Discipline-Civil Engneering	Semestar- 3rd	Name Of the teaching Faculty: Er.Diptirani Mishra
Subject-Structural Mechanics	No. of Days/per week class alloted:5	Semestar From Date : 1/10/2021 To Date:8/1/2022
Week	Class Day	Theory/Practical Topics
1st	1st	Basic Principle of Mechanics: Force, Moment, support conditions, Conditions of equilibrium
	2nd	C.G & MI
	3rd	Free body diagram
	4th	Review of CG and MI of different sections
	5th	Introduction to stresses and strains
2nd	1st	Mechanical properties of materials – Rigidity, Elasticity, Plasticity, Compressibility, Hardness
	2nd	Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue, Tenacity, Durability
	3rd	Types of stresses -Tensile, Compressive and Shear stresses
	4th	Types of strains - Tensile, Compressive and Shear strains
	5th	Complimentary shear stress
3rd	1st	Diagonal tensile / compressive Stresses due to shear
	2nd	Elongation and Contraction, Longitudinal and Lateral strains
	3rd	Deformation of prismatic bars due to uniaxial load,
	4th	Deformation of prismatic bars due to its self weight
	5th	Deformation of prismatic bars due to uniaxial load,
4th	1st	Principal stresses and strains: Occurrence of normal and tangential stresses
	2nd	Concept of Principal stress and Principal Planes, major and minor principal stresses and their orientations
	3rd	Concept of Principal stress and Principal Planes, major and minor principal stresses and their orientations
	4th	Mohr's Circle and its application to solve problems of complex stresses
	5th	Mohr's Circle and its application to solve problems of complex stresses
5th	1st	Bending stress in beams – Theory of simple bending – Assumptions
	2nd	Moment of resistance – Equation for Flexure– Flexural stress distribution – Curvature of beam
	3rd	Position of N.A. and Centroidal Axis – Flexural rigidity – Significance of Section modulus

	4th	Shear stress distribution in beams of rectangular, circular and standard sections symmetrical about vertical axis
	5th	Shear stress distribution in beams of rectangular, circular and standard sections symmetrical about vertical axis
6th	1st	Concept of torsion, basic assumptions of pure torsion
	2nd	Torsion of solid and hollow circular sections, polar moment of inertia
	3rd	Torsional shearing stresses, angle of twist, torsional rigidity, equation of torsion
	4th	Torsional shearing stresses, angle of twist, torsional rigidity, equation of torsion
	5th	Problems on Torsion
7th	1st	Combination of stresses, Combined direct and bending stresses, Maximum and Minimum stresses in Sections
	2nd	Conditions for no tension, Limit of eccentricity
	3rd	Middle third/fourth rule, Core or Kern for square, rectangular and circular sections
	4th	Chimneys, dams and retaining walls
	5th	Chimneys, dams and retaining walls
8th	1st	Chimneys, dams and retaining walls
	2nd	Columns and Struts, Definition, Short and Long columns, End conditions, Equivalent length / Effective length
	3rd	Slenderness ratio, Axially loaded short and long column, Euler's theory of long columns
	4th	Slenderness ratio, Axially loaded short and long column, Euler's theory of long columns
	5th	Critical load for Columns with different end conditions
9th	1st	Types of Loads: Concentrated (or) Point load, Uniformly Distributed load (UDL), Types of Supports: Simple support, Roller support, Hinged support, Fixed support
	2nd	Types of Reactions: Vertical reaction, Horizontal reaction, Moment reaction
	3rd	Types of Beams based on support conditions: Calculation of support reactions using equations of static equilibrium
	4th	Shear Force and Bending Moment: Signs Convention for S.F. and B.M, S.F and B.M of general cases of determinate beams with concentrated loads and udl only, S.F and B.M diagrams for Cantilevers
	5th	Simply supported beams and Over hanging beams
	1st	Simply supported beams and Over hanging beams
	2nd	Position of maximum BM, Point of contra flexure

