

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-1 BUILDING CONSTRUCTION (COURSE CODE: CEPC201)

Discipline: Civil engineering	Semester: 3 rd	No. of periods available: 45	Name of Teaching Faculty: Bisnupriya Jena
Subject: Building Construction	No. of Days/ per week class allotted: 3 periods per week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15
Week	Class Day		Topics to be covered
1 ST	1 st	1	1. Overview of Building Components 1.1. Classification of Buildings as per National Building Code Group A to I, as per Types of Constructions- Load Bearing Structure, Framed Structure, Composite Structure.
	2 nd	1	1.2. Building Components – Functions of Building Components, substructure – Foundation, Plinth
	3 rd	1	1.3. Superstructure – Walls, Partition wall, Cavity wall, Sill, Lintel, Doors and Windows, Floor, Mezzanine floor, Roof, Columns, Beams, Parapet.
2 ND	4 th	1	Unit 1 Revision
	5 th	1	2. Construction of Substructure 2.1. Job Layout: Site Clearance, Layout for Load Bearing Structure and Framed Structure by Centre Line and Face Line Method, Precautions.
	6 th	1	2.2. Earthwork: Excavation for

			Foundation, Timbering and Strutting, Earthwork for embankment, Material for plinth Filling, Tools and plants used for earthwork.
3 RD	7 th	1	Class Test 2
	8 th	1	2.3. Foundation: Functions of foundation, 2.4. Types of foundation – Shallow Foundation, Stepped Footing, Wall Footing,
	9 th	1	Column Footing, Isolated and Combined Column Footing, Raft Foundation, Grillage Foundation.
4 TH	10 th	1	Footing Revision
	11 th	1	2.5. Deep Foundation – Pile Foundation, Well foundation and Caissons
	12 th	1	Pumping Methods of Dewatering, Deep wells, Well points, Cofferdams (Introduction only).
5 TH	13 th	1	Foundation Revision
	14 th	1	Unit 2 Revision
	15 th	1	3. Construction of Superstructure 3.1. Stone Masonry: Terms used in stone masonry- facing, backing, hearting, through stone, corner stone, cornice. Types of stone masonry: Rubble masonry, Ashlar Masonry and their types.
6 TH	16 th	1	Joints in stone masonry and their purpose. Selection of Stone Masonry, Precautions to be taken in Stone Masonry Construction.

	17 th	1	3.2. Brick masonry: Terms used in brick masonry- header, stretcher, closer, quoins, course, face, back, hearting, bat bond, joints, lap, frog line, level and plumb. Bonds in brick masonry- header bond, stretcher bond, English bond and Flemish bond. Requirements of good brick masonry.
	18 th	1	Junctions in brick masonry and their purpose and procedure. Precautions to be observed in
7 TH	19 th	1	Brick Masonry Construction. Comparison between stone and Brick Masonry. Tools and plants required for construction of stone and brick masonry.
	20 th	1	Hollow concrete block masonry and composite masonry.
	21 st	1	Masonry Revision
8 TH	22 nd	1	3.3.Scaffolding and Shoring: Purpose, Types of Scaffolding, Process of Erection and Dismantling. Purpose and Types of Shoring, Underpinning.
	23 rd	1	Formwork: Definition of Formwork, Requirements of Formwork, Materials used in Formwork, Types of Formworks, Removal of formwork.
	24 th	1	Unit 3 Revision
9 TH	25 th	1	4. Building Communication and Ventilation 4.1. Horizontal Communication: Doors –Components of Doors, Full Panelled Doors, Part ly Paneled and Glazed

			Doors, Flush Doors, Collapsible Doors, Rolling Shutters, Revolving Doors, Glazed Doors. Sizes of Door recommended by BIS.
	26 th	1	4.2.Windows: Component of windows, Types of Windows – Full Paneled, Partly Paneled and Glazed, wooden, Steel, Aluminum windows, Sliding Windows, Louvered Window, Bay win- Dow, Corner window, clear story window, Gable and Dormer window, Skylight. Sizes of Windows recommended by BIS. Ventilators
	27 th	1	Door and Window Revision
10 TH	28 th	1	4.3.Fixtures and fastenings for doors and windows
	29 th	1	4.4.Material used and functions of Window Sill and Lintels, Shed / Chajja.
	30 th	1	4.5.Vertical Communication: Means of Vertical Communication- Stair Case, Ramps,Lift, Elevators and Escalators.
11 TH	31 st	1	4.6.Terms used in staircase steps, tread, riser, nosing, soffit, waist slab, baluster, balustrade, scotia, hand rails, newel post, landing, headroom, winder.
	32 nd	1	Types of staircases (On the basis of shape): Straight, dog-legged, open well, Spiral, quarter turn, bifurcated, Three quarter turn and Half turn, (On the basis of Material): Stone, Brick, R.C.C., wooden and Metal.
	33 rd	1	Unit 4 revision
12 TH	34 th	1	Unit 4 class test
	35 th	1	5. Building Finishes 5.1. Floors and Roofs: Types of Floor Finishes and its suitability- Kota, Marble, Granite, Ceramic Tiles,

