| Discipline-Civil Engineering | Semester-3rd | Name of the teaching faculty:- Er.Laxmipriya Mohapatra |
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| Subject:- Building Construction (CEPC 201) | No. of days /per week class alloted:-3 | Semester From Date:14/07/2025 to 15/11/2025 |
| | | No. of weeks-15 |
| **Week** | **Class Day** | **Theory/Practical Topics** |
| | | **BUILDING MATERIALS** |
| 1st | 1st | **UNIT-I**<br>**Overview of Building Components**<br>Classification of Buildings as per National Building Code Group<br>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**<br>**Construction of Substructure** Job Layout: Site Clearance, Layout for Load Bearing Structure and |
| | 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**<br>**Construction of Superstructure**<br>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, |
| | 1st | Precautions to be taken in Stone Masonry Construction. |

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| 6th | 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. |
| 7th | 1st | Precautions to be observed in Brick Masonry Construction. Comparison between stone and Brick Masonry |
| | 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 offormwork. |
| | 3rd | **UNIT-IV**<br>**Building Communication and Ventilation**<br>Horizontal Communication: Doors –Components of Doors, |
| 9th | 1st | Full Paneled Doors, Part ly Paneled and Glazed Doors, 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 win- dow, Corner window, clear storey window, Gable and Dormer window, Skylight. Sizes of Windows recommended by BIS. Ventilators. |
| 10th | 1st | 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, |
| | 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. |

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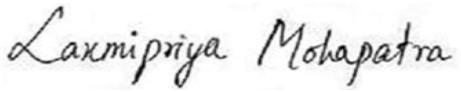
| 11th | 2nd | **UNIT-V**<br>**Building Finishes**<br>Floors and Roofs: Types of Floor Finishes and its suitability- Kota, Marble, Granite, Ceramic Tiles, |
| | 3rd | Vitrified, Chequered Tiles, Paver Blocks, Concrete Floors, wooden Flooring, Skirting and Dado |
| 12th | 1st | Process of Laying and Construction, Finishing and Polishing of Floors, |
| | 2nd | Roofing Ma terials- RCC, Mangalore Tiles, AC Sheets, G.I. sheets, Corrugated G.I. Sheets, Plastic and Fibre Sheets. |
| | 3rd | Types of Roof: Flat roof, Pitched RoofKing 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 & II |
| | 2nd | Revision Unit - III & IV |
| | 3rd | Revision Unit - V |
| | |  <br>Signature of the Faculty |

| Discipline: Civil Engneering | Semestar-3rd | Name Of the teaching Faculty: Manoranjan Nayak |
|---|---|---|
| Subject: Transportation Engineering (CEPC 203) | No. of Days/per week class alloted:3 | Semestar From Date : 14/07/2025 To Date:15/11/2025<br>No. Of Weeks: 15 |
| **Week** | **Day** | **Theory/Practical Topics** |
| 1st | 1st | **UNIT –I Overview of Highway Engineering** Role of transportation in the development of nation, Scope and Importance of roads in India and its' Characteristics. |
| | 2nd | Different modes of transportation – land way, waterway, airway. |
| | 3rd | Merits and demerits ofroadway and railway; |
| 2nd | 1st | General classification of roads. |
| | 2nd | Selection and factors affecting road alignment. |
| | 3rd | **UNIT –II Geometric Design of Highway** Camber: Definition, purpose, types as per IRC – recommendations. |
| 3rd | 1st | Kerbs: Road margin, road formation, right of way. |
| | 2nd | Design speed and various factors affecting design speed as per IRC – recommendations. |
| | 3rd | Gradient: Definition, types as per IRC – Recommendations. |
| 4th | 1st | Sight distance (SSD): Definition, types IRC – recommendations, simple numerical. |
| | 2nd | Sight distance (SSD): Definition, types IRC – recommendations, simple numerical. |
| | 3rd | Curves: Necessity, types: Horizontal, vertical curves. |
| 5th | 1st | Extra widening of roads: numerical examples. |
| | 2nd | Super elevation: Definition, formula for calculating minimum and maximum Super elevation and method of providing super-elevation. |
| | 3rd | Standards cross-sections of national highway in embankment and cutting. |
| 6th | 1st | **UNIT –III Construction of Road Pavements**<br>Types of road materials and their Tests – Test on aggregates-Flakiness and Elongation In- dex tests, |
| | 2nd | Angularity Number test. |
| | 3rd | test on Bitumen- penetration, Ductility, |
| 7th | 1st | Flash and Fire point test and Softening point test. |
| | 2nd | Pavement – Definition, Types, Structural Components of pavement and their functions |
| | 3rd | Construction of WBM road. Merits and demerits of WBM & WMM road. |
| 8th | 1st | Construction of Flexible pavement / Bituminous Road Types of Bitumen and its proper- ties, Emulsion, Cutback, Tar |
| | 2nd | Terms used in BR-prime coat, tack coat, seal coat, Merits and Demerits of BR. |

