

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH:1 Hydraulics & Irrigation Engineering (COURSE CODE : CEPC202)

Discipline: Civil Engineering	Semester : 4 th	No. of periods available: 48	Name of Teaching Faculty: Ankita Rath
Subject: TH-1 Hydraulics & Irrigation Engineering	No. of Days/ per week class allotted : 4 periods per week		Semester From : 5 th January 2026 to 18 th April 2026
Week	Class Day		No. of weeks : 12
1 st	1 st	1	Topics to be covered Introduction to Hydraulics, properties of fluids, density, specific weight, specific gravity
	2 nd	1	Viscosity, Newton's law of viscosity, surface tension, capillarity
	3 rd	1	Pressure concepts – atmospheric, gauge, vacuum pressure
	4 th	1	Hydrostatic law, pressure variation with depth
2 nd	5 th	1	Pressure measurement – piezometer, manometers
	6 th	1	Total pressure and centre of pressure on plane surfaces
	7 th	1	Pressure on curved surfaces
	8 th	1	Numerical problems + Doubt Clearing Session
3 rd	9 th	1	Types of flow, flow classification
	10 th	1	Continuity equation (1D, 2D)
	11 th	1	Velocity potential and stream function
	12 th	1	Flow nets – construction and applications
4 th	13 th	1	Energy of flowing fluid, Bernoulli's equation
	14 th	1	Applications of Bernoulli's equation
	15 th	1	Flow measurement – venturimeter, orificemeter
	16 th	1	Flow through orifices and mouthpieces
5 th	17 th	1	Flow through pipes – major and minor losses
	18 th	1	Darcy–Weisbach equation, problems
	19 th	1	Hydraulic gradient line (HGL) and energy gradient line (EGL)
	20 th	1	Class Test – Unit I to III
6 th	21 st	1	Types of open channel flow, Chezy's

			equation
	22 nd	1	Manning's equation, velocity distribution
	23 rd	1	Most economical channel sections
	24 th	1	Numerical problems
7 th	25 th	1	Measurement of discharge – weirs and notches
	26 th	1	Specific energy and critical flow
	27 th	1	Hydraulic jump – theory and applications
	28 th	1	Doubt Clearing + Numerical Practice
8 th	29 th	1	Classification of pumps, centrifugal pump – components
	30 th	1	Working of centrifugal pump, efficiencies
	31 st	1	Reciprocating pump – working and performance
	32 nd	1	Numerical problems on pumps
9 th	33 rd	1	Hydrological cycle, rainfall measurement
	34 th	1	Runoff, infiltration, hydrograph
	35 th	1	Floods and flood control
	36 th	1	Class Test – Unit IV & V
10 th	37 th	1	Irrigation – definition and classification
	38 th	1	Crop water requirements, duty, delta, base period
	39 th	1	Irrigation efficiencies and scheduling
	40	1	Numerical problems
11 th	41 st	1	Types of dams, selection of dam site
	42 nd	1	Gravity dams – forces and stability
	43 rd	1	Spillways – types and components
	44 th	1	Energy dissipation devices
12 th	45 th	1	Weirs and barrages – components and functions
	46 th	1	Canal regulation and canal lining
	47 th	1	Canal falls and cross drainage works
	48 th	1	Doubt Clearing Session (Irrigation Units)

Ankita Rath

Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH : 2 Theory of Structure (COURSE CODE : CEPC204)

