

Discipline-Civil Engineering	Semester-3rd	Name of the teaching faculty:- Er.Laxmipriya Mohapatra
Subject:- Th.1 Building Construction	No. of days /per week class allotted:-3	Semester From Date:01/07/2026 to 05/11/2026
		No. of weeks-17
Week	Class Day	Theory/Practical Topics
		BUILDING MATERIALS
1st		UNIT-I
	1st	Overview of Building Components Classification of Buildings as per National Building Code Group A to I, as per Types of Constructions- Load Bearing Structure, Framed Structure, Composite Structure.
	2nd	Building Components – Functions of Building Components, substructure – Foundation, Plinth.
	3rd	Superstructure – Walls, Partition wall, Cavity wall, Sill, Lintel, Doors and Windows, Floor,
2nd	1st	Mezzanine floor, Roof, Columns, Beams, Parapet.
	2nd	UNIT-II Construction of Substructure Job Layout: Site Clearance, Layout for Load Bearing Structure
	3rd	Layout for Framed Structure by Center Line and Face Line Method, Precautions.
3rd	1st	Earthwork: Excavation for Foundation, Timbering and Strutting, Earthwork for embankment, Material for plinth Filling, Tools and plants used for earthwork.
	2nd	Foundation: Functions of foundation,
	3rd	Types of foundation – Shallow Foundation, Stepped Footing, Wall Footing,
4th	1st	Column Footing, Isolated and Combined Column Footing, Raft Foundation, Grillage Foundation.
	2nd	Deep Foundation – Pile Foundation, Well foundation and Caissons, Pumping
	3rd	Methods of Dewatering, Deep wells, Well points, Cofferdams (Introduction only).
5th	1st	UNIT-III Construction of Superstructure Stone Masonry: Terms used in stone masonry- facing, backing, hearting, through stone, corner stone, cornice.
	2nd	Types of stone masonry: Rubble masonry, Ashlar Masonry and their types
	3rd	Joints in stone masonry and their purpose. Selection of Stone Masonry,
6th	1st	Precautions to be taken in Stone Masonry Construction.
	2nd	Brick masonry: Terms used in brick masonry- header, stretcher, closer, quoins, course,
		face, back, hearting, bat bond, joints, lap, frog line, level and plumb.
	3rd	Bonds in brick masonry- header bond, stretcher bond, English bond and Flemish bond.
		Requirements of good brick masonry. Junctions in brick masonry and their purpose and procedure.
	1st	Precautions to be observed in Brick Masonry Construction. Comparison between stone and Brick Masonry

7th	2nd	Tools and plants required for construction of stone and brick masonry. Hollow concrete block masonry and composite masonry
	3rd	Scaffolding and Shoring: Purpose, Types of Scaffolding, Process of Erection and Dismantling. Purpose and Types of Shoring,
8th	1st	Underpinning. Formwork: Definition of Formwork, Requirements of Formwork,
	2nd	Materials used in Formwork, Types of Formwork, Removal of formwork.
	3rd	UNIT-IV Building Communication and Ventilation Horizontal Communication: Doors –Components of Doors, Full Paneled Doors, Partly Paneled and Glazed Doors,
9th	1st	Flush Doors, Collapsible Doors, Rolling Shutters, Revolving Doors, Glazed Doors. Sizes of Door recommended by BIS.
	2nd	Windows: Component of windows, Types of Windows – Full Paneled, Partly Paneled and Glazed, wooden, Steel, Aluminum windows, Sliding Windows, Louvered Window
	3rd	Bay window, Corner window, clear storey window, Gable and Dormer window, Skylight.
10th	1st	Sizes of Windows recommended by BIS. Ventilators. Fixtures and fastenings for doors and windows
	2nd	Material used and functions of Window Sill and Lintels, Shed / Chajja.
	3rd	Vertical Communication: Means of Vertical Communication-Stair Case, Ramps, Lift, Elevators and Escalators. Terms used in staircase steps, tread, riser, nosing, soffit, waist slab, baluster, balustrade, scotia, hand rails,
11th	1st	newel post, landing, headroom, winder. Types of staircase (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.
	2nd	UNIT-V Building Finishes Floors and Roofs: Types of Floor Finishes and its suitability- Kota, Marble, Granite, Ceramic Tiles,
	3rd	Vitrified, Chequered Tiles, Paver Blocks, Concrete Floors, wooden Flooring, Skirting and Dado
12th	1st	Process of Laying and Construction, Finishing and Polishing of Floors,
	2nd	Roofing Materials- RCC, Mangalore Tiles, AC Sheets, G.I. sheets, Corrugated G.I. Sheets, Plastic and Fibre Sheets.
	3rd	Types of Roof: Flat roof, Pitched Roof, King Post truss, Queen Post Truss, terms used in roofs.
13th	1st	Wall Finishes: Plastering – Necessity of Plastering, Procedure of Plastering,
	2nd	Single Coat Plaster, Double Coat Plaster, Rough finish, Neeru Finishing and Plaster of Paris (POP).
	3rd	Special Plasters- Stucco plaster, sponge finish, pebble finish. Plaster Board and Wall Claddings. Precautions to be taken in plastering,