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| | 3rd | Cement concrete road -methods of construction, Alternate and Continuous Bay Method |
| 9th | 1st | Construction joints, filler and sealers, merits and demerits of concrete roads. Types of joints. |
| | 2nd | **UNIT –IV Basics of Railway Engineering** Classification of Indian Railways, zones of Indian Railways |
| | 3rd | Permanent way: Ideal requirement |
| 10th | 1st | Components; Rail Gauge types, factors affecting selection of a gauge. |
| | 2nd | Rail, Rail Joints - requirements, types. |
| | 3rd | Creep of rail: causes and prevention. |
| 11th | 1st | Sleepers - functions and Requirement |
| | 2nd | Sleeper types - concrete sleepers and their density |
| | 3rd | Ballast - function and types, suitability. |
| 12th | 1st | Rail fixtures and fastenings – fish plate, spikes, bolts, |
| | 2nd | keys, bearing plates, chairs-types of anchors and anti- creepers. |
| | 3rd | **UNIT - V** **Track geometrics, Construction and Maintenance** Alignment- Factors governing rail alignment. |
| 13th | 1st | Track Cross sections – standard cross section of single and double line in cutting and em- bankment. Important terms-permanent land, formation width, side drains. |
| | 2nd | Railway Track Geometrics: Gradient, curves- types and factors affecting, grade compensa- tion, super elevation. |
| | 3rd | limits of Super elevation on curves, cant deficiency, negative cant, con- ing of wheel, tilting of rail. |
| 14th | 1st | Branching of Tracks, Points and crossings, Turn out- types, components, functions and in- spection. Track junctions: crossovers, scissor cross over, diamond crossing, track triangle. |
| | 2nd | Station -Purpose, requirement of railway station, important technical terms, |
| | 3rd | types of rail- way station, factors affecting site selection for railway station. |
| 15TH | 1st | Station yard: Classification- Passenger, goods, locomotive and marshalling yards. Function & drawbacks of marshalling yards. |
| | 2nd | Track Maintenance- Necessity, Classification, Tools required for track maintenance with their functions, |
| | 3rd | Organisation of track maintenance, Duties of permanent way inspector, gangmate and key man. |

Signature of the Faculty

| Discipline-Civil Engineering | Semester-3rd | Name of the teaching faculty:- Er.Laxmipriya Mohapatra |
|---|---|---|
| Subject:- Mechanics of Metarial (CEPC-205) | No. of days /per week class alloted:-3 | Semester From Date:14/07/2025 to 15/11/2025 |
| | | No. of weeks-15 |
| **Week** | **Class Day** | **Theory/Practical Topics** |
| 1st | 1st | **UNIT-I**<br>**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, |
| 2nd | 1st | M.I. of rectangle, square, circle, semicircle, quarter circle and triangle section (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 referenceaxis. |
| | 2nd | Polar Moment of Inertia of solid circular sections. |
| | 3rd | **UNIT-II**<br>**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 |

