

## LESSON PLAN OF 3<sup>rd</sup> SEMESTER CIVIL ENGINEERING(2021-22)

Discipline :- CIVIL	Semester:-3 <sup>rd</sup>	Name of the Teaching Faculty ANANTA BISWAL
Subject:- Building materials and construction technology.	No of Days/per Week Class Allotted :-05	Semester From:- <u>1<sup>st</sup> October,2021</u> To:- <u>31<sup>th</sup> January, 2022</u>  No of Weeks:- 19
<b>Week</b>	<b>Class Day</b>	<b>Theory/ Practical Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	Classification of rock.
	2 <sup>nd</sup>	Uses of stone, natural bed of stone
	3 <sup>rd</sup>	Qualities of good building stone
	4 <sup>th</sup>	Dressing of stone
	5 <sup>th</sup>	Characteristics of different types of stone and their uses
2 <sup>nd</sup>	1 <sup>st</sup>	Brick earth-its composition
	2 <sup>nd</sup>	Brick making- preparation of brick earth
	3 <sup>rd</sup>	Moulding, Drying
	4 <sup>th</sup>	Burning in kilns (Continuous process)
	5 <sup>th</sup>	Classification of bricks, size of traditional and modular bricks.
3 <sup>rd</sup>	1 <sup>st</sup>	Qualities of good building bricks
	2 <sup>nd</sup>	Cement types of cement, properties of cements, manufacturing of cement.
	3 <sup>rd</sup>	Importance and application of blended cement with fly ash and blast furnace slag
	4 <sup>th</sup>	Mortar : Definition and types of mortar
	5 <sup>th</sup>	Sources and classification of sand, bulking of sand.
4 <sup>th</sup>	1 <sup>st</sup>	Use of gravel, morrum and fly ash as different building material.
	2 <sup>nd</sup>	Concrete: Definition and composition –Water cement ratio- workability, Mechanical properties.
	3 <sup>rd</sup>	Grading of aggregates, mixing, placing, compacting and curing of concrete
	4 <sup>th</sup>	Timber classification and structure of timber
	5 <sup>th</sup>	seasoning of timber- Importance
5 <sup>th</sup>	1 <sup>st</sup>	Characteristics of good timber
	2 <sup>nd</sup>	Clay products and refractory materials- Definition and classification.
	3 <sup>rd</sup>	Properties and uses of refractory materials like-tiles, terracotta
	4 <sup>th</sup>	Porcelain glazing , Iron and steel uses of cast iron.
	5 <sup>th</sup>	Wrought iron, mild steel and tor steel
	6 <sup>th</sup>	Tutorial class
6 <sup>th</sup>	1 <sup>st</sup>	Composition of paints, enamels
	2 <sup>nd</sup>	Composition of varnishes
	3 <sup>rd</sup>	Types and uses of surface protective materials like paints
	4 <sup>th</sup>	Enamels, Varnishes, Distempers
	5 <sup>th</sup>	Emulsion, French polish and Wax polish Tutorial class.
7 <sup>th</sup>	1 <sup>st</sup>	Building and classification of buildings based on occupancy, different components of buildings site
	2 <sup>nd</sup>	Investigation objective, Site reconnaissance and explorations
	3 <sup>rd</sup>	Concept of foundation and its purpose