14th	1st	Defects in plastering.
	2nd	Painting – Necessity, Types of painting and procedure of Painting.
	3rd	Painting –Necessity, Surface Preparation for painting, Methods of Application.
15th	1st	Revision Unit - I
	2nd	Revision Unit - II
	3rd	Revision Unit - III
16th	1st	Revision Unit - IV
	2nd	Revision Unit - V
	3rd	Previous year question answer practice
17th	1st	Previous year question answer practice
	2nd	Previous year question answer practice
	3rd	Previous year question answer practice
<i>Laxmipriya Mohapatra</i> Signature of the Faculty		

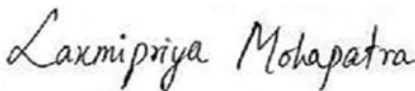
Discipline: Civil Engineering	Semester-3rd	Name of the teaching faculty: Er. Chittaranjan Panda
Subject: Transportation Engineering (TH:2)	No. of Days/Per week Class allotted: 3	Semester From Date: 01/07/26 To Date: 05/11/26 No. of Weeks: 15
Week	Day	Theory Topics to be covered
1st	1st	Introduction to Highway Engineering – Role of transportation in development of the nation; scope and importance of roads in India
	2nd	Road Transportation – Characteristics of roads; importance of road transportation; factors influencing road development
	3rd	Modes of Transportation – Landway, waterway and airway; merits and demerits of road and railway transportation
2nd	1st	Classification of Roads – General classification of roads; road classification based on different criteria
	2nd	Selection and Factors Affecting Road Alignment – Engineering, economic and environmental considerations; review of Unit I
	3rd	Geometric Design – Introduction – Objectives and importance of geometric design; basic terminology
3rd	1st	Camber – Definition, purpose, types of camber; IRC recommendations; numerical examples
	2nd	Kerbs and Road Margins – Types and functions of kerbs; road margin; road formation; right of way
	3rd	Design Speed – Definition; factors affecting design speed; IRC recommendations
4th	1st	Factors Affecting Design Speed – Terrain, traffic, road characteristics and safety considerations
	2nd	Gradient – Definition; types of gradients; IRC recommendations; application in highway design
	3rd	Sight Distance – Definition and importance; types of sight distance
	1st	Stopping Sight Distance (SSD) – IRC recommendations; formulae and assumptions; solved numerical problems