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| 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 | Principal stresses and strains: Occurrence of normal and tangential stresses - Concept of Principal stress and Principal Planes – major and minor principal stresses |
| | 2nd | and their orientations – 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**<br>**Shear Force and Bending Moment**<br>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 | Concept and definition of shear force and bending moment, Relation between load, shear force and bending moment (without derivation). |
| | 3rd | 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. |
| 9th | 1st | 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. |
| | 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 | **UNIT-IV**<br>**Bending and Shear Stresses in beams**<br>Concept and theory of pure bending, assumptions, flexural equation (without derivation), |
| 10th | 1st | bending stresses and their nature, bending stress distribution diagram. |
| | 2nd | Concept of moment of resistance and simple numerical problems using flexural equation. |
| | 3rd | Shear stresss equation (without derivation), |
| 11th | 1st | relation between maximum and average shear stress for rectangular |
| | 2nd | and circular section, shear stress distribution diagram. |

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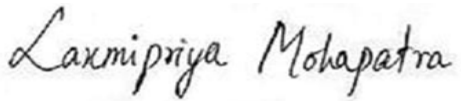
| | 3rd | Shear stress distribution for square, rectangular, circle, hollow, |
| 12th | 1st | square, rectangular, circular, angle sections, channel section, I-section, T section |
| | 2nd | Simple numerical problems based on shear equation. |
| | 3rd | **UNIT-V**<br>**Columns**<br>Concept of compression member, short and long column, Effective length |
| 13th | 1st | Radius of gy- ration, Slenderness ratio, Types of end condition for columns, Buckling of axially loadedcolumns. |
| | 2nd | Euler's theory, assumptions made in Euler's theory and its limitations. |
| | 3rd | Application of Eu- ler's equation to calculate buckling load. |
| 14th | 1st | Rankine' s formula and its application to calculate crippling load. |
| | 2nd | Concept of working load/safe load, |
| | 3rd | design load and factor of safety. |
| 15th | 1st | Revision UNIT-I and II |
| | 2nd | Revision UNIT-II and III |
| | 3rd | Revision UNIT-IV |
| | |  <br>Signature of the Faculty |

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: GF-1 |
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| Subject-Geotechnical Engineering (CEPC-209) | No. of Days/per week class alloted:3 | Semestar From Date : 14/07/2025 To Date: 15/11/2025 |
| | | No. Of Weeks: 15 |
| **Week** | **Class Day** | **Theory/Practical Topics** |
| 1st | 1st | **Chapter - 1 Overview of Geology and Geotechnical Engineering** Introduction of Geology, Branches of Geology, Importance of Geology for civil engineering structure and composition of earth, |
| | 2nd | Definition of a rock: Classification based on their genesis (mode of origin), formation. Classification and engineering uses of igneous, sedimentary and metamorphic rocks. |
| | 3rd | Importance of soil as construction material in Civil engineering structures and as foundation bed for structures. (Concepts only) |
| 2nd | 1st | Field application of geotechnical engineering for foundation design, pavement design, design of earth retaining structures, design of earthen dam. |
| | 2nd | **Chapter -2 Physical and Index Properties of Soil** Soil as a three phase system, water content, determination of water content by oven drying method as per BIS code, |
| | 3rd | void ratio, porosity and degree of saturation, density index.,air Content,Percentage of air voids,Relation between the parameters. |
| 3rd | 1st | Unit weight of soil mass – bulk unit weight, dry unit weight, unit weight of solids, saturated unit weight, submerged unit weight. |
| | 2nd | Determination of bulk unit weight and dry unit weight by core cutter and sand replacement method, Determination of specific gravity by pycnometer. |
| | 3rd | Consistency of soil, Atterberg limits of consistency: Liquid limit |
| 4th | 1st | Plastic limit and shrinkage limit. Plasticity index. |
| | 2nd | Particle size distribution test and plotting of curve, Determination of effective diameter of soil, well graded and uniformly graded soils, BIS classification of soil. |