	4 <sup>th</sup>	Types of foundation – shallow and deep, shallow foundation - constructional details of Spread foundation of walls.
	5 <sup>th</sup>	Thumb rules for depth and width of foundation and thickness of concrete block.
8 <sup>th</sup>	1 <sup>st</sup>	Deep foundations : Pile foundation their suitability, classification of piles based on materials, function and method of installation
	2 <sup>nd</sup>	Purpose of walls, Classification of walls load bearing, non-load bearing walls, retaining walls
	3 <sup>rd</sup>	Classification of walls as per materials of construction : brick stone, reinforced brick , reinforced concrete, pre cast, hollow and solid concrete block and composite masonry walls
	4 <sup>th</sup>	Partition walls suitability and uses of brick and wooden partition walls, brick masonry, Definition of different terms
	5 <sup>th</sup>	Bond- meaning and necessity; English bond for I and I -1/2 brick thick walls
9 <sup>th</sup>	1 <sup>st</sup>	Stone Masonry string course, corbel, Cornices block in course
	2 <sup>nd</sup>	Grouting, mouldings, templates, throating through stones, parapet, coping, pilaster and buttress
	3 <sup>rd</sup>	Glossary of terms used in doors and windows doors- different types of doors
	4 <sup>th</sup>	Doors- different types of doors
	5 <sup>th</sup>	Windows – different types of windows
10 <sup>th</sup>	1 <sup>st</sup>	Purpose of use of arches and lintels
	2 <sup>nd</sup>	Floors, types of floor finishes-cast – situ, concrete flooring, terrazzo tile flooring cast in situ terrazzo flooring, timber flooring.
	3 <sup>rd</sup>	Roofs types concept and function of flat pitched and slopped roofs
	4 <sup>th</sup>	stair case, landing, winder, stringer, newel, baluster, rise, tread , width
	5 <sup>th</sup>	Hand rail, nosing, head room, mumty room, various types of stair case – straight flight, dog legged open well
11 <sup>th</sup>	1 <sup>st</sup>	Quarter turn, half turn, bifurcated stair, spiral stair, cantilever stair, tread riser stair
	2 <sup>nd</sup>	Plastering – purpose- types of plastering types of plaster finishes.
	3 <sup>rd</sup>	Proportions of mortar of plaster, pre paration techniques and curing.
	4 <sup>th</sup>	Painting purpose types, painting- method of painting new and old surface
	5 <sup>th</sup>	White washing –colour washing- distempering internal and external walls
12 <sup>th</sup>	1 <sup>st</sup>	Damp and termite proofing – materials and method
	2 <sup>nd</sup>	Concept of green building, introduction to energy management and audit of building
	3 <sup>rd</sup>	Aims of energy management of buildings
	4 <sup>th</sup>	Types of energy audit, response energy audit questionnaire
	5 <sup>th</sup>	Energy Surveying and audit report
13 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	4 <sup>th</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	5 <sup>th</sup>	DOUBT CLEARING CLASS

14 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	4 <sup>th</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	5 <sup>th</sup>	DOUBT CLEARING CLASS
15 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	4 <sup>th</sup>	PREVIOUS YEAR QUESTIONS PRACTICE
	5 <sup>th</sup>	DOUBT CLEARING CLASS
16 <sup>th</sup>	1 <sup>st</sup>	DOUBT CLEARING CLASS
	2 <sup>nd</sup>	DOUBT CLEARING CLASS
	3 <sup>rd</sup>	DOUBT CLEARING CLASS
	4 <sup>th</sup>	DOUBT CLEARING CLASS
	5 <sup>th</sup>	DOUBT CLEARING CLASS
17 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision
	5 <sup>th</sup>	Revision
18 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision
	5 <sup>th</sup>	Revision
19 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision

Discipline :- <b>CIVIL ENGG.</b>	Semester:- <b>3<sup>rd</sup></b>	Name of the Teaching Faculty:-  <b>SOUMYA PRAKASH SUTAR</b>
Subject:- <b>ENVIRONMENTAL STUDIES</b>	No of Days/per Week Class Allotted :- <b>5</b>	Semester From:- <b>1<sup>st</sup> October,2021</b> To:- <b>31<sup>TH</sup> January,2022</b>  No of Weeks:- <b>19</b>
<b>Week</b>	<b>Class Day</b>	<b>Theory/ Practical Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	Definition, scope of Environmental studies
	2 <sup>nd</sup>	Multidisciplinary nature of environment
	3 <sup>rd</sup>	Importance
	4 <sup>th</sup>	Need for public awareness
	5 <sup>th</sup>	Renewable and Non-renewable resources
2 <sup>nd</sup>	1	Natural resources and associated problems : Forest resources: Use and over-exploitation, deforestation, case studies,
	2 <sup>nd</sup>	Timber extraction mining, dams and their effects on forests and tribal people.
	3 <sup>rd</sup>	Water resources: Use and over-utilization of surface and ground water,
	4 <sup>th</sup>	floods, drought, conflicts over water, dam's benefits and problems.
	5 <sup>th</sup>	Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.
3 <sup>rd</sup>	1 <sup>th</sup>	Food Resources: World food problems, changes caused by agriculture and over grazing,
	2 <sup>nd</sup>	effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity,
	3 <sup>rd</sup>	Energy Resources: Growing energy need, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
	4 <sup>th</sup>	Land Resources: Land as a resource, land degradation, man induces land slides, soil erosion, and desertification.
	5 <sup>th</sup>	a) Role of individual in conservation of natural resources.
4 <sup>th</sup>	1 <sup>st</sup>	b) Equitable use of resources for sustainable life styles.
	2 <sup>nd</sup>	Concept of an eco system.
	3 <sup>rd</sup>	Structure and function of an eco system
	4 <sup>th</sup>	Producers, consumers, decomposers
	5 <sup>th</sup>	Energy flow in the eco systems
5 <sup>th</sup>	1 <sup>st</sup>	Ecological succession
	2 <sup>nd</sup>	Food chains
	3 <sup>rd</sup>	food webs
	4 <sup>th</sup>	ecological pyramids
6 <sup>th</sup>	1 <sup>st</sup>	Introduction, types, characteristic features of the following eco system
	2 <sup>nd</sup>	structure and function of the following eco system
	3 <sup>rd</sup>	Forest ecosystem