5th	2nd	Horizontal and Vertical Curves – Necessity and types; basic concepts and applications
	3rd	Extra Widening of Roads – Need and methods; numerical examples
6th	1st	Superelevation – Definition, necessity and formula for calculating superelevation
	2nd	Superelevation and Highway Cross Sections – Minimum and maximum superelevation; method of providing superelevation; standard cross-sections in embankment and cutting; Unit II review
	3rd	Construction of Road Pavements – Introduction; pavement types; components of pavement and their functions
7th	1st	Road Aggregates – Types and properties; tests on aggregates; flakiness and elongation index tests
	2nd	Tests on Aggregates – Aggregate crushing/impact-related properties; Los Angeles/Aggregate Abrasion test and interpretation
	3rd	Aggregate Tests – Angularity number test; significance of aggregate shape and texture
8th	1st	Bituminous Materials – Bitumen properties; penetration test; ductility test
	2nd	Bitumen Tests – Flash and fire point test; softening point test; significance of test results
	3rd	WBM and WMM Roads – Construction of WBM road; merits and demerits; construction of WMM road
9th	1st	Flexible Pavement – Definition and structural components; types of bituminous roads; properties of bitumen
	2nd	Bituminous Road Construction – Cutback, tar and bitumen emulsions; comparison and applications
	3rd	Bituminous Surface Treatments – Prime coat, tack coat and seal coat; construction procedure
10th	1st	Cement Concrete Roads – Methods of construction; alternate and continuous bay methods; construction joints and filler
	2nd	Concrete Pavements – Construction procedure; merits and demerits of concrete roads; types of joints
	3rd	Unit III Revision – Pavement components, material tests, WBM/WMM, bituminous and cement concrete roads
11th	1st	Introduction to Railway Engineering – Classification of Indian Railways; zones of Indian Railways
	2nd	Permanent Way – Definition, requirements and components; overview of railway track
	3rd	Rails – Types of rails; rail sections; requirements of rails; factors affecting selection of rail
12th	1st	Rail Joints – Requirements of rail joints; types of rail joints and their applications
	2nd	Creep of Rails – Causes of creep; effects and methods of prevention/control
	3rd	Sleepers – Functions and requirements; types of sleepers; concrete sleepers and their density
13th	1st	Ballast – Functions, requirements and types; suitability of different ballast materials
	2nd	Rail Fixtures and Fastenings – Fish plates, spikes, bolts, keys and bearing plates

	3rd	Rail Fastenings – Chairs; types of anchors; anti-creepers; review of permanent-way components
14th	1st	Unit IV Revision – Rails, joints, creep, sleepers, ballast and rail fastenings
	2nd	Railway Alignment and Track Cross Sections – Factors governing rail alignment; standard cross-section of single and double line in cutting and embankment
	3rd	Track Geometry – Gradient and curves; types of curves; factors affecting gradient and curve design
15th	1st	Superelevation and Cant – Gradients, compensation, superelevation limits, cant deficiency, cant excess; coning of wheels and tilting of rail
	2nd	Branching of Tracks, Points and Crossings – Turnouts, components and functions; inspection of track junctions; crossovers, diamond crossings and track triangles
	3rd	Stations, Yards and Track Maintenance – Railway stations and their requirements; types of stations; station yards; passenger/goods/locomotive/marshalling yards; track maintenance, tools, organization and duties of permanent-way inspector/gangmate; course review

Discipline-Civil Engineering	Semester-3rd	Name of the teaching faculty:- Er.Laxmipriya Mohapatra
Subject:- Th.3 Mechanics of Materials	No. of days /per week class allotted:-3	Semester From Date:01/07/2026 to 05/11/2026
		No. of weeks-17
Week	Class Day	Theory/Practical Topics
1st	1st	UNIT-I Centre of Gravity and Moment of Inertia Definition of centre of gravity -Centre of gravity of of Symmetrical shapes (solid / hollow square, rectangular, circular, I Sections)
	2nd	Definition of centre of gravity -Centre of gravity of of Symmetrical shapes (solid / hollow square, rectangular, circular, I Sections)
	3rd	Moment of inertia (M.I.): Definition, M.I. of plane lamina, Radius of gyration, section modulus,
2nd	1st	Parallel axis theorem and Perpendicular axis theorem (without derivations).
	2nd	M.I. of rectangle, square, circle, semicircle, quarter circle and triangle section (without derivations).
	3rd	M. I. of symmetrical and unsymmetrical I-section, Channel section
3rd	1st	T-section, Angle section, Hollow sections and built up sections about centroidal axes and any other reference axis.
	2nd	Polar Moment of Inertia of solid circular sections.
	3rd	UNIT-II Simple stresses and Strains Definition of rigid, elastic and plastic bodies, Deformation of elastic body under various forces,
4th	1st	Definition of stress, strain, elasticity, Hook's law, Elastic limit, Modulus of elasticity.
	2nd	Type of Stresses-Normal, Direct, Bending and Shear and nature of stresses i.e. Tensile and Compressive stresses.