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| | 3rd | **Chapter - 3 Permeability and Seepage**<br>Definition of permeability, Darcy's law of permeability, coefficient of permeability |
| 5th | 1st | Factors affecting permeability, determination of coefficient of permeability by constant head and falling head tests, simple problems to determine coefficient of permeability. |
| | 2nd | Factors affecting permeability, determination of coefficient of permeability by constant head and falling head tests, |
| | 3rd | Simple problems to determine coefficient of permeability. |
| 6th | 1st | Seepage through earthen structures, seepage velocity |
| | 2nd | Seepage pressure, phreatic line, |
| | 3rd | Flow lines, application of flow net, |
| 7th | 1st | Effective stress,quick Sand |
| | 2nd | **Chapter - 4 Compaction,Consolidation and stabilization of soil**<br>Concept of compaction, Standard and Modified proctor test as per IS code, Plotting of Compaction curve for determining: Optimum moisture content (OMC), |
| | 3rd | Maximum dry density (MDD), Zero air voids line. |
| 8th | 1st | Factors affecting compaction, field methods of compaction – rolling, ramming and vibration. |
| | 2nd | Consoildation,Difference between compaction and consolidation. |
| | 3rd | Terzaghi's Model analogy of compression/springs showing the process of consolidation,Field implications |
| 9th | 1st | Concept of soil stabilization, necessity of soil stabilization, different methods of soil stabiliza tion. California bearing ratio (CBR) test - Meaning and Utilization in Pavement Construction |
| | 2nd | Necessity of site investigation and soil exploration: Types of exploration, criteria for decidingthe location and number of test pits and bores. Field identification of soil – dry |

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| | 3rd | Necessity of site investigation and soil exploration: Types of exploration, criteria for decidingthe location and number of test pits and bores. Field identification of soil – dry |
| 10th | 1st | strength test, dilatancy test and toughness test. |
| | 2nd | **Chapter - 5 Shear Strength of Soil**<br>Shear failure of soil-General,local and punching shear, |
| | 3rd | Concept of shear strength of soil. |
| 11th | 1st | Components of shearing resistance of soil – cohesion, |
| | 2nd | Internal friction. Mohr-Coulomb failure theory, |
| | 3rd | Strength envelope, strength equation for purely cohesive and cohesion less soils. |
| 12th | 1st | Direct shear, triaxial and vane shear test laboratory methods. |
| | 2nd | **Chapter - 6 Bearing Capacity of Soil and Foundation**<br>Bearing capacity and theory of earth pressure. |
| | 3rd | Concept of bearing capacity, ultimate bearing capacity, safe bearing capacity and allowable bearing pressure. |
| 13th | 1st | Introduction to Terzaghi's analysis and assumptions, |
| | 2nd | Effect of water table on bearing capacity. |
| | 3rd | Field methods for determination of bearing capacity – Plate load and Standard Penetration Test. Test procedures as per IS:1888 & IS:2131. |
| 14th | 1st | Field methods for determination of bearing capacity – Plate load and Standard Penetration Test. Test procedures as per IS:1888 & IS:2131. |
| | 2nd | Definition of earth pressure, Active and Passive earth pressure for no surcharge condition, |
| | 3rd | Coefficient of earth pressure, |
| 15th | 1st | Rankine's theory and assumptions made for non- cohesive Soils. |
| | 2nd | Type of foundations-shallow,deep foundation |
| | 3rd | Type of foundations-shallow,deep foundation |