			Vitrified, Cheered Tiles, Paver Blocks, Concrete Floors, wooden Flooring, Skirting and Dado.
	36 th	1	Process of Laying and Construction, Finishing and Polishing of Floors, Roofing Materials- RCC, Mangalore Tiles, AC Sheets, G.I. sheets, Corrugated G.I. Sheets, Plastic and Fiber Sheets.
13 TH	37 th	1	Types of Roofs: Flat roof, Pitched Roofing Post truss, Queen Post Truss, terms used in roofs.
	38 th	1	Wall Finishes: Plastering – Necessity of Plastering, Procedure of Plastering, Single Coat Plaster, Double Coat Plaster, Rough finish, Neeru Finishing and Plaster of Paris (POP). Special Plasters- Stucco plaster, sponge finish, pebble finish. Plaster Board and Wall Claddings. Precautions to be taken in plastering, defects in plastering.
	39 th	1	Painting – Necessity, Types of painting and procedure of Painting. Painting – Necessity, Surface Preparation for painting, Methods of Application.
14 TH	40 th	1	Unit 5 revision
	41 st	1	Unit 5 class test
	42 nd	1	PYQ Discussion
15 TH	43 rd	1	PYQ Discussion
	44 th	1	PYQ Discussion
	45 th	1	PYQ Discussion

Dishnupriya Bena
Signature of Teaching Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-2 TRANSPORTATION ENGINEERING (COURSE CODE: CEPC203)

Discipline: Civil engineering	Semester: 3 rd	No. of periods available: 45	Name of Teaching Faculty: Santosh Kumar Behera
Subject: Transportation Engineering	No. of Days/ per week class allotted: 3 periods per week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15
Week	Class Day		Topics to be covered
1 ST	1 st	1	Role of transportation in development of a nation
	2 nd	1	Scope and importance of roads in India and its characteristics.
	3 rd	1	Different modes of Transportation.
2 ND	4 th	1	General classification of roads
	5 th	1	Road alignment and selection factor affecting road alignment.
	6 th	1	Cross sectional elements of road and standards cross sections of national highway in embankment and cutting.
3 RD	7 th	1	Camber and Gradient: Definition, purpose, types as per IRC recommendation.
	8 th	1	Sight Distance (SSD): Definition, types IRC recommendation.
	9 th	1	Numerical on sight distance.
4 TH	10 th	1	Curves: Necessity, types: Horizontal and vertical curves.
	11 th	1	Extra widening of roads: numerical examples.

	12 th	1	Superelevation: Definition, Formula for calculating maximum and minimum super elevation.
5 TH	13 th	1	Numerical on super elevation.
	14 th	1	Methods of providing super elevation.
	15 th	1	Numerical practice on super elevation and sight distance.
6 TH	16 th	1	Types of road materials, their types and properties.
	17 th	1	Tests on aggregates – Flakiness and elongation index test, angularity number test.
	18 th	1	Tests on bitumen- Penetration, Ductility, Flash and fire point test and softening point test.
7 TH	19 th	1	Pavement definition, types structural components of pavement and their functions.
	20 th	1	Construction of WBM road, Merits and Demerits of WBM and WMM roads.
	21 st	1	Construction of flexible pavement.
8 TH	22 nd	1	Terms used in BR prime coat, tack coat, seal coat, Merits and Demerits of BR.
	23 rd	1	Cement concrete road- methods of construction, alternate and Continuous Bay method.
	24 th	1	Construction joints, fillers and sealers, merits and demerits of concrete road. Types of joint.
9TH	25 th	1	Revision and general