Discipline: Civil Engineering	Semester : 4 th	No. of periods available: 48	Name of Teaching Faculty: Sunanda Mishra
Subject: TH-2 Theory of Structure	No. of Days/ per week class allotted : 4 periods per week		Semester From : 5 th January 2026 to 18 th April 2026 No. of weeks : 12
Week	Class Day		Topics to be covered
1 st	1 st	1	Introduction to Theory of Structures, assumptions, types of loads
	2 nd	1	Axial and eccentric loading, direct stress, bending stress
	3 rd	1	Combined direct and bending stresses – concept and examples
	4 th	1	Conditions for no tension, kern/core of section
2 nd	5 th	1	Middle third rule and limit of eccentricity
	6 th	1	Chimneys and circular sections under wind pressure
	7 th	1	Retaining walls – stresses due to earth pressure
	8 th	1	Numerical problems + Doubt Clearing Session
3 rd	9 th	1	Elastic curve, slope and deflection – basic concepts
	10 th	1	Relation between load, bending moment, slope and deflection
	11 th	1	Macaulay's method – theory and applications
	12 th	1	Numerical problems using Macaulay's method
4 th	13 th	1	Double integration method for slope and deflection
	14 th	1	Deflection of cantilever and simply supported beams
	15 th	1	Deflection due to point load and UDL
	16 th	1	Class Test – Unit I & II
5 th	17 th	1	Determinate vs indeterminate structures, degree of indeterminacy
	18 th	1	Methods of analysis – overview and comparison
	19 th	1	Fixed beams – concept, advantages and disadvantages

	20 th	1	Fixed beam under UDL and point load
6 th	21 st	1	Fixed beam with different loading conditions
	22 nd	1	Bending moment and shear force diagrams
	23 rd	1	Introduction to Clapeyron's theorem of three moments
	24 th	1	Numerical problems on fixed beams
7 th	25 th	1	Continuous beams – analysis using three-moment theorem
	26 th	1	Continuous beams with support settlement
	27 th	1	Influence line diagrams – concept and applications
	28 th	1	Doubt Clearing + Numerical Practice
8 th	29 th	1	Introduction to moment distribution method
	30 th	1	Stiffness factor, distribution factor, carry-over factor
	31 st	1	Analysis of continuous beams using MDM
	32 nd	1	Numerical problems on continuous beams
9 th	33 rd	1	MDM for beams with unequal spans and EI
	34 th	1	MDM with support settlement
	35 th	1	Introduction to portal frames
	36 th	1	Class Test – Unit III & IV
10 th	37 th	1	Types of trusses – simple, compound, pin-jointed
	38 th	1	Analysis of trusses by method of joints
	39 th	1	Method of sections for truss analysis
	40	1	Numerical problems on trusses
11 th	41 st	1	Trusses subjected to point loads and joint loads
	42 nd	1	Calculation of forces in members
	43 rd	1	Comparison of methods, common mistakes
	44 th	1	Doubt Clearing Session (Trusses)
12 th	45 th	1	Revision – Unit I & II (Stress and Deflection)
	46 th	1	Revision – Unit III (Indeterminate Structures)
	47 th	1	Revision – Unit IV & V
	48 th	1	Model Test / Practice Problems

Sumanda Mishra
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH : 3 Estimating, Costing & Valuation (COURSE CODE : CEPC206)

Discipline: Civil Engineering	Semester : 4 th	No. of periods available: 45	Name of Teaching Faculty: Swatishree Lenka
Subject: TH-3 Estimating, Costing and Valuation	No. of Days/ per week class allotted : 4 periods per week		Semester From : 5 th January 2026 to 18 th April 2026
			No. of weeks : 12
Week	Class Day		Topics to be covered
1 st	1 st	1	Introduction to estimating and costing – meaning, importance, types
	2 nd	1	Administrative approval, technical sanction, types of estimates
	3 rd	1	Roles and responsibilities of engineers in estimation
	4 th	1	CPWD, PWD specifications and schedule of rates (SoR)
2 nd	5 th	1	Modes of measurement and units as per IS:1200
	6 th	1	Measurement of different items of work
	7 th	1	Deduction rules in different categories of work
	8 th	1	Numerical Problems + Doubt Clearing
3 rd	9 th	1	Detailed estimate – definition, purpose, data required
	10 th	1	Components – abstract cost, contingencies, work charged establishment
	11 th	1	Rate analysis basics and specification writing
	12 th	1	Centre line method – concept and procedure
4 th	13 th	1	Long wall and short wall method
	14 th	1	Estimation of building components – foundation, plinth, superstructure
	15 th	1	Estimation of RCC items and finishing works
	16 th	1	Class Test – Unit I & II
5 th	17 th	1	Estimation of doors, windows, flooring, plastering
	18 th	1	Sanitary and electrical installations – estimation basics
	19 th	1	Provisional sums, bill of quantities (BOQ)