Signature of The Faculty

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: Pramila Kumari Gouda |
|---|---|---|
| Subject-Building Material & Concrete Technology (CEPC-207) | No. of Days/per week class alloted:3 | Semestar From Date : 14/07/2025 To Date: 15/11/2025 |
| | | No. Of Weeks: 15 |
| **Week** | **Class Day** | **Theory/Practical Topics** |
| 1st | 1st | **Chapter - 1 Overview of Construction Materials** Scope of construction materials in Building Construction, Transportation Engineering, Environmental Engineering, and Irrigation Engineering (applications only). |
| | 2nd | Selection of materials for different civil engineering structures on the basis of strength, durability, Eco friendly and economy. Broad classification of materials –, Natural, Artificial, special, finishing and recycled. |
| | 3rd | **Chapter - 2 Natural Construction Materials** Requirements of good building stone; general characteristics of stone; quarrying anddressing methods and tools for stone. |
| 2nd | 1st | Structure of timber, general properties and uses of good timber, different methods of seasoning for preservation of timber, defects in timber, use of bamboo in construction. |
| | 2nd | Asphalt, bitumen and tar used in construction, properties and uses. Properties of lime, its types and uses. |
| | 3rd | Types of soil and its suitability in construction. Properties of sand and uses. Classification of coarse aggregate according to size |
| 3rd | 1st | **Chapter - 3 Artificial Construction Materials** Constituents of brick earth, Conventional / Traditional bricks, Modular and Standard bricks, Special bricks –fly ash bricks, Characteristics of good brick, Field tests on Bricks, Classification of burnt clay bricks and their suitability, |
| | 2nd | Manufacturing process of burnt clay brick, fly ash bricks, Aerated concrete blocks. |
| | 3rd | Flooring tiles – Types, uses. Pre-cast concrete blocks- hollow, solid, pavement blocks, and their uses. |
| 4th | 1st | Types of glass: soda lime glass, lead glass and borosilicate glass and their uses. |
| | 2nd | Ferrous and non-ferrous metals and their uses. |
| | 3rd | **Chapter - 4 Cement, Aggregates , Water and Admixture** Composition of Cement. Manufacturing process of Cement – dry and wet (only flow chart), types of cement and its uses. Field tests on cement. |
| 5th | 1st | Physical properties of OPC and PPC: fineness, standard consistency, setting time, soundness, compressive strength. Different grades of OPC and relevant BIS codes. |

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| | 2nd | Testing of cement: Laboratory tests-fineness, standard consistency, |
| | 3rd | setting time, soundness, compressive strength. |
| 6th | 1st | Storage of cement and effect of storage on properties of cement. |
| | 2nd | BIS Specifications and field applications of different types of cements: Rapid hardening, Lowheat, Portland pozzolana, Sulphate resisting, Blast furnace slag, High Alumina and White cement. |
| | 3rd | Aggregates: Requirements of good aggregate, Classification according to size and shape. |
| 7th | 1st | Fine aggregates: Properties, size, specific gravity, bulk density, water absorption and bulking, fineness modulus and grading zone of sand, silt content and their specification as per IS 383.Concept of crushed Sand. |
| | 2nd | Coarse aggregates: Properties, size, shape, surface texture, water absorption, soundness, specific gravity and bulk density, fineness modulus of coarse aggregate, grading of coarse aggregates, crushing value, |
| | 3rd | Impact value and abrasion value of coarse aggregates with specifications. |
| 8th | 1st | Water: Quality of water, impurities in mixing water and permissible limits for solids as per IS: 456. |
| | 2nd | Admixtures in concrete: Purpose, properties and application for different types of admixturesuch as accelerating admixtures, retarding admixtures, water reducing admixtures, air entraining admixtures and super plasticizers. (concepts only) |
| | 3rd | Admixtures in concrete: Purpose, properties and application for different types of admixturesuch as accelerating admixtures, retarding admixtures, water reducing admixtures, air entraining admixtures and super plasticizers. (concepts only) |
| 9th | 1st | **Chapter - 5 Concrete**<br>Concrete: Different grades of concrete, provisions of IS 456 (Latest). Duff Abraham water cement (w/c) ratio law, significance of w/c ratio, selection of w/c ratio for different grades, |
| | 2nd | maximum w/c ratio for different grades of concrete for different expo-sure conditions as per IS 456. |
| | 3rd | Properties of fresh concrete: Workability: Factors affecting workability of concrete. |
| 10th | 1st | Determination of workability of concrete by slump cone, compaction factor, Vee-Bee Consistometer. |
| | 2nd | Value of workability requirement for different types of concrete works. Segregation, bleeding and preventive measures. |