			discussion on road construction and pavement materials.
	26 th	1	Classification of Indian railways and Zones of Indian railways.
	27 th	1	Permanent way: Ideal requirements, components, Railway gauges types and factors affecting selection of gauge.
10 TH	28 th	1	Rail, rail joints – requirements, types.
	29 th	1	Creep of rail: causes and prevention.
	30 th	1	Sleepers – functions and requirements, types – concrete sleepers and their density.
11 TH	31 st	1	Ballast – Function and types, suitability.
	32 nd	1	Rail fixtures and fastenings- fish plate, spikes, bolts and keys, bearing plates, chairs type anchors and anti-creepers.
	33 rd	1	Railway alignment: Factors governing rail alignment. Gradient, curves – types and factors affecting, grade compensation.
12 TH	34 th	1	Track cross sections- standard cross section of single and double line in cutting and embankment
	35 th	1	Super elevation, limit of superelevation on curves.
	36 th	1	Can't deficiency, negative cant, coning of wheels and side train.
13 TH	37 th	1	Turn out _ types, components, functions on inspections.

	38 th	1	Types of points and crossing.
	39 th	1	Station- Purpose, requirements of railway station, important technical terms, types of railway station, factors affecting site selection for railway station.
14 TH	40	1	Station yard: Classification- Passenger, goods, locomotives and marshaling yards. Function and drawbacks of marshaling yards.
	41 st	1	Track maintenance- Necessity and function.
	42 nd	1	Tools required for track maintenance and their functions.
15 TH	43 rd	1	Organization of track maintenance, Duties of permanent way inspector, gangmate and keyman.
	44 th	1	Revision on Indian railway.
	45 th	1	Revision on Indian railway.

Santosh Kumar Behra

Signature of Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-3 MECHANICS OF MATERIALS (COURSE CODE: CEPC205)

Discipline: Civil engineering	Semester: 3 rd	No. of periods available: 45	Name of Teaching Faculty: Jyoti Sankar Panda
Subject: Mechanics of Materials	No. of Days/ per week class allotted: 3 periods per week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15
Week	Class Day		Topics to be covered
1 ST	1 st	1	Basic Principle of Mechanics: Force, Moment, support conditions, Conditions of equilibrium, C.G & MI, Free body diagram
	2 nd	1	Review of CG and MI of different sections
	3 rd	1	Introduction to stresses and strains: Mechanical properties of materials – Rigidity, Elasticity, Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue, Tenacity, Durability
2 ND	4 th	1	Types of stresses -Tensile, Compressive and Shear stresses, Types of strains - Tensile, Compressive and Shear strains
	5 th	1	Problem Practice & Doubt Clearing
	6 th	1	Complimentary shear stress - Diagonal tensile / compressive Stresses due to shear, Elongation and Contraction, Longitudinal and Lateral strains, Poisson's Ratio, Volumetric strain
3 RD	7 th	1	Computation of stress, Strain, Poisson's ratio, change in dimensions and volume etc.,
	8 th	1	Hooke's law - Elastic Constants, Derivation of relationship between the elastic constants.
	9 th	1	Behaviour of ductile and brittle materials under direct loads, Stress Strain curve of a ductile material, Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress
4 TH	10 th	1	Percentage elongation, Percentage reduction in area, Significance of percentage elongation and reduction in

			area of cross section, Deformation of prismatic bars due to uniaxial load, Deformation of prismatic bars due to its self-weight.
	11 th	1	Problem Practice & Doubt Clearing
	12 th	1	Class Test-1
5 TH	13 th	1	Occurrence of normal and tangential stresses, Concept of Principal stress and Principal Planes, Major and minor principal stresses and their orientations
	14 th	1	Mohr's Circle and its application to solve problems of complex stresses
	15 th	1	Bending stress in beams – Theory of simple bending – Assumptions
6 TH	16 th	1	Moment of resistance – Equation for Flexure– Flexural stress distribution
	17 th	1	Curvature of beam – Position of N.A. and Centroidal Axis – Flexural rigidity – Significance of Section modulus
	18 th	1	Shear stress distribution in beams of rectangular, circular and standard sections symmetrical about vertical axis
7 TH	19 th	1	Class Test-2
	20 th	1	Concept of torsion, basic assumptions of pure torsion
	21 st	1	Torsion of solid and hollow circular sections & Problem Practice
8 TH	22 nd	1	Polar moment of inertia, torsional shearing stresses, angle of twist, torsional rigidity, equation of torsion
	23 rd	1	Combination of stresses, combined direct and bending stresses
	24 th	1	Maximum and Minimum stresses in Sections, Conditions for no tension & Problem Practice
9 TH	25 th	1	Limit of eccentricity, Middle third/fourth rule,
	26 th	1	Core or kern for square, rectangular and circular sections, chimneys, dams and retaining walls
	27 th	1	Problem Practice
10 TH	28 th	1	Columns and Struts, Definition, Short and Long columns, End conditions, Equivalent length / Effective length, Slenderness ratio, axially loaded short and long column
	29 th	1	Euler's theory of long columns, Critical load for Columns with