	3rd	Standard stress strain curve for tor steel bar under tension, Yield stress, Proof stress, Ultimate stress
5th	1st	Strain at various critical points, Percentage elongation and Factor of safety.
	2nd	Deformation of body due to axial force, forces applied at intermediate sections, Maximum and minimum stress induced, Composite section under axial loading.
	3rd	Concept of temperature stresses and strain, Stress and strain developed due to temperature variation in homogeneous simple bar (no composite section)
	1st	Longitudinal and lateral strain, Modulus of Rigidity, Poisson's ratio, Biaxial and tri-axial stresses
6th	2nd	volumetric strain, change in volume, Bulk modulus (Introduction only).
	3rd	Relation between modulus of elasticity, modulus of rigidity and bulk modulus (without derivation).
7th	1st	Complex stresses and strains Principal stresses and strains: Occurrence of normal and tangential stresses - Concept of Principal stress and Principal Planes – major and minor principal stresses and their orientations
	2nd	stresses on a given plane –shear and normal stress components on any inclined plane – Mohr's circle and its use in solving problems on complex stresses - Numerical problems
	3rd	UNIT-III Shear Force and Bending Moment Types of supports, beams and loads.
8th	1st	Concept and definition of shear force and bending moment, Relation between load, shear force and bending moment (without derivation).
	2nd	Shear force and bending moment diagram for cantilever subjected to point loads, uniformly distributed loads.
	3rd	Shear force and bending moment diagram for simply supported beams subjected to point loads, uniformly distributed loads.
9th	1st	Shear force and bending moment diagram for cantilever and simply supported beams subjected to couple (combination of any two types of loading), point of contra flexure.
	2nd	Shear force and bending moment diagram for cantilever and simply supported beams subjected to point loads, uniformly distributed loads and couple (combination of any two types of loading), point of contra flexure.
	3rd	Numerical problems on SF & BM.
10th	1st	Numerical problems on SF & BM.
	2nd	Numerical problems on SF & BM.
	3rd	Numerical problems on SF & BM.
11th	1st	UNIT-IV Bending and Shear Stresses in beams Concept and theory of pure bending, assumptions, flexural equation (without derivation), bending stresses and their nature,
	2nd	Bending stress distribution diagram.

	3rd	Concept of moment of resistance and simple numerical problems using flexural equation.
12th	1st	Shear stresss equation (without derivation), relation between maximum and average shear stress for rectangular .
	2nd	Relation between maximum and average shear stress for and circular section, shear stress distribution diagram.
	3rd	Shear stress distribution for square, rectangular, circle, hollow,
13th	1st	Shear stress distribution for angle sections, channel section
	2nd	Shear stress distribution for I-section, T section
	3rd	Simple numerical problems based on shear equation.
14th	1st	UNIT-V Columns: Concept of compression member, short and long column, Effective length
	2nd	Radius of gyration, Slenderness ratio, Types of end condition for columns, Buckling of axially loaded columns.
	3rd	Euler's theory, assumptions made in Euler's theory and its limitations.
15th	1st	Application of Euler's equation to calculate buckling load.
	2nd	Rankine's formula and its application to calculate crippling load.
	3rd	Concept of working load/safe load, design load and factor of safety.
16th	1st	Revision Unit - I
	2nd	Revision Unit - II
	3rd	Revision Unit - III
17th	1st	Revision UNIT-IV
	2nd	Revision Unit - V
	3rd	Previous year question answer practice
 Signature of the Faculty		

Discipline: Civil Engineering	Semester-3rd	Name of the teaching faculty: Er. Chittaranjan Panda
Subject: Geotechnical Engineering (TH:4)	No. of Days/Per week Class allotted: 3	Semester From Date: 01/07/26 To Date: 05/11/26 No. of Weeks: 15
Week	Day	Theory Topics to be covered
1st	1st	Introduction to Geology; branches of geology; importance of geology in Civil Engineering
	2nd	Earth composition; definition and classification of rocks based on mode of origin
	3rd	Igneous, sedimentary and metamorphic rocks; engineering uses
2nd	1st	Importance of soil as a construction material and foundation medium
	2nd	Applications of geotechnical engineering: foundations, pavements, earth retaining structures, earth dams
	3rd	Three-phase soil system; soil, water and air phases; phase relationships
	1st	Water content; determination by oven-drying method as per BIS; void ratio and porosity