	20 th	1	Numerical Practice + Doubt Clearing
6 th	21 st	1	Earthwork – methods of calculation
	22 nd	1	Estimation of roads – flexible and rigid pavements
	23 rd	1	Estimation of culverts, bridges and drains
	24 th	1	Estimation of canals and irrigation structures
7 th	25 th	1	Estimation of RCC works – footings, columns, beams, slabs
	26 th	1	Estimation of siphons and vertical falls
	27 th	1	Estimation of bituminous roads
	28 th	1	Class Test – Unit III
8 th	29 th	1	Rate analysis – definition, purpose and importance
	30 th	1	Lead, lift, overhead charges, contractor's profit
	31 st	1	Task work and outturn of labour
	32 nd	1	Rate analysis for earthwork and concrete
9 th	33 rd	1	Rate analysis for brickwork and plastering
	34 th	1	Rate analysis for flooring and finishing works
	35 th	1	Transportation of materials – lead and lift problems
	36 th	1	Numerical Practice + Doubt Clearing
10 th	37 th	1	Valuation – definition, purpose and principles
	38 th	1	Types of value – market value, book value, capitalized value
	39 th	1	Depreciation – methods and sinking fund
	40	1	Rent fixation and capitalized value
11 th	41 st	1	Valuation of buildings – problems
	42 nd	1	Leasehold, freehold property and mortgage
	43 rd	1	Revision of rate analysis and valuation numericals
	44 th	1	Class Test – Unit IV & V
12 th	45 th	1	Comprehensive Revision & Final Doubt Clearing (All Units)

Sunitishree Lenka
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH : 4 Construction Management (COURSE CODE : CEPE202)

Discipline: Civil Engineering	Semester : 4 th	No. of periods available: 48	Name of Teaching Faculty: Bisnupriya Jena
Subject: TH-4 Construction Management	No. of Days/ per week class allotted : 4 periods per week		Semester From : 5 th January 2026 to 18 th April 2026
			No. of weeks : 12
Week	Class Day		Topics to be covered
1 st	1 st	1	Introduction to construction industry, scope and objectives of construction management
	2 nd	1	Organization objectives, principles of organization, types (line, staff, functional)
	3 rd	1	Agencies associated with construction – owner, consultant, contractor
	4 th	1	Role of project manager and construction manager
2 nd	5 th	1	Functions of management – planning, organizing, staffing, directing, controlling
	6 th	1	Preparation of Detailed Project Report (DPR)
	7 th	1	Monitoring progress and settlement of disputes (overview)
	8 th	1	Doubt Clearing + Case Discussion
3 rd	9 th	1	Principles governing site layout
	10 th	1	Factors affecting site layout
	11 th	1	Preparation of site layout plans
	12 th	1	Land acquisition procedures and compensation
4 th	13 th	1	Introduction to planning and scheduling in construction
	14 th	1	Bar charts and milestone charts
	15 th	1	Limitations of bar charts, introduction to network techniques
	16 th	1	Class Test – Unit I & II
5 th	17 th	1	Network planning concepts, events and activities
	18 th	1	CPM – principles and terminology
	19 th	1	CPM – forward and backward pass, floats
	20 th	1	Numerical problems on CPM
6 th	21 st	1	PERT – concepts, probability of