			different end conditions
	30 th	1	Types of Loads: Concentrated (or) Point load, Uniformly Distributed load (UDL), Types of Supports: Simple support, Roller support, Hinged support, Fixed support, Types of Reactions: Vertical reaction, Horizontal reaction, Moment reaction, Types of Beams based on support conditions
11 TH	31 st	1	Calculation of support reactions using equations of static equilibrium
	32 nd	1	Problem Practice
	33 rd	1	Shear Force and Bending Moment: Signs Convention for S.F. and B.M, S.F and B.M of 43 general cases of determinate beams with concentrated loads and udl only
12 TH	34 th	1	S.F and B.M diagrams for Cantilevers
	35 th	1	S.F and B.M diagrams for Simply supported beams and over hanging beams
	36 th	1	Position of maximum BM, Point of contra flexure, Relation between intensity of load, S.F and B.M.
13 TH	37 th	1	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection
	38 th	1	Slope and deflection of cantilever and simply supported beams under concentrated by Double Integration method
	39 th	1	Slope and deflection of cantilever and simply supported beams under uniformly distributed load by Double Integration method.
14 TH	40	1	Slope and deflection of simply supported beams under concentrated and uniformly distributed load by Macaulay's method.
	41 st	1	Indeterminacy in beams, Principle of consistent deformation/compatibility
	42 nd	1	Analysis of propped cantilever
15 TH	43 rd	1	Fixed and two span continuous beams by principle of superposition
	44 th	1	Fixed and two span continuous beams by principle of superposition

	45 th	1	SF and BM diagrams (point load and udl covering full span)
			Types of trusses, statically determinate and indeterminate trusses, degree of indeterminacy, stable and unstable trusses, advantages of trusses
			Analytical method (Method of joints, method of Section)

Jyoti Sankar Panda

Signature of Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-4 GEOTECHNICAL ENGINEERING (COURSE CODE: CEPC207)

Discipline: Civil engineering	Semester: 3 rd	No. of periods available: 45	Name of Teaching Faculty: Ankita Rath
Subject: Geotechnical Engineering	No. of Days/ per week class allotted: 3 periods per week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15
Week	Class Day		Topics to be covered
1 ST	1 st	1	Soil and Soil Engineering
	2 nd	1	Scope of Soil Mechanics
	3 rd	1	Origin and formation of soil
2 ND	4 th	1	Soil as a three Phase system.
	5 th	1	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content, degree of saturation,
	6 th	1	density Index, Bulk/Saturated/dry/submerged density,
3 RD	7 th	1	Interrelationship of various soil parameters
	8 th	1	Revision
	9 th	1	Water Content, Specific Gravity
4 TH	10 th	1	Sieve analysis, wet mechanical analysis
	11 th	1	particle size distribution curve and its uses
	12 th	1	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
5 TH	13 th	1	Class Test-1
	14 th	1	Quiz Test
	15 th	1	Classification of Soil
6 TH	16 th	1	I.S. Classification, Plasticity chart
	17 th	1	Concept of Permeability, Darcy's Law, Co-efficient of

			Permeability
	18 th	1	Factors affecting Permeability
7 TH	19 th	1	Constant head permeability and falling head permeability Test.
	20 th	1	Seepage pressure, effective stress
	21 st	1	phenomenon of quick sand
8 TH	22 nd	1	Compaction, Light and heavy compaction Test
	23 rd	1	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line
	24 th	1	Factors affecting Compaction
9 TH	25 th	1	Field compaction methods and their suitability
	26 th	1	Revision
	27 th	1	Consolidation, distinction between compaction and consolidation.
10 TH	28 th	1	Terzaghi 's model analogy of compression/ springs showing the process of consolidation
	29 th	1	field implications
	30 th	1	Concept of shear strength, Mohr- Coulomb failure theory
11 TH	31 st	1	Cohesion, Angle of internal friction, strength envelope for different type of soil
	32 nd	1	Measurement of shear strength; - Direct shear test, triaxial shear test, unconfined compression test and vane-shear test
	33 rd	1	Class Test-2
12 TH	34 th	1	Quiz Test
	35 th	1	Active earth pressure, Passive earth pressure, Earth pressure at rest.
	36 th	1	Use of Rankine's formula for the following cases