3rd	2nd	Degree of saturation; density index; air content; percentage of air voids; relationships between parameters
	3rd	Unit weight of soil – bulk, dry, saturated and submerged unit weight
4th	1st	Determination of unit weight and dry unit weight by core cutter and sand replacement methods
	2nd	Determination of specific gravity by pycnometer
	3rd	Consistency of soil; Atterberg limits – liquid, plastic and shrinkage limits
5th	1st	Plasticity index; interpretation and engineering significance of consistency limits
	2nd	Particle-size distribution; sieve analysis and plotting of grain-size distribution curve
	3rd	Effective diameter, well-graded and uniformly graded soils; BIS soil classification
6th	1st	Permeability; Darcy's law; coefficient of permeability
	2nd	Factors affecting permeability; methods of determining coefficient of permeability
	3rd	Constant-head permeability test
7th	1st	Falling-head permeability test
	2nd	Problems on determination of coefficient of permeability
	3rd	Seepage through earth structures; seepage velocity and seepage pressure
8th	1st	Piping/quick condition; phreatic line and flow-related concepts
	2nd	Effective stress principle; quick sand condition; overall revision
	3rd	Compaction of soil; purpose and concept of compaction
9th	1st	Standard and Modified Proctor tests as per IS code
	2nd	Moisture-content–dry-density relationship; OMC and MDD
	3rd	Zero air voids line; factors affecting compaction
10th	1st	Field methods of compaction – rolling, ramming and vibration
	2nd	Consolidation; difference between compaction and consolidation
	3rd	Terzaghi's model/analogy of consolidation; consolidation process
11th	1st	Field implications of consolidation; soil stabilization; need and methods
	2nd	California Bearing Ratio (CBR) test; meaning and utilization in pavement construction; site investigation and soil exploration
	3rd	Shear failure of soil – general, local and punching shear
12th	1st	Concept of shear strength of soil; components of shear resistance
	2nd	Cohesion and internal friction; Mohr-Coulomb failure theory
	3rd	Strength envelope; shear strength for purely cohesive soils
13th	1st	Shear strength for cohesionless soils
	2nd	Direct shear test – principle, procedure and interpretation
	3rd	Triaxial shear test – principle, types and applications
14th	1st	Vane shear test; comparison of shear tests; revision/problem solving
	2nd	Bearing capacity and theory of earth pressure; concept of bearing capacity
	3rd	Ultimate and allowable bearing capacity; Terzaghi's bearing capacity theory
15th	1st	Terzaghi's assumptions; effect of water table on bearing capacity
	2nd	Field methods for bearing capacity – Plate Load Test and Standard Penetration Test; IS 1888 and IS 2131

	3rd	Earth pressure: active/passive pressure, Rankine's theory; foundations – shallow and deep; course revision
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Discipline: Civil Engineering	Semester: 3rd	Name of the Teaching faculty: Mr. Subrat Kumar Panigrahi
Subject: BUILDING MATERIAL & CONCRETE	No. of days/ per week class allotted: 3	Semester From Date: 01.07.2026 To Date: 05.11.2026
	Total Periods :45 Hrs	No. of Weeks: 15
Week	Class Day	Theory/ Practical Topics
1st	1	Scope and applications of construction materials in Building, Transportation, Environmental & Irrigation Engineering
	2	Selection of materials based on strength, durability, eco-friendliness and economy; classification of materials
	3	Requirements of good building stone; general characteristics of stone
2nd	1	Quarrying methods and dressing of stones; tools used for stone dressing
	2	Timber: structure, properties and uses of good timber
	3	Seasoning and preservation of timber; defects in timber; bamboo in construction
3rd	1	Asphalt, bitumen, tar, lime, soil, sand and classification of coarse aggregate
	2	Constituents of brick earth; conventional/traditional, modular and standard bricks, Special bricks: fly ash bricks;
	3	characteristics and field tests of good bricks
4th	1	Classification and suitability of burnt clay bricks; manufacturing process of burnt clay bricks, Fly ash Bricks, Aerated Concrete Blocks.
	2	Flooring tiles- Types and Uses
	3	Precast concrete blocks, plywood, particle board, veneers and laminated boards; glass and metals
5th	1	Composition of cement; constituents and their functions
	2	Manufacturing of cement – dry and wet processes
	3	Types of cement and their uses; field tests on cement
6th	1	Physical properties of OPC/PPC: fineness and standard consistency
	2	Setting time, soundness and compressive strength of cement
	3	Laboratory tests of cement – Fineness, Standard Consistency and Setting Time
7th	1	Laboratory tests – Soundness and Compressive Strength; Storage of cement and effect of storage
	2	Grades of OPC and relevant BIS codes; BIS specifications and field applications of Rapid Hardening, Low Heat, PPC and Sulphate Resisting Cement
	3	BIS specifications and field applications of Blast Furnace Slag, High Alumina and White Cement; Aggregates – requirements and classification according to size and shape
8th	1	Fine & coarse aggregates – properties, grading, fineness modulus, tests; Water quality and permissible limits; Admixtures – types, purpose and applications
	2	Coarse aggregate properties, grading, crushing value, impact value and abrasion value; water and admixtures
	3	Concrete: grades of concrete and provisions of IS 456; water-cement ratio law