	4 <sup>th</sup>	Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries).
7 <sup>th</sup>	1 <sup>st</sup>	Introduction-Definition: genetics, species and ecosystem diversity.
	2 <sup>nd</sup>	Biogeographically classification of India
	3 <sup>rd</sup>	Value of biodiversity: consumptive use
	4 <sup>th</sup>	Productive use, social ethical
	5 <sup>th</sup>	Aesthetic and option values
8 <sup>th</sup>	1 <sup>st</sup>	Biodiversity at global, national and local level.
	2 <sup>nd</sup>	Threats to biodiversity: Habitats loss,
	3 <sup>rd</sup>	Poaching of wild life, man wildlife conflicts.
	4 <sup>th</sup>	Definition Causes of Environmental Pollution
	5 <sup>th</sup>	Effects of Environmental Pollution
9 <sup>th</sup>	1 <sup>st</sup>	control measures of Environmental Pollution
	2 <sup>nd</sup>	a) Air pollution.
	3 <sup>rd</sup>	b) Water pollution. c) Soil pollution
10 <sup>th</sup>	1 <sup>st</sup>	a) Marine pollution b) Noise pollution.
	2 <sup>nd</sup>	a) Thermal pollution b) Nuclear hazards.
	3 <sup>rd</sup>	Solid waste Management Causes
	4 <sup>th</sup>	Solid waste Management effects
11 <sup>th</sup>	1 <sup>st</sup>	Solid waste Management control measures of urban wastes Solid waste Management control measures of industrial wastes
	2 <sup>nd</sup>	Role of an individual in prevention of pollution Pollution case studies
	3 <sup>rd</sup>	Disaster management: Floods, earth quake Disaster management : cyclone and landslides
	4 <sup>th</sup>	Disaster management: Floods, earth quake
	5 <sup>th</sup>	Form unsustainable to sustainable development.
12 <sup>th</sup>	1 <sup>st</sup>	Urban problems related to energy. Water conservation, rain water harvesting water shed management
	2 <sup>nd</sup>	Resettlement and rehabilitation of people; its problems and concern Environmental ethics: issue and possible solutions
	3 <sup>rd</sup>	Climate change, global warming Nuclear accidents and holocaust, case studies Nuclear accidents and holocaust, case studies
13 <sup>th</sup>	1 <sup>st</sup>	Population explosion- family welfare program Environment and human health: Environmental health, Climate health, Infectious diseases
	2 <sup>nd</sup>	Environment and human health: Water-related diseases, Risk due to chemical

