layout of diesel power plant
	18 th	1	Components and working of diesel power plant
7	19 th	1	Advantages and disadvantages of diesel power plant
	20 th	1	Gas turbine power plant – Schematic diagram, components and working
	21 st	1	Combined cycle power generation; Combined gas and steam turbine power plant operation (flow diagram only)
8	22 nd	1	NUCLEAR POWER PLANT / Introduction; Nuclear Power – Radioactivity – Radioactive charge – Types of reactions
	23 rd	1	Working of a nuclear power plant
	24 th	1	Thermal fission Reactors – PWR (Pressurized Water Reactor)
9	25 th	1	BWR (Boiling Water Reactor) and Gas Cooled Reactors
	26 th	1	Advantages and Disadvantages of Nuclear power plant
	27 th	1	ENVIRONMENTAL IMPACT OF POWER PLANT / Social and Economical issues of power plant
10	28 th	1	Green house effect; Acid precipitation – Acid rain, Acid snow, Dry deposition, Acid fog
	29 th	1	Air, water, Thermal pollution from power plants
	30 th	1	Radiations from nuclear power plant effluents

11	31 st	1	POWER PLANT SAFETY / Plant safety concept; Safety policy to be observed in power plants
	32 nd	1	Safety practices to be observed in boiler operation
	33 rd	1	Safety in oil handling system; Safety in Chemical handling system
12	34 th	1	Statutory provision related to boiler operation
	35 th	1	PROGRESSIVE ASSESSMENT – 2 (Units: IV & V) Class Test-2
	36 th	1	Overall Revision / Doubt Clearing Session (All Units)
13	37 th	1	REVISION / Unit I – Important topics & Numerical problems
	38 th	1	Unit II – Important topics & Numerical problems
	39 th	1	Unit III – Important topics & Numerical problems
14	40 th	1	Unit IV – Important topics & Numerical problems
	41 st	1	Unit V – Important topics & Numerical problems
	42 nd	1	Model Question Paper Discussion / End-Term Preparation
15	43 rd	1	FINAL REVISION / Summary of all Units
	44 th	1	Important Questions & Numerical Practice
	45 th	1	Final Class: Doubt Clearing & Last-minute Preparation

Pradyuman Pattanayak

Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER 2026)

TH-5(B) LEADERSHIP AND MANAGEMENT SKILLS(COURSE CODE: OE301)

Discipline: Mechanical Engineering	Semester: 5 th	No. of periods available: 45	Name of the Teaching Faculty : RAJENDRA SETHY
Subject: Leadership and Management Skills	No. of days/per week class allotted:3p/week		SemesterFrom:02 ND JULY 2026 to 05 TH NOV 2026 No. of Weeks:15 weeks
Week	Class Day		Theory Topics
1	1 st	1	Unit-I: Leadership & Management, concept, principles: Definition of leadership, management
	2 nd	1	Leadership theories
	3 rd	1	Leadership characteristics
2	4 th	1	Principles of management
	5 th	1	Managerial functions
	6 th	1	Leader v/s Manager; Leader/Manager traits and character
3	7 th	1	Leadership Styles
	8 th	1	Unit-II: Human Resource Management in Organizations: Human Resource Management: Meaning, Nature, Objectives, Scope
	9 th	1	Job & Job analysis
4	10 th	1	Staff Development: Need and Objectives of Staff Development, Approaches
	11 th	1	Training & development
	12 th	1	Organizational Development: Components of OD process
5	13 th	1	Learning organization
	14 th	1	Unit-III: Personal disposition, skills & abilities of leaders: Self-awareness
	15 th	1	Leadership characteristics, traits
6	16 th	1	Emotional intelligence & its components, importance in leadership
	17 th	1	Communication skills for effective leadership, barriers to effective communication
	18 th	1	Active Listening, Mindful listening
7	19 th	1	Leading & Mentorship – Influencing & mentoring
	20 th	1	Leadership skills & abilities
	21 st	1	PROGRESSIVE ASSESSMENT – 1 (Units I, II & III)
8	22 nd	1	Revision / Doubt Clearing Session (Unit III)
	23 rd	1	Unit-IV: Leader's role in Motivating, Inspiring and Transformative leadership, nurturing team-work: Goal setting & leadership
	24 th	1	Transformative Leadership, vision & envisioning
9	25 th	1	Motivational role of leader in people management
	26 th	1	Group & team
	27 th	1	Team dynamics
10	28 th	1	Conflict management, strategies in managing conflicts
	29 th	1	Unit-V: Change Management & Leadership: Models of change
	30 th	1	Forces driving change

11	31 st	1	Change Management – process, goal, importance
	32 nd	1	The process of change happening in an organization
	33 rd	1	Key aspects of leadership in change management – responsibilities of a change leader
12	34 th	1	PROGRESSIVE ASSESSMENT – 2 (Units III & IV)
	35 th	1	Revision / Doubt Clearing Session (Unit IV & V)
	36 th	1	Group/Individual presentation on the basic principles of leadership and management
13	37 th	1	Discussion on readings - Individual or group presentation of assigned topics in class
	38 th	1	Leadership and management principles and theories – Case study discussion
	39 th	1	Activities on Envisioning, Goal setting
14	40 th	1	ACTION PLAN to be prepared by students
	41 st	1	Presentation of Action Plans and Peer Feedback
	42 nd	1	Full Syllabus Revision: Important topics from Unit I, II & III
15	43 rd	1	Full Syllabus Revision: Important topics from Unit IV & V
	44 th	1	Model questions discussion / Case study analysis
	45 th	1	Final summary and last-minute tips for End Term Examination

Rupendra Saty

Signature of Teaching Faculty