10th	3rd	Relation between intensity of load, S.F and B.M.
	4th	Problems on SF & BM
	5th	Problems on SF & BM
11th	1st	Shape and nature of elastic curve (deflection curve)
	2nd	Relationship between slope, deflection and curvature
	3rd	Importance of slope and deflection
	4th	Slope and deflection of cantilever Using Double integration method
	5th	Slope and deflection of Simply SupportedUsing Double integration method
12th	1st	Slope and deflection of cantilever Using Maculay's method
	2nd	Slope and deflection of Simply Supported beam Using Maculay's method
	3rd	Indeterminacy in beams, Principle of consistent deformation/compatibility
	4th	Indeterminacy in beams, Principle of consistent deformation/compatibility
	5th	Analysis of propped cantilever
13th	1st	fixed and two span continuous beams by principle of superposition, SF and BM diagrams
	2nd	fixed and two span continuous beams by principle of superposition, SF and BM diagrams
	3rd	Fixed and two span continuous beams by principle of superposition, SF and BM diagrams
	4th	Fixed and two span continuous beams by principle of superposition, SF and BM diagrams
	5th	Types of trusses
14th	1st	Statically determinate and indeterminate trusses
	2nd	Degree of indeterminacy, stable and unstable trusses
	3rd	Degree of indeterminacy, stable and unstable trusses
	4th	Advantages of trusses
	5th	Problems of degree of determinancy
15th	1st	Problems of degree of determinancy
	2nd	Analytical method (Method of joints)
	3rd	Analytical method (Method of joints)
	4th	Analytical method (Method of section)
	5th	Analytical method (Method of section)

Dww
4/10/21

Discipline-Civil Engneering	Semestar- 3rd	Name Of the teaching Faculty: Er.Jagganth Das
Subject-Geotechnical Engineering	No. of Days/per week class alloted: 4	Semestar From Date : 1/10/2021 To Date: 8/01/2022 No. Of Weeks: 13
Week	Class Day	Theory/Practical Topics
1st	1st	Introduction Soil and Soil Engineering Scope of Soil Mechanics
	2nd	Origin and formation of soil
	3rd	Soil as a three Phase system
	4th	Soil as a three Phase system
2nd	1st	Water Content, Density, Specific gravity, Voids ratio, Porosity, Percentage of air voids, air content
	2nd	degree of saturation, density Index, Bulk/Saturated/dry/submerged density
	3rd	Interrelationship of various soil parameters
	4th	Interrelationship of various soil parameters
3rd	1st	Water Content Specific Gravity
	2nd	Particle size distribution: Sieve analysis, wet mechanical analysis
	3rd	particle size distribution curve and its uses Consistency of Soils
	4th	Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
4th	1st	General-ASTHO Classification,HRB classification,Group Iindex I.S. Classification
	2nd	I.S. Classification(classification Of Fine grained Soil)
	3rd	I.S. Classification(classification Of Coarse grained Soil)
	4th	I.S. Classification(Numericals on IS classification)
5th	1st	I.S. Classification(Misclleneous)
	2nd	Plasticity Chart
	3rd	Concept of Permeability, Darcy's Law
	4th	Co-efficient of Permeability
6th	1st	Constant Head Method test of permeability
	2nd	Falling Head Method Test of Permeability
	3rd	Seepage pressure, effective stress phenomenon of quick sand
	4th	Compaction: Compaction
7th	1st	Light and heavy compaction Test, Optimum Moisture Content of Soil, Maximum dry density
	2nd	Zero air void line, Factors affecting Compaction
	3rd	Field compaction methods and their suitability