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| | 3rd | Properties of Hardened concrete: Strength, Durability, Impermeability. |
| 11th | 1st | **Chapter - 6 Concrete Mix Design and Testing of Concrete**<br>Concrete mix design: Objectives, methods of mix design, |
| | 2nd | study of mix design as per IS 10262 (only procedural steps). |
| | 3rd | Non- destructive testing of concrete: Rebound hammer test, working principle of rebound hammer and factor affecting the rebound index |
| 12th | 1st | Ultrasonic pulse velocity test as per IS13311 (part 1 and 2), |
| | 2nd | Importance of NDT tests. |
| | 3rd | **Chapter - 7 Quality Control of Concrete**<br>Concreting Operations: Batching, Mixing, Transportation, Placing |
| 13th | 1st | Compaction, Curing and Finishing of concrete. |
| | 2nd | Forms for concreting: Different types of form works for beams, slabs, columns, materials used for form work, requirement of good form work. Stripping time for removal of form works perIS 456. |
| | 3rd | Waterproofing: Importance and need of waterproofing, methods of waterproofing and mate rials used for waterproofing. |
| 14th | 1st | Joints in concrete construction: Types of joints, methods for joining old and new concrete, materials used for filling joints. |
| | 2nd | **Chapter - 8 Special Concrete and Extreme Weather concreting**<br>Special Concrete: Properties, advantages and limitation of following types of Special concrete: Ready mix Concrete |
| | 3rd | Fiber Reinforced Concrete, High performance Concrete, |
| 15th | 1st | Self-com pacting concrete and light weight concrete. |
| | 2nd | Cold weather concreting: effect of cold weather on concrete, precautions to be taken while concreting in cold weather condition. (only concepts) |
| | 3rd | Hot weather concreting: effect of hot weather on concrete, precautions to be taken while concreting in<br>hot weather condition. (only concepts) |

Signature of The Faculty

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: M.R Nayak |
|---|---|---|
| Subject- Transportation Engineering Lab | No. of Days/per week class alloted:4 | Semestar From Date : 14/07/2025 To Date:15/11/2025 |
| Week | Class Day (2 periods per day) | Theory/Practical Topics |
| 1st | 1st | Flakiness and Elongation Index of aggregates. |
| | 2nd | Flakiness and Elongation Index of aggregates. |
| 2nd | 1st | Determination of Crushing strength, of Aggregates |
| | 2nd | Determination of Crushing strength, of Aggregates |
| 3rd | 1st | Determination of Impact of Aggregates |
| | 2nd | Determination of Impact of Aggregates |
| 4th | 1st | Determination of Abrasion value of Aggregates |
| | 2nd | Determination of Abrasion value of Aggregates |
| 5th | 1st | Angularity Number of aggregates. |
| | 2nd | Angularity Number of aggregates. |
| 6th | 1st | Softening point test of bitumen. |
| | 2nd | Softening point test of bitumen. |
| 7th | 1st | Penetration test of bitumen. |
| | 2nd | Penetration test of bitumen. |
| 8th | 1st | Flash and Fire Point test of bitumen. |
| | 2nd | Flash and Fire Point test of bitumen. |
| 9th | 1st | Ductility test of Bitumen. |
| | 2nd | Ductility test of Bitumen. |
| 10th | 1st | Determination of Viscosity of bitumen |
| | 2nd | Determination of Viscosity of bitumen |
| 11th | 1st | Determination of bitumen content using centrifuging extractor. |
| | 2nd | Determination of bitumen content using centrifuging extractor. |
| 12th | 1st | Determination of stability and flow of bitumen using Marshal stability apparatus. |
| | 2nd | Determination of stability and flow of bitumen using Marshal stability apparatus. |
| 13th | 1st | Visit the constructed road for visual inspection to identify defects and suggest remedial measures. |
| | 2nd | Visit the constructed road for visual inspection to identify defects and suggest remedial measures. |
| 14th | 1st | Visit the road of any one type (flexible or rigid) to know the drainage condition. |
| | 2nd | Visit the road of any one type (flexible or rigid) to know the drainage condition. |
| 15th | 1st | CBR Test of aggregates |
| | 2nd | CBR Test of aggregates |