9th	1	Significance and selection of water-cement ratio; maximum w/c ratio for exposure conditions
	2	Workability of concrete; factors affecting workability
	3	Slump cone test – principle, procedure and interpretation
10th	1	Compaction factor and Vee-Bee consistometer tests
	2	Workability requirements; segregation, bleeding and preventive measures
	3	Properties of hardened concrete: strength, durability and impermeability
11th	1	Concrete mix design: objectives, methods and factors affecting mix design
	2	IS 10262 mix design – procedural steps: data collection and design requirements
	3	IS 10262 mix design – selection of w/c ratio, water content and cement content
12th	1	Mix proportioning and procedural steps of concrete mix design
	2	Non-destructive testing: Rebound hammer test – principle, procedure and factors affecting rebound index Ultrasonic Pulse Velocity test as per IS 13311 (Part 1 & 2); importance of NDT
	3	Concreting Operations – Batching and Mixing of Concrete
13th	1	Transportation, Placing and Compaction of Concrete
	2	Curing and Finishing of Concrete; methods of curing
	3	Forms/Formwork – types for beams, slabs and columns; materials used for formwork; requirements of good formwork
14th	1	Stripping time for removal of formwork as per IS 456; Waterproofing – importance, need, methods and materials; Joints in concrete construction – types and joining old and new concrete
	2	Waterproofing: importance, need, methods and materials
	3	Joints in concrete construction: types and methods of joining old and new concrete
15th	1	Special concrete: Ready Mix Concrete, Fibre Reinforced Concrete and High Performance Concrete
	2	Self-Compacting Concrete and Lightweight Concrete
	3	Cold and hot weather concreting: effects and precautions;
<i>Subrat Kumar Paigrahi</i> Signature of the Faculty		

Discipline: Civil Engineering	Semester-3rd	Name of the teaching faculty: Er. Chittaranjan Panda
Subject: Transportation Engineering Lab (Pr:1)	No. of Days/Per week Class allotted: 2	Semester From Date: 01/07/26 To Date: 05/11/26 No. of Weeks: 15
Week	Day	Practicals to be Performed
1st	1st	Introduction to Transportation Engineering Laboratory
	2nd	Flakiness Index of Aggregates – Theory & Demonstration
2nd	1st	Flakiness Index – Practical
	2nd	Elongation Index of Aggregates – Theory & Demonstration
3rd	1st	Elongation Index – Practical
	2nd	Crushing Strength of Aggregates – Theory