	4th	Consolidation, distinction between compaction and consolidation
8th	1st	Terzaghi's model analogy of compression/ springs showing the process of consolidation – field implications
	2nd	Concept of shear strength, Mohr- Coulomb failure theory, Cohesion, Angle of internal friction
	3rd	strength envelope for different type of soil
	4th	Measurement of shear strength;- Direct shear test, triaxial shear test
9th	1st	unconfined compression test and vane-shear test
	2nd	Active earth pressure, Passive earth pressure
	3rd	Earth pressure at rest
	4th	Use of Rankine's formula for the following cases (cohesion less soil only) Backfill with no surcharge
10th	1st	backfill with uniform surcharge
	2nd	Introduction to foundation engineering
	3rd	Functions of foundations
	4th	shallow and deep foundation
11th	1st	different type of shallow foundation
	2nd	different type of shallow foundation different type.
	3rd	Types of failure (General shear, Local shear & punching shear)
	4th	Bearing capacity of soil
12th	1st	bearing capacity of soils using Terzaghi's formulae
	2nd	IS Code formulae for strip
	3rd	Circular and square footings
	4th	Effect water table on bearing capacity of soil
13th	1st	Plate load test and standard penetration test.

JDas
1/10/21

Discipline-Civil Engneering	Semestar- 3 rd	Name Of the teaching Faculty: Er. M.R NAYAK
Subject-Buildng Materials & Construction Technology	No. of Days/per week clas	Semestar From Date : 1/10/2021 To Date: 8/1/2022 No. Of Weeks: 13
Week	Class Day	Theory/Practical Topics
1st	1st	Classification of rock, uses of stone, natural bed of stone,
	2nd	Qualities of good building stone
	3rd	Dressing of stone, Characteristics of different types of stone and their uses
	4th	Brick earth – its composition
2nd	1st	Brick making – Preparation of brick earth, Moulding, Drying, Burning in kilns
	2nd	Classification of bricks, size of traditional and modular bricks, qualities of good building bricks
	3rd	Cement: Types of cements, Properties of cements, Manufacturing of cement
	4th	Importance and application of blended cement with fly ash and blast furnace slag, Mortar: Definition and types of mortar, Sources and classification of sand, Bulking of sand
3rd	1st	Use of gravel, morrum and fly ash as different building material
	2nd	Concrete: Definition and composition- Water cement ratio- Workability, mechanical properties and grading of aggregates, mixing, placing, compacting and curing of concrete
	3rd	Timber: Classification and Structure of timber.
	4th	Seasoning of timber – Importance
4th	1st	Characteristics of good timber
	2nd	Clay products and refractory materials – Definition and Classification
	3rd	Properties and uses of refractory materials- tiles, terracotta, porcelain glazing
	4th	Iron and Steel: Uses of cast iron, wrought iron, mild steel and tor steel
5th	1st	Composition of Paints, enamels, varnishes
	2nd	Types and uses of surface protective materials like Paints, Enamels, Varnishes, Distempers, Emulsion, French polish and Wax Polish.
	3rd	Buildings and classification of buildings based on occupancy
	4th	Different components of a building.
		Different components of a building.
6th	1st	Concept of foundation and its purpose
	2nd	Types of foundations – shallow and deep