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: L.M & GF-1 |
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| Subject- Mechanics of Material Lab | No. of Days/per week class alloted:4 | Semestar From Date : 14/07/2025 To Date:15/11/2025 |
| **Week** | **Class Day (2 periods per 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 | 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 |
| 3rd | 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 |
| 4th | 1st | Conduct compression test on Concrete cube using Compression Testing Machine. |
| | 2nd | Conduct compression test on Concrete cube using Compression Testing Machine. |
| 5th | 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. |
| 6th | 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. |
| 7th | 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. |
| 8th | 1st | Conduct Charpy Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1757. |

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| | 2nd | Conduct Charpy Impact test on three metals. e.g. mild steel/ brass/aluminum/ copper /castiron etc. as per IS:1757. |
| 9th | 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. |
| 10th | 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. |
| 11th | 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. |
| 12th | 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. |
| 13th | 1st | Abrasion test of floor tiles |
| | 2nd | Abrasion test of floor tiles |
| 14th | 1st | Flexural test of floor tiles/roof tile |
| | 2nd | Flexural test of floor tiles/roof tile |
| 15th | 1st | Flexural test of floor tiles/roof tile |
| | 2nd | Flexural test of floor tiles/roof tile |

Signature of the Faculty

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: GF-1 |
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| Subject- Geotechnical Engineering Lab | No. of Days/per week class alloted:4 | Semestar From Date : 14/07/2025 To Date:15/11/2025 |
| Week | Class Day (2 periods per day) | Theory/Practical Topics |
| 1st | 1st | Determine water content of given soil sample by oven drying method as per IS: 2720 (Part-II). |
| | 2nd | Determine water content of given soil sample by oven drying method as per IS: 2720 (Part-II). |
| 2nd | 1st | Determine specific gravity of soil by pycnometer method as per IS 2720 (Part- III). |
| | 2nd | Determine specific gravity of soil by pycnometer method as per IS 2720 (Part- III). |
| 3rd | 1st | Determine dry unit weight of soil in field by core cutter method as per IS 2720 (Part- XXIX). |
| | 2nd | Determine dry unit weight of soil in field by core cutter method as per IS 2720 (Part- XXIX). |
| 4th | 1st | Determine dry unit weight of soil in field by sand replacement method as per IS 2720 (Part-XXVIII). |
| | 2nd | Determine dry unit weight of soil in field by sand replacement method as per IS 2720 (Part-XXVIII). |
| 5th | 1st | Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part- V). |
| | 2nd | Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part- V). |
| 6th | 1st | Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part- V). |
| | 2nd | Determine Plastic and Liquid Limit along with Plasticity Index of given soil sample as per IS 2720 (Part- V). |
| 7th | 1st | Determine Shrinkage limit of given soil sample as per IS 2720 (Part- V). |
| | 2nd | Determine Shrinkage limit of given soil sample as per IS 2720 (Part- V). |
| 8th | 1st | Determine grain size distribution of given soil sample by mechanical sieve analysis as per IS2720 (Part- IV). |
| | 2nd | Determine grain size distribution of given soil sample by mechanical sieve analysis as per IS2720 (Part- IV). |
| 9th | 1st | Use different types of soil to identify and classify soil by conducting field tests- through Visual inspection, Dry strength test, Dilatancy test and Toughness test. |

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| | 2nd | Use different types of soil to identify and classify soil by conducting field tests- through Visual inspection, Dry strength test, Dilatancy test and Toughness test. |
| 10th | 1st | Determine coefficient of permeability by constant head test as per IS 2720 (Part- XVII). |
| | 2nd | Determine coefficient of permeability by constant head test as per IS 2720 (Part- XVII). |
| 11th | 1st | Determine coefficient of permeability by falling head test as per IS 2720 (Part-XVII). |
| | 2nd | Determine coefficient of permeability by falling head test as per IS 2720 (Part-XVII). |
| 12th | 1st | Determine shear strength of soil by direct shear test as per IS 2720 (Part-XIII). |
| | 2nd | Determine shear strength of soil by direct shear test as per IS 2720 (Part-XIII). |
| 13th | 1st | Determine shear strength of soil by vane shear and triaxial shear test as per IS 2720 (Part-XXX). |
| | 2nd | Determine shear strength of soil by vane shear and triaxial shear test as per IS 2720 (Part-XXX). |
| 14th | 1st | Determine MDD and OMC by standard proctor test and modified proctor test of given soil sample as per IS 2720 (Part-VII). |
| | 2nd | Determine MDD and OMC by standard proctor test and modified proctor test of given soil sample as per IS 2720 (Part-VII). |
| 15th | 1st | Determination of CBR value on the field as per IS2720 (Part - XVI). |
| | 2nd | Determination of CBR value on the field as per IS2720 (Part - XVI). |
| | | Signature of the Faculty |