4th	1st	Crushing Strength of Aggregates – Practical
	2nd	Impact Value of Aggregates – Theory & Demonstration
5th	1st	Impact Value of Aggregates – Practical
	2nd	Abrasion Value of Aggregates – Theory
6th	1st	Abrasion Value of Aggregates – Practical
	2nd	Angularity Number of Aggregates – Theory & Demonstration
7th	1st	Angularity Number – Practical
	2nd	Softening Point of Bitumen – Theory & Demonstration
8th	1st	Softening Point of Bitumen – Practical
	2nd	Penetration Test of Bitumen – Theory & Demonstration
9th	1st	Penetration Test – Practical
	2nd	Flash Point and Fire Point of Bitumen – Theory
10th	1st	Flash Point and Fire Point – Practical
	2nd	Ductility Test of Bitumen – Theory & Demonstration
11th	1st	Ductility Test – Practical
	2nd	Viscosity of Bitumen – Theory & Demonstration
12th	1st	Viscosity of Bitumen – Practical
	2nd	Bitumen Content by Centrifuge Extractor – Theory & Demonstration
13th	1st	Bitumen Content by Centrifuge Extractor – Practical
	2nd	Marshall Stability and Flow – Theory & Demonstration
14th	1st	Marshall Stability and Flow – Practical
	2nd	Road/Highway Field Visit – Drainage Condition
15th	1st	Road/Highway Field Visit – Flexible/Rigid Pavement & Remedial Measures
	2nd	CBR Test of Aggregates/Soil – Practical & Course Review

Discipline-Civil Engineering	Semester-3rd	Name of the teaching faculty:- Er.Laxmipriya Mohapatra
Subject:- Mechanics of Materials (Pr-2)	No. of days /per week class allotted:-4	Semester From Date: 01/07/2026 to 05/11/2026
		No. of weeks-17
Week	Class Day	Theory/Practical Topics
1st	1st	Study and understand the use and components of Universal Testing Machine (UTM).
	2nd	Study and understand the use and components of Universal Testing Machine (UTM).
2nd	1st	Study and understand the use and components of Universal Testing Machine (UTM).
	2nd	Perform Tension test on mild steel as per IS:432(1) and bend rebend test on mild steel
3rd	1st	Perform Tension test on mild steel as per IS:432(1) and bend rebend test on mild steel
	2nd	Perform Tension test on mild steel as per IS:432(1) and bend rebend test on mild steel

4th	1st	Perform tension test on Tor steel as per IS:1608, IS:1139 and bend - rebend test on Tor Steel
	2nd	Perform tension test on Tor steel as per IS:1608, IS:1139 and bend - rebend test on Tor Steel
5th	1st	Perform tension test on Tor steel as per IS:1608, IS:1139 and bend - rebend test on Tor Steel
	2nd	Conduct compression test on Concrete cube using Compression Testing Machine.
6th	1st	Conduct compression test on Concrete cube using Compression Testing Machine.
	2nd	Conduct compression test on Concrete cube using Compression Testing Machine.
7th	1st	• Conduct Izod Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1598.
	2nd	• Conduct Izod Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1598.
8th	1st	• Conduct Izod Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1598.
	2nd	• Conduct Charpy Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1757.
9th	1st	• Conduct Charpy Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1757.
	2nd	• Conduct Charpy Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1757.
10th	1st	• Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237.
	2nd	• Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237.
11th	1st	• Determine Water Absorption on bricks per IS:3495 (part II), IS:1077 or tile IS:1237.
	2nd	• Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077.
12th	1st	• Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077.
	2nd	• Determine Compressive strength of dry and wet bricks as per IS:3495(part I), IS:1077.
13th	1st	• Conduct Flexural test on concrete beam on rectangular section as per Indian Standards.
	2nd	• Conduct Flexural test on concrete beam on rectangular section as per Indian Standards.
14th	1st	• Conduct Flexural test on concrete beam on rectangular section as per Indian Standards.

	2nd	• Abrasion test of floor tiles
15th	1st	• Abrasion test of floor tiles
	2nd	• Flexural test of floor tiles/roof tile
16th	1st	• Flexural test of floor tiles/roof tile
	2nd	• Flexural test of floor tiles/roof tile
17th	1st	Vivavoce
	2nd	Vivavoce