			completion
	22 nd	1	Time–cost trade-off, crashing of networks
	23 rd	1	Resource allocation and leveling (introduction)
	24 th	1	Doubt Clearing + Numerical Practice
7 th	25 th	1	Cost control techniques
	26 th	1	Productivity and performance measurement
	27 th	1	Case study on planning and scheduling
	28 th	1	Class Test – Unit III
8 th	29 th	1	Types of construction contracts
	30 th	1	Contract documents – general and special conditions
	31 st	1	Tendering process and bid evaluation
	32 nd	1	Contract management procedures
9 th	33 rd	1	Claims, disputes and arbitration (introduction)
	34 th	1	Settlement of disputes and role of engineer
	35 th	1	Case studies on contract disputes
	36 th	1	Doubt Clearing Session
10 th	37 th	1	Materials management – importance and objectives
	38 th	1	Purchasing, inventory control, EOQ
	39 th	1	Store management and record keeping
	40	1	Introduction to ABC and VED analysis
11 th	41 st	1	Waste reduction and lean construction (overview)
	42 nd	1	E-procurement and material management portals
	43 rd	1	Revision of materials management
	44 th	1	Class Test – Unit IV & V
12 th	45 th	1	Construction safety – causes of accidents
	46 th	1	Preventive and remedial safety measures
	47 th	1	Labour laws and acts related to construction (introductory)
	48 th	1	Doubt Clearing + Safety Case Studies

Dishupriya Bena
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (SUMMER-2026)

TH:5 Solid Waste Management (COURSE CODE : CEPE204)

Discipline: Civil Engineering	Semester : 4 th	No. of periods available: 45	Name of Teaching Faculty: Santosh Kumar Behera
Subject: TH-5 Solid Waste Management	No. of Days/ per week class allotted : 4 periods per week		Semester From : 5 th January 2026 to 18 th April 2026 No. of weeks : 12
Week	Class Day		Topics to be covered
1 st	1 st	1	Introduction, definition of solid waste, importance of SWM
	2 nd	1	Types of solid waste – domestic, commercial, industrial, agricultural
	3 rd	1	Biomedical waste, E-waste, hazardous and institutional waste
	4 th	1	Sources of solid waste and classification
2 nd	5 th	1	Physical characteristics of municipal solid waste
	6 th	1	Chemical characteristics of municipal solid waste
	7 th	1	Sampling and analysis of solid waste
	8 th	1	Doubt Clearing + Numerical/Conceptual Discussion
3 rd	9 th	1	Waste storage systems and segregation at source
	10 th	1	Tools and equipment – bins, brooms, shovels, handcarts
	11 th	1	Collection methods – door-to-door, community bins
	12 th	1	Mechanical road sweepers and street cleaning methods
4 th	13 th	1	Transportation vehicles – trucks, tractors, compactors
	14 th	1	Transfer stations – meaning, necessity and location
	15 th	1	Route planning and optimization for waste collection
	16 th	1	Class Test – Unit I & II
5 th	17 th	1	Concept and principles of composting
	18 th	1	Factors affecting composting process
	19 th	1	Methods of composting – manual composting
	20 th	1	Bangalore method and Indore method
6 th	21 st	1	Mechanical composting and

			vermicomposting
	22 nd	1	Advantages and limitations of composting methods
	23 rd	1	Case studies on composting plants
	24 th	1	Doubt Clearing + Numerical/Design Basics
7 th	25 th	1	Solid waste management hierarchy and waste minimization
	26 th	1	Landfilling – site selection factors
	27 th	1	Sanitary landfill – area method, trench method
	28 th	1	Leachate and gas control systems
8 th	29 th	1	Advantages and disadvantages of landfills
	30 th	1	Recycling of municipal solid waste
	31 st	1	Incineration – principles and process
	32 nd	1	Class Test – Unit III & IV
9 th	33 rd	1	Types of incinerators – single and multiple chamber
	34 th	1	Products of incineration and their uses
	35 th	1	Pyrolysis – definition, process and applications
	36 th	1	Doubt Clearing Session
10 th	37 th	1	Definition and sources of biomedical waste
	38 th	1	Classification and handling of biomedical waste
	39 th	1	Biomedical waste treatment technologies
	40	1	Biomedical waste rules (overview)
11 th	41 st	1	Definition, sources and effects of E-waste
	42 nd	1	Recycling and disposal methods of E-waste
	43 rd	1	Role of informal sector and waste pickers
	44 th	1	Class Test – Unit V
12 th	45 th	1	Model Test / Practice Questions

Santosh Kumar Behra

Signature of Teaching Faculty