	3rd	Shallow foundation-constructional details of : Spread foundations for walls, thumb rules for depth and width of foundation and thickness of concrete block
	4th	Deep foundations: Pile foundations-their suitability, classification of piles based on materials, function and method of installation.
7th	1st	Distribution system layout – types, comparison, suitability
	2nd	Purpose of walls, Classification of walls – load bearing, non-load bearing walls, retaining walls
	3rd	Classification of walls as per materials of construction: brick, stone, reinforced brick, reinforced concrete, precast, hollow and solid concrete block and composite masonry walls
	4th	Partition Walls : Suitability and uses of brick and wooden partition walls
8th	1st	Brick masonry : Definition of different terms
	2nd	Bond – meaning and necessity: English bond for 1and 1-1/2 Brick thick walls. T, X and right angled corner junctions. Thickness for 1and 1-1/2 brick square pillars in English bond
	3rd	Stone Masonry
	4th	Glossary of terms –String course, corbel, cornice, block-in-course, grouting, mouldings, templates, throating, through stones, parapet, coping, pilaster and buttress
9th	1st	Glossary of terms used in doors and windows
	2nd	Doors – different types of doors
	3rd	Windows – different types of windows
	4th	Purpose of use of arches and lintels
10th	1st	Floors: Glossary of terms ,Types of floor finishes – cast-in-situ, concrete flooring(monolithic, bonded), terrazzo tile flooring, cast in situ Terrazzo flooring, timber flooring
	2nd	Roofs: Glossary of terms, Types of roofs, concept and function of flat, pitched, hipped and Sloped roofs
	3rd	Stairs: Glossary of terms; Stair case, winder, landing, stringer, newel, baluster, rise, tread, width of stair case, hand rail, nosing, head room, mumty room
	4th	Various types of stair case – straight flight, dog legged, open well, quarter turn, half turn (newel and geometrical stairs), bifurcated stair, spiral stair, cantilever stair, tread riser stair.
11th	1st	Plastering – purpose – Types of plastering, Types of plaster finishes – Grit finish, rough cast, smooth cast, sand faced, pebble dash, acoustic plastering and plain plaster

	2nd	Proportion of mortars used for different plasters, preparation of mortars, techniques of plastering and curing
	3rd	Pointing – purpose –Types of pointing
	4th	Painting – objectives – method of painting new and old wall surfaces, wood surface and metal surfaces – powder coating and spray painting on metal surfaces
12th	1st	White washing – Colour washing – Distempering – internal and external walls
	2nd	Damp and Termite proofing – Materials and Methods
	3rd	Concept of green building, Introduction to Energy Management and Energy Audit of Buildings
	4th	Aims of energy management of buildings,Types of energy audit, Response energy audit questionnaire
13th	1st	Energy surveying and audit report

11/10/21

Discipline-Civil Engneering	Semestar- 5th 3rd	Name Of the teaching Faculty: Er. Pramila Gouda
Subject-Estimate & Cost Evaluation-I	No. of Days/per week class alloted:4	Semestar From Date : 1/10/2021 To Date:8/01/2022
		No. Of Weeks:13
Week	Class Day	Theory/Practical Topics
1st	1st	Types of estimates – Plinth area, floor area / carpet area
	2nd	Units and modes of measurements as per IS 1200
	3rd	Accuracy of measurement for different item of work
	4th	deductions in masonry, plastering, white washing, painting etc
2nd	1st	deductions in masonry, plastering, white washing, painting etc
	2nd	multiplying factor (paint coefficients) for painting of doors and windows (paneled/glazed), grills etc.
	3rd	multiplying factor (paint coefficients) for painting of doors and windows (paneled/glazed), grills etc.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
3rd	1st	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	2nd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	3rd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
4th	1st	shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	2nd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	3rd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
5th	1st	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	2nd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.

	3rd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
		Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
6th	1st	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	2nd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	3rd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
7th	1st	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	2nd	R.C.C. with centering and shuttering, reinforcing steel, Painting of doors and windows etc. as per OPWD
	3rd	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
	4th	Detailed estimate of single storied flat roof building with shallow foundation and RCC roof slab with leak proof treatment over it including staircase and mumty room.
8th	1st	Analysis of rates for cement concrete, brick masonry in
	2nd	laterite stone masonry in Cement Mortar, cement plaster
	3rd	white washing, Artificial Stone flooring
	4th	Tile flooring, concrete flooring
9th	1st	R.C.C. with centering and shuttering,
	2nd	reinforcing stee
	3rd	Painting of doors and windows etc. as per OPWD.
	4th	Calculation of lead, lift, conveyance charges, royalty of materials, etc. as per Orissa P.W.D. system
10th	1st	Calculation of lead, lift, conveyance charges, royalty of materials, etc. as per Orissa P.W.D. system
	2nd	Abstract of cost of estimate.
	3rd	Valuation- Value and cost, scrap value, salvage value
	4th	assessed value, sinking fund,
11th	1st	depreciation and obsolesce
	2nd	methods of valuation.
	3rd	methods of valuation.
	4th	Secondary treatment – necessity, principles, essential