Laxmipriya Mohapatra

Discipline: Civil Engineering	Semester-3rd	Name of the teaching faculty: Subrat Kumar Panigrahi	& Er.
Subject: Geotechnical Engineering Lab (Pr:3)	No. of Days/Per week Class allotted: 2	Semester From Date: 01/07/26 To Date: 05/11/26	No. of Weeks: 15
Week	Day	Practicals to be Performed	
1st	1st	Introduction to Geotechnical Engineering Lab	
	2nd	Water Content – Oven Drying Method	
2nd	1st	Water Content – Experiment & Calculations	
	2nd	Specific Gravity – Pycnometer Method	
3rd	1st	Specific Gravity – Experiment & Calculations	
	2nd	Field Density – Core Cutter Method	
4th	1st	Core Cutter – Experiment & Calculations	
	2nd	Field Density – Sand Replacement Method	
5th	1st	Sand Replacement – Experiment & Calculations	
	2nd	Atterberg Limits – Liquid Limit	
6th	1st	Plastic Limit & Plasticity Index	
	2nd	Atterberg Limits – Complete Test & Discussion	
7th	1st	Shrinkage Limit	
	2nd	Shrinkage Limit – Experiment & Calculations	
8th	1st	Grain Size Analysis – Mechanical Method	
	2nd	Sieve Analysis – Experiment	
9th	1st	Particle Size Distribution Curve	
	2nd	Soil Identification & Classification	
10th	1st	Soil Classification – Practical Exercise	
	2nd	Permeability – Constant Head Test	
11th	1st	Constant Head – Experiment & Calculations	
	2nd	Permeability – Falling Head Test	
12th	1st	Falling Head – Experiment & Calculations	
	2nd	Direct Shear Test	
13th	1st	Direct Shear – Experiment & Calculations	
	2nd	Vane Shear & Triaxial Shear Test	
14th	1st	Compaction – Standard & Modified Proctor Test	
	2nd	Proctor Test – Experiment & Calculations	
15th	1st	CBR Test – Field/Laboratory Procedure	
	2nd	Revision, Viva & Practical Assessment	

Discipline: Civil Engineering	Semester: 3rd	Name of the Teaching faculty: Mr. Subrat Kumar Panigrahi
Subject: BUILDING MATERIALS & CONCRETE	No. of days/ per week class allotted: 2	Semester From Date: 01.07.2026 To Date: 05.11.2026
	Total Periods :60 Hrs	No. of Weeks: 15

Week	Class Day	Theory/ Practical Topics
1st	1	Identify 60, 40, 20 and 10 mm coarse aggregates from a 10 kg sample; record observations.
	2	Identify various soil layers/types in foundation pits at two construction locations; photographs and samples.
2nd	1	Complete third site visit and prepare consolidated report with photographs and samples.
	2	Select first, second and third-class bricks; measure 10 bricks, determine average dimensions/weight and perform dropping, striking and nail-scratching tests.
3rd	1	Viva-voce and record checking
	2	Identify vitrified, ceramic, glazed, mosaic, anti-skid, chequered tiles and paving blocks; record specifications.
4th	1	Apply two or more coats of selected paint on a 1 m × 1 m wall surface using suitable brush/rollers and safe practices.
	2	Prepare cement mortar of proportion 1:3 and/or 1:6 using cement and sand only.
5th	1	Determine fineness of cement by Blaine apparatus or sieving; determine specific gravity and standard consistency.
	2	Viva-voce and record checking
6th	1	Determine initial and final setting times of cement.
	2	Prepare/test cement specimens and determine compressive strength.
7th	1	Determine bulking of sand; bulk density of fine/coarse aggregates; water absorption of fine/coarse aggregates.
	2	Perform sieve analysis and determine fineness modulus of fine aggregate.
8th	1	Determine workability of concrete by slump cone test and interpret the result.
	2	Viva-voce and record checking
9th	1	Determine workability of concrete by compaction factor test and interpret the result.
	2	Study concrete mix design procedure for a particular grade as per IS 10262:2019; identify materials and calculate mix proportions.
10th	1	Prepare concrete mix of a particular grade and prepare specimens/cubes for strength testing.
	2	Viva-voce and record checking
11th	1	Determine/observe 7-day and 28-day compressive strength of concrete and analyze results.
	2	Demonstration and identification of available non-destructive testing equipment and its applications.
12th	1	Viva-voce and record checking
	2	Viva-voce and record checking
13th	1	Viva-voce and record checking
	2	Viva-voce and record checking
14th	1	Viva-voce and record checking
	2	Viva-voce and record checking
15th	1	Viva-voce and record checking
	2	Assessment of Practical

Subrat Kumar Paigrahi

Signature of the Faculty