		in food
	3 <sup>rd</sup>	Human rights
	4 <sup>th</sup>	Value education: environmental values, valuing nature, valuing cultures, social justice
14 <sup>th</sup>	1 <sup>st</sup>	Value education: Human heritage, Equitable use of resources, common property resources, ecological degradation
	2 <sup>nd</sup>	Role of information technology in environment and human health.
	3 <sup>rd</sup>	Role of information technology in environment and human health.
	4 <sup>th</sup>	Previous year question answer discussion
15 <sup>th</sup>	1 <sup>st</sup>	DOUBT CLEARING CLASS
	2 <sup>nd</sup>	DOUBT CLEARING CLASS
	3 <sup>rd</sup>	DOUBT CLEARING CLASS
	4 <sup>th</sup>	DOUBT CLEARING CLASS
16 <sup>th</sup>	1 <sup>st</sup>	DOUBT CLEARING CLASS
	2 <sup>nd</sup>	DOUBT CLEARING CLASS
	3 <sup>rd</sup>	DOUBT CLEARING CLASS
	4 <sup>th</sup>	DOUBT CLEARING CLASS
17 <sup>th</sup>	1 <sup>st</sup>	DOUBT CLEARING CLASS
	2 <sup>nd</sup>	DOUBT CLEARING CLASS
	3 <sup>rd</sup>	DOUBT CLEARING CLASS
	4 <sup>th</sup>	DOUBT CLEARING CLASS
18 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision
19 <sup>th</sup>	1 <sup>st</sup>	Revision
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	Revision

# LESSON PLAN OF 3<sup>RD</sup> SEMESTER CIVIL ENGINEERING (2021-22)

Discipline :- CIVIL	Semester:-3 <sup>RD</sup>	Name of the Teaching Faculty SUMAN SAHOO
Subject:- Estimating and cost evaluation-I	No of Days/per Week Class Allotted :-04	Semester From:- <u>1<sup>ST</sup> October,2021</u> To:- <u>31<sup>th</sup> January, 2022</u> No of Weeks:- <b>19</b>
Week	Class Day	Theory/ Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	Introduction Types of estimates – Plinth area, floor area / carpet area
	2 <sup>nd</sup>	Units and modes of measurements as per IS 1200 Accuracy of measurement for different item of work
	3 <sup>rd</sup>	Quantity estimate of building Short wall long wall method and centre line method
	4 <sup>th</sup>	Problems
2 <sup>nd</sup>	1 <sup>st</sup>	Deductions in masonry,
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Plastering,
	4 <sup>th</sup>	Problems
3 <sup>rd</sup>	1 <sup>st</sup>	white washing,
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	painting etc., multiplying factor
	4 <sup>th</sup>	Problems
4 <sup>th</sup>	1 <sup>st</sup>	Painting
	2 <sup>nd</sup>	Painting of doors and windows (paneled/glazed), grills etc. as per OPWD scheduled of rates.
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	Problems
5 <sup>th</sup>	1 <sup>st</sup>	Problems
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Detailed estimate of single storied flat roof building with shallow foundation and
	4 <sup>th</sup>	Problems
6 <sup>th</sup>	1 <sup>st</sup>	Problems
	2 <sup>nd</sup>	RCC roof slab with leak proof treatment over it including
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	Problems
7 <sup>th</sup>	1 <sup>st</sup>	Detailed estimate of a simple inclined roof building with gabled / hipped roof
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	A.C. sheet / G.C.I. sheet roofing.
8 <sup>th</sup>	1 <sup>st</sup>	Problems
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	Analysis of rates as per opwd specifications / standards Analysis of rates for cement concrete
9 <sup>th</sup>	1 <sup>st</sup>	Problems
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	brick masonry in Cement Mortar
10 <sup>th</sup>	1 <sup>st</sup>	Problems

	2 <sup>nd</sup>	laterite stone masonry in Cement Mortar ,
	3 <sup>rd</sup>	Problems
	4 <sup>th</sup>	Problems
11 <sup>th</sup>	1 <sup>st</sup>	cement plaster
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	white washing ,Artificial Stone flooring,
	4 <sup>th</sup>	Problems
12 <sup>th</sup>	1 <sup>st</sup>	concrete flooring,
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	R.C.C. with centering and shuttering, reinforcing steel,
	4 <sup>th</sup>	Problems
13 <sup>th</sup>	1 <sup>st</sup>	Painting of doors and windows etc
	2 <sup>nd</sup>	Problems
	3 <sup>rd</sup>	Calculation of lead, lift, conveyance charges, royalty of materials, etc. as per Orissa P.W.D. system
	4 <sup>th</sup>	Abstract of cost of estimate.
14 <sup>th</sup>	1 <sup>st</sup>	Administrative set-up of engineering organisations
	2 <sup>nd</sup>	Administrative set-up and hierarchy of Engineering Deptt. Duties of responsibilities of Engineers at different positions /levels
	3 <sup>rd</sup>	Doubt clearing classes
	4 <sup>th</sup>	PREVIOUS YEAR QUESTION DISCUSSION
15 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	4 <sup>th</sup>	PREVIOUS YEAR QUESTION DISCUSSION
16 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	4 <sup>th</sup>	PREVIOUS YEAR QUESTION DISCUSSION
17 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION
18 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION
19 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION



# LESSON PLAN OF 3<sup>RD</sup> SEMESTER CIVIL ENGINEERING(2021-22)

Discipline :- CIVIL	Semester:-3 <sup>RD</sup>	Name of the Teaching Faculty SOUMYAKANTA SAHOO
Subject:- Geotechnical engineering	No of Days/per Week Class Allotted :-04	Semester From:- <u>1<sup>st</sup> October,2021</u> To:- <u>31<sup>TH</sup>January,2022</u>  No of Weeks:- <b>15</b>
Week	Class Day	Theory/ Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	Introduction Soil and Soil Engineering. Scope of Soil Mechanics
	2 <sup>nd</sup>	Preliminary definitions and relationship. Soil as a three Phase system.
	3 <sup>rd</sup>	Weight volume relationships: Water Content ,Density
	4 <sup>th</sup>	Specific gravity,Voids ratio, Porosity,
2 <sup>nd</sup>	1 <sup>st</sup>	Degree of saturation ,Percentage of air voids, air content,
	2 <sup>nd</sup>	Density Index, Bulk/Saturated/dry/submerged density.
	3 <sup>rd</sup>	Water Content (Pycnometer method, Oven drying method)
	4 <sup>th</sup>	Specific Gravity
3 <sup>rd</sup>	1 <sup>st</sup>	Particle size distribution, Sieve analysis, Wet mechanical analysis- Pipette method, Basic concept of Hydrometer Analysis
	2 <sup>nd</sup>	Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
	3 <sup>rd</sup>	Classification of soil.
	4 <sup>th</sup>	Particle size Distribution.
4 <sup>th</sup>	1 <sup>st</sup>	Textural Classification.
	2 <sup>nd</sup>	HRB Classification.
	3 <sup>rd</sup>	Unified Soil Classifications
	4 <sup>th</sup>	I.S. Classification.
5 <sup>th</sup>	1 <sup>st</sup>	Concept of Permeability, Darcy's Law
	2 <sup>nd</sup>	Co-efficient of Permeability,
	3 <sup>rd</sup>	Factors affecting Permeability
	4 <sup>th</sup>	Constant head permeability and
6 <sup>th</sup>	1 <sup>st</sup>	falling head permeability Test
	2 <sup>nd</sup>	Seepage pressure, the phenomenon of quick sand
	3 <sup>rd</sup>	Concept of flow-net, Properties and application of flow-net.
	4 <sup>th</sup>	Compaction, Light and heavy compaction Test
7 <sup>th</sup>	1 <sup>st</sup>	Optimum Moisture Content of Soil, Maximum dry density, Zero air void line
	2 <sup>nd</sup>	Factors affecting Compaction
	3 <sup>rd</sup>	Field compaction methods and their suitability
	4 <sup>th</sup>	Consolidation, distinction between compaction and consolidation
8 <sup>th</sup>	1 <sup>st</sup>	Spring Analogy method, Pressure-void ratio curve, normally consolidated
	2 <sup>nd</sup>	under consolidated and over consolidated soil, Assumption of Terzaghi's theory of one-dimensional consolidation, Laboratory Consolidation Test
	3 <sup>rd</sup>	Co-efficient of Consolidation, Time Factor, Estimation of consolidation settlement, Difference between primary and secondary consolidation
	4 <sup>th</sup>	Concept of shear strength
9 <sup>th</sup>	1 <sup>st</sup>	Mohr- Coulomb failure theory,
	2 <sup>nd</sup>	Cohesion, Angle of internal friction