| Discipline-Civil Engneering | Semestar- 3rd | Name Of the teaching Faculty: Er. Pramila Kumari Gouda |
|---|---|---|
| Subject- Geotechnical Engineering Lab | No. of Days/per week class alloted:4 | Semestar From Date : 14/07/2025 To Date:15/11/2025 |
| Week | Class Day (2 periods per day) | Theory/Practical Topics |
| 1st | 1st | Identify various sizes of available coarse aggregates from sample of 10 kg in laboratory and prepare report (60,40, 20,10 mm) |
| | 2nd | Identify various sizes of available coarse aggregates from sample of 10 kg in laboratory and prepare report (60,40, 20,10 mm) |
| 2nd | 1st | Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting photographs and samples. |
| | 2nd | Identify various layers and types of soil in foundation pit by visiting at least 3 construction sites in different locations of city and prepare report consisting photographs and samples. |
| 3rd | 1st | Select first class, second class and third-class bricks from the stake of bricks and prepare report based on its properties. |
| | 2nd | Select first class, second class and third-class bricks from the stake of bricks and prepare report based on its properties. |
| 4th | 1st | Measure dimensions of 10 bricks and find average dimension and weight. Perform field tests - dropping, striking and scratching by nail and correlate the results obtained. |
| | 2nd | Identify different types of flooring tiles such as vitrified tiles, ceramic tiles, glazed tiles, mosaic tiles, anti- skid tiles, chequered tiles, paving blocks and prepare report about the specifications. |
| 5th | 1st | Apply two or more coats of selected paint on the prepared base of a given wall surface for the area of 1m x 1m using suitable brush/rollers adopting safe practices. |
| | 2nd | Prepare the cement mortar of proportion 1:3 or 1:6 using cement and sand only. |
| 6th | 1st | Determine fineness of cement by Blaine’s air permeability apparatus Or by sieving. |
| | 2nd | Determine fineness of cement by Blaine’s air permeability apparatus Or by sieving. |

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| 7th | 1st | Determine specific gravity, standard consistency, initial and final setting times of cement |
| | 2nd | Determine specific gravity, standard consistency, initial and final setting times of cement |
| 8th | 1st | Determine compressive strength of cement. |
| | 2nd | Determine bulking of sand. and<br>Determine bulk density of fine and coarse aggregates. |
| 9th | 1st | Determine bulking of sand. and<br>Determine bulk density of fine and coarse aggregates. |
| | 2nd | Determine water absorption of fine and coarse aggregates. |
| 10th | 1st | Determine water absorption of fine and coarse aggregates. |
| | 2nd | Determine Fineness modulus of fine aggregate by sieve analysis. |
| 11th | 1st | Determine Fineness modulus of fine aggregate by sieve analysis. |
| | 2nd | Determine workability of concrete by slump cone test. |
| 12th | 1st | Determine workability of concrete by slump cone test. |
| | 2nd | Determine workability of concrete by compaction factor test. |
| 13th | 1st | Determine workability of concrete by compaction factor test. |
| | 2nd | To prepare concrete mix of a particular grade as per IS 10262:2019 and determine compressive strength of |
| 14th | 1st | To prepare concrete mix of a particular grade as per IS 10262:2019 and determine compressive strength of Concrete for 7 and 28 days. |
| | 2nd | To prepare concrete mix of a particular grade as per IS 10262:2019 and determine compressive strength of Concrete for 7 and 28 days. |
| 15th | 1st | Demonstration of NDT equipment |
| | 2nd | Demonstration of NDT equipment |

Signature of the Faculty