			(cohesion- less soil only) (i) Backfill with no surcharge, (ii) backfill with uniform surcharge
13 TH	37 th	1	
	38 th	1	Revision
	39 th	1	Functions of foundations, shallow and deep foundation, different type of shallow and deep foundations with sketches.
14 TH	40	1	Types of failure (General shear, Local shear & punching shear)
	41 st	1	Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings
	42 nd	1	Effect water table on bearing capacity of soil
15 TH	43 rd	1	Plate load test and standard penetration test
	44 th	1	PYQ Discussion
	45 th	1	PYQ Discussion

Ankita Path

Signature of Faculty

ASIAN SCHOOL OF TECHNOLOGY, KHORDHA

ACADEMIC LESSON PLAN (WINTER-2026)

TH-5 BUILDING MATERIALS AND CONSTRUCTION TECHNIQUES (COURSE CODE: CEPC209)

Discipline: Civil engineering	Semester: 3 rd	No. of periods available: 45	Name of Teaching Faculty: Swati Shree Lenka
Subject: Building Materials and Construction techniques	No. of Days/ per week class allotted: 3 periods per week		Semester from: 02.07.2026 To 05.11.2026 No. of weeks: 15
Week	Class Day		Topics to be covered
1 st	1 st	1	Classification of rock Uses of stone Natural bed of stone and dressing of stone Characteristic of different types of stone and their uses
	2 nd	1	Brick earth and its composition Brick making and preparation of brick earth Classification of bricks Manufacturing process of brick
	3 rd	1	Qualities of good building bricks Cement and types of cement Properties of cement
2 nd	4 th	1	Manufacturing of cement
	5 th	1	Importance and application of blended cement
	6 th	1	Mortar and types of mortar
3 rd	7 th	1	Sources and classification of sand
	8 th	1	Buckling of sand
	9 th	1	Use of gravel, morrum and fly ash
4 th	10 th	1	Definition and composition of concrete
	11 th	1	Water cement ratio, workability
	12 th	1	Properties and grading of aggregate
5 th	13 th	1	Class test 1
	14 th	1	Mixing placing, compacting and curing of concrete
	15 th	1	Timber and its classification
6 th	16 th	1	Importance and seasoning of timber
	17 th	1	Characteristics of good timber
	18 th	1	Clay products and refractory materials
7 th	19 th	1	Uses of cast iron, wrought iron, mild steel
	20 th	1	Surface protective materials

	21 st	1	Composition of paints, enamels, varnishes
8 th	22 nd	1	Types and uses of surface protective material
	23 rd	1	Varnishes and distempering
	24 th	1	Building and classification of building
9 th	25 th	1	Different components of building
	26 th	1	Site investigation
	27 th	1	Concept of foundation and its purpose
10 th	28 th	1	Types of foundation
	29 th	1	Different types of shallow foundation
	30 th	1	Wall and purpose of wall
11 th	31 st	1	Classification of walls
	32 nd	1	Brick masonry
	33 rd	1	Technical terms used in brick masonry
11 th	34 th	1	Stone masonry
	35 th	1	Glossary of terms used in stone masonry
	36 th	1	Class Test 2
12 th	37 th	1	Doors windows and lintels
	38 th	1	Glossary of terms used related to door, window
	39 th	1	Different types of doors and Different types of windows
13 th	40	1	Purpose and uses of lintel and arches Floors, roofs and staircase Terms used in floors Terms used in roof.
	41 st	1	Terms used in staircase Types of staircases
	42 nd	1	Plastering and types of plastering Types of plaster finishes Purpose of plastering
14 th	43 rd	1	Pointing, types of pointing white washing, color washing, distempering Methods of painting Damp proofing methods and materials Termite proofing methods
	44 th	1	Introduction to green building and energy management Types of energy audit Energy surveying and audit report
	45 th	1	PYQ Discussion

Sunitishree Lenka.
Signature of Teaching Faculty.