	3 <sup>rd</sup>	strength envelope for different type of soil
	4 <sup>th</sup>	Measurement of shear strength;- Direct shear test,
10 <sup>th</sup>	1 <sup>st</sup>	Triaxial shear test, unconfined compression test and vane-shear test
	2 <sup>nd</sup>	EARTH PRESSURE ON RETAINING STRUCTURES
	3 <sup>rd</sup>	Active earth pressure
	4 <sup>th</sup>	Passive earth pressure,
11 <sup>th</sup>	1 <sup>st</sup>	Earth pressure at rest.
	2 <sup>nd</sup>	Use of Rankin's formula for the following cases (cohesion-less soil only)
	3 <sup>rd</sup>	(i) Backfill with no surcharge,
	4 <sup>th</sup>	(ii) Backfill with uniform surcharge.
12 <sup>th</sup>	1 <sup>st</sup>	(iii) submerged backfill
	2 <sup>nd</sup>	FOUNDATION ENGINEERING, Functions of foundations,
	3 <sup>rd</sup>	Shallow and deep foundation,
	4 <sup>th</sup>	Different type of shallow and deep foundations with sketches.
13 <sup>th</sup>	1 <sup>st</sup>	Types of failure (General shear, Local shear & punching shear)
	2 <sup>nd</sup>	9.2 Bearing capacity of soil, bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip, Circular and square footings
	3 <sup>rd</sup>	Machine Foundation: Introduction to Soil dynamics, Terms associated with soil dynamics
	4 <sup>th</sup>	Free vibration and Forced vibration, Natural frequency, Types of
14 <sup>th</sup>	1 <sup>st</sup>	machines and machine foundation, General requirements, Design of machine
	2 <sup>nd</sup>	foundations: Reciprocating type , Centrifugal type, Impact type,
	3 <sup>rd</sup>	Isolation of foundations.
	4 <sup>th</sup>	PREVIOUS YEAR QUESTION DISCUSSION
15 <sup>th</sup>	1 <sup>st</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	2 <sup>nd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	3 <sup>rd</sup>	PREVIOUS YEAR QUESTION DISCUSSION
	4 <sup>th</sup>	PREVIOUS YEAR QUESTION DISCUSSION
16 <sup>th</sup>	1 <sup>st</sup>	Numerical problem solving
	2 <sup>nd</sup>	Numerical problem solving
	3 <sup>rd</sup>	Numerical problem solving
	4 <sup>th</sup>	Previous year questions solving
17 <sup>th</sup>	1 <sup>st</sup>	Previous year questions solving
	2 <sup>nd</sup>	Numerical problem solving
	3 <sup>rd</sup>	Numerical problem solving
	4 <sup>th</sup>	Numerical problem solving
18 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION
19 <sup>th</sup>	1 <sup>st</sup>	REVISION
	2 <sup>nd</sup>	REVISION
	3 <sup>rd</sup>	REVISION
	4 <sup>th</sup>	REVISION

**LESSON PLAN OF 3RD SEMESTER CIVIL ENGINEERING(2021-22)**

Discipline: <b>CE</b>	Semester: 3rd/3rd	Name of the Teaching Faculty Swastik Pradhan	
Subject: <b>Structural mechanics</b>	No. of Days/per week class allotted: 05	Semester From Date: <b>01/10/2021</b> To Date: <b>31/01/2022</b> No. of Weeks : <b>19</b>	
<b>Week</b>	<b>Class Day</b>	<b>Theory Topics</b>	<b>Update/comment</b>
1st	01	Review Of Basic Concepts	
	02	Force, Moment, support conditions, Conditions of equilibrium, C.G & MI, Free body diagram	
	03	Review of CG and MI of different sections	
	04	Simple And Complex Stress, Strain	
	05	Introduction to stresses and strains	
2nd	01	Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue, Tenacity, Durability	
	02	Longitudinal and Lateral strains, Poisson's Ratio, Volumetric strain, computation of stress, strain, Poisson's ratio,	
	03	Hooke's law - Elastic Constants, Derivation of relationship between the elastic constants.	
	04	Application of simple stress and strain in engineering field Behaviour of ductile and brittle materials under direct loads	
	05	Stress Strain curve of a ductile material	
3rd	01	Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress, Percentage elongation, Percentage reduction in area	
	02	Deformation of prismatic bars due to uniaxial load, Deformation of prismatic bars due to its self weight	
	03	Complex stress and strain introduction	
	04	Principal stresses and strains: Occurrence of normal and tangential stresses,	
	05	Concept of Principal stress and Principal Planes, major and minor principal stresses	
4th	01	Mohr's Circle and its application to solve problems of complex stresses	
	02	Stresses In Beams and Shafts	