12th	1st	Administrative set-up and hierarchy of Engineering department in State Govt./Central Govt./PSUs/Private Sectors
	2nd	Administrative set-up and hierarchy of Engineering department in State Govt./Central Govt./PSUs/Private Sectors
	3rd	Duties and responsibilities of Engineers at different positions
	4th	Duties and responsibilities of Engineers at different positions
13th	1st	Duties and responsibilities of Engineers at different positions

Discipline- Civil Engneering	Semestar- 3rd	Name Of the teaching Faculty: Er.Narasingh Mahanty
Subject- Environmental Studies	No. of Days/per week class	Semestar From Date : 1/10/2021 To Date:1/8/2022 No. Of Weeks: 13
Week	Class Day	Theory/Practical Topics
1st	1st	Definition, scope and importance, Need for public awareness
	2nd	Renewable and non renewable resources:
	3rd	Forest resources: Use and over-exploitation, deforestation
	4th	, case studies Timber extraction mining, dams and their effects on forests and tribalpeople.
2nd	1st	Water resources: Use and over-utilization of surface and ground water,
	2nd	loods, drought, conflicts over water, dam's benefits and problems.
	3rd	Mineral Resources: Use and exploitation, environmental effects of extracting and using mineralresources
	4th	Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture
3rd	1st	fertilizers- pesticides problems, water logging, salinity
	2nd	Energy Resources: Growing energy need, renewable and non renewable energy sources, use of alternate energy sources, case studies.
	3rd	Land Resources: Land as a resource, land degradation, man induces landslides, soil erosion, anddesertification
	4th	Concept of an eco system. ⍰ Structure and function of an eco system
4th	1st	Producers, consumers,decomposers. ⍰ Energy flow in the eco systems. ⍰ Ecological succession.
	2nd	Food chains, food webs and ecological pyramids. ⍰ Introduction, types, characteristic features, structure and function of the following eco system
	3rd	Forest ecosystem: ⍰ Aquatic eco systems (ponds, streams, lakes,rivers, oceans, estuaries).
	4th	Introduction-Definition: genetics, species and ecosystem diversity
5th	1st	Biogeographically classification of India.
	2nd	Value of biodiversity: consumptive use,
	3rd	productive use, social ethical, aesthetic and optinvalues

	4th	Biodiversity at global, national and local level.
6th	1st	Threats to biodiversity: Habitats loss
	2nd	, poaching of wild life, man wildlife conflicts
	3rd	Definition Causes, effects and control measures of:a) Air pollution
	4th	b) Water pollution
7th	1st	) Soil pollution
	2nd	) Marine pollution
	3rd	) Noise pollution.
	4th	f) Thermal pollution
8th	1st	g) Nuclear hazards.
	2nd	Solid waste Management: Causes,
	3rd	effects and control measures of urban and industrial wastes.
	4th	Role of an individual in prevention of pollution
9th	1st	Disaster management: Floods,
	2nd	earth quake, cyclone and landslides.
	3rd	Form unsustainable to sustainable development.
	4th	Urban problems related to energy.
10th	1st	Water conservation, rain water harvesting, water shed management
	2nd	Resettlement and rehabilitation of people; its problems and concern.
	3rd	Environmental ethics: issue and possible solutions
	4th	Climatechange, globalwarming,acidrain,ozonelayerdepletion,
11th	1st	nuclear accidents and holocaust, case studies.
	2nd	Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act
	3rd	Public awareness
	4th	Population growth and variation among nations.
12th	1st	Population explosion- family welfare program.
	2nd	Environment and humanhealth.
	3rd	Human rights
	4th	Value education
13th	1st	Role of information technology in environment and human health.

11/10/21