		introduction	
	03	Bending stress in beams – Theory of simple bending	
	04	Equation for Flexure– Flexural stress distribution – Curvature of beam	
	05	Position of N.A. and Centroidal Axis – Flexural rigidity – Significance of Section modulus	
5th	01	Shear stresses in beams	
	02	Shear stress distribution in beams of rectangular, circular and standard sections symmetrical about vertical axis.	
	03	Stresses in shafts due to torsion	
	04	Concept of torsion, basic assumptions of pure torsion,	
	05	torsion of solid and hollow circular sections, polar moment of inertia	
6th	01	Torsional shearing stresses, angle of twist, Torsional rigidity, equation of torsion	
	02	Combined bending and direct stresses:	
	03	Combination of stresses, Combined direct and bending stresses	
	04	Maximum and Minimum stresses in Sections	
	05	Conditions for no tension	
7th	01	Limit of eccentricity, Middle third/fourth rule, Core or Kern for square, rectangular and circular sections	
	02	chimneys, dams and retaining walls	
	03	Columns and Struts introduction	
	04	Definition, Short and Long columns, End conditions, Equivalent length / Effective length, Slenderness ratio,	
	05	Axially loaded short and long column, Euler's theory of long columns, Critical load for Columns with different end conditions	
8th	01	Shear Force and Bending Moment introduction	
	02	Types of Loads: Concentrated (or) Point load, Uniformly Distributed load (UDL)	
	03	Types of Supports: Simple support, Roller support, Hinged support, Fixed support	
	04	Types of Reactions: Vertical reaction, Horizontal reaction, Moment reaction,	
	05	Types of Beams based on support conditions: Calculation of support reactions using equations of static	

		equilibrium	
9 <sup>th</sup>	01	Shear Force and Bending Moment	
	02	S.F and B.M diagrams for Cantilevers	
	03	Practice problem	
	04	Practice problem	
	05	S.F and B.M diagrams for Simply supported beams	
10 <sup>th</sup>	01	Practice problem	
	02	S.F and B.M diagrams for overhanging beam	
	03	practice problem	
	04	Position of maximum BM, Point of contra flexure	
	05	Relation between intensity of load, S.F and B.M.	
11 <sup>th</sup>	01	Slope and Deflection	
	02	Shape and nature of elastic curve deflection curve	
	03	Relationship between slope, deflection and curvature	
	04	Importance of slope and deflection	
	05	Slope and deflection of cantilever for point load by Double Integration method	
12 <sup>th</sup>	01	Slope and deflection of cantilever for udl by Double Integration method	
	02	Slope and deflection of simply supported beam for point load	
	03	Slope and deflection of simply supported beam for udl	
	04	Macaulay method	
	05	Practice problem	
13 <sup>th</sup>	01	Indeterminate Beams	
	02	Indeterminacy in beams,	
	03	Principle of consistent deformation and compatibility	
	04	Analysis of propped cantilever with SF and BM diagrams	
	05	Analysis of fixed beam with SF and BM diagram	
14 <sup>th</sup>	01	Analysis of two span continuous beam with SF and BM	
	02	Trusses: Introduction	
	03	Types of trusses	
	04	statically determinate and indeterminate	

		trusses	
	05	Degree of indeterminacy	
15th	01	stable and unstable trusses	
	02	Advantages of trusses.	
	03	Numerical problem solving	
	04	Numerical problem solving	
	05	Previous year questions solving	
16th	01	Numerical problem solving	
	02	Numerical problem solving	
	03	Previous year questions solving	
	04	Previous year questions solving	
	05	Numerical problem solving	
17th	01	Numerical problem solving	
	02	Numerical problem solving	
	03	Previous year questions solving	
	04	Previous year questions solving	
	05	Numerical problem solving	
18th	01	DOUBT CLEARING CLASS	
	02	DOUBT CLEARING CLASS	
	03	DOUBT CLEARING CLASS	
	04	DOUBT CLEARING CLASS	
	05	Numerical problem solving	
19th	01	Numerical problem solving	
	02	Revision	
	03	Revision	
	04	Revision	
	05	Revision	