

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

Department of civil Engineering

Lesson Plan

Subject: GEOTECHNICAL ENGINEERING			
Discipline: CIVIL Engineering		Name of the Faculty: Swagatika tripathy	
Course Code:	TH-2	Semester:	3rd
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Periods in week	Theory Topics
1st	1 st	1 Introduction, 1.1 Soil and Soil Engineering
	2 nd	1.2 Scope of Soil Mechanics, 1.3 Origin and formation of soil
	3 rd	2 Preliminary Definitions and Relationship
	4 th	2.1 Soil as a three Phase system.
2nd	1 st	2.2 Water Content, Density, Specific gravity, Voids ratio
	2 nd	2.2 Porosity, Percentage of air voids, air content, degree of saturation,
	3 rd	2.2 density Index, Bulk/Saturated/dry/submerged density,
	4 th	2.2 Interrelationship of various soil parameters
3rd	1 st	3 Index Properties of Soil
	2 nd	3.1 Water Content, 3.2 Specific Gravity
	3 rd	3.3 Particle size distribution: Sieve analysis, wet mechanical analysis, particle size distribution curve and its uses
	4 th	3.4 Consistency of Soils, Atterberg's Limits, Plasticity Index, Consistency Index, Liquidity Index
4th	1 st	4 Classification of Soil
	2 nd	4.1 General
	3 rd	4.2 I.S
	4 th	4.2 Classification,
5th	1 st	4.3 Plasticity chart
	2 nd	5 Permeability and Seepage
	3 rd	5.1 Concept of Permeability
	4 th	5.1 Co-efficient of Permeability
6th	1 st	5.2 Factors affecting Permeability
	2 nd	5.3 Constant head permeability
	3 rd	5.3 falling head permeability Test

	4 th	5.3 Darcy's Law
7TH	1 st	5.4 Seepage pressure, effective stress, phenomenon of quick sand
	2 nd	6 Compaction and Consolidation
	3 rd	6.1 Compaction, Light and heavy compaction Test, Optimum Moisture Content of Soil, Maximum dry density, Zero air void line
	4 th	6.1 Factors affecting Compaction
8TH	1 st	6.1 Field compaction methods and their suitability
	2 nd	6.2 Consolidation, distinction between compaction and consolidation
	3 rd	6.2 Terzaghi's model analogy of compression
	4 th	6.2 springs showing the process of consolidation – field implications
9TH	1 st	7 shear strength ,7.1 Concept of shear strength
	2 nd	7.1 Mohr- Coulomb failure theory, Cohesion
	3 rd	7.1 Angle of internal friction
	4 th	7.1 strength envelope for different type of soil, Measurement of shear strength
10TH	1 st	7.1 Direct shear test
	2 nd	7.1 triaxial shear test, unconfined compression test and vane-shear test
	3 rd	8 Earth Pressure on Retaining Structures
	4 th	8.1 Active earth pressure
11TH	1 st	8.1 Passive earth pressure
	2 nd	8.1 Earth pressure at rest
	3 rd	8.2 Use of Rankine's formula for the following cases (cohesion-less soil only)
	4 th	8.2 (i) Backfill with no surcharge
12th	1 st	8.2 (ii) backfill with uniform surcharge
	2 nd	9 Foundation Engineering
	3 rd	9.1 Functions of foundations, shallow and deep foundation
	4 th	9.1 different type of shallow and deep foundations with sketches
13th	1 st	9.1 Types of failure (General shear, Local shear & punching shear)
	2 nd	9.2 Bearing capacity of soil
	3 rd	9.2 bearing capacity of soils using Terzaghi's formulae & IS Code formulae for strip
	4 th	9.3 Circular and square footings,
14th	1 st	9.2 bearing capacity of soils using Terzaghi's formula (revision)
	2 nd	9.2 IS Code formulae for strip (revision)
	3 rd	9.2 Effect water table on bearing capacity of soil
	4 th	9.3 Plate load test
15th	1 st	9.3 standard penetration test

Lesson Plan

Subject : Environmental Studies			
Discipline: Civil Engineering		Name of the Faculty: Snehasikta Tripathy	
Course Code:	TH-5	Semester:	3rd
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class Day	Theory
1st	1st	Definition, scope and importance.
	2nd	Need for public awareness.
	3rd	Natural resources and associated problems.
	4th	Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction mining, dams and their effects on forests and tribal people.
2nd	1st	Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits, and problems
	2nd	Revising the taught portions
	3rd	Doubt clearance
	4th	Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources.
3rd	1st	Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, 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, and desertification.
	4th	Role of individual in conservation of natural resources.
4th	1st	Equitable use of resources for sustainable life styles.
	2nd	Concept of an eco-system Structure and function of an eco-system.
	3 rd	Producers, consumers, decomposers.
	4 th	Energy flow in the eco systems, Ecological succession.
5 th	1 st	Food chains, food webs and ecological pyramids
	2 nd	Introduction, types, characteristic features, structure and function of the following eco system
	3 rd	Forest ecosystem
	4 th	Aquatic eco systems (ponds, streams, lakes, rivers, oceans, estuaries)
6 th	1 st	Introduction-Definition: genetics, species and ecosystem diversity.
	2 nd	Biogeographically classification of India

	3 rd	Value of biodiversity: consumptive use, productive use, social ethical, aesthetic and option values
	4 th	Biodiversity at global, national and local level.
7 th	1 st	Threats to biodiversity: Habitat loss, poaching of wild life, man wildlife conflicts.
	2 nd	Revision
	3 rd	Class test
	4 th	Doubt clearance
8 th	1 st	Definition Causes, effects and control measures of: Air pollution, Water pollution.
	2 nd	Soil pollution
	3 rd	Noise pollution
	4 th	Thermal pollution
9 th	1 st	Marine pollution
	2 nd	Water pollution
	3 rd	QUIZ Test - 1
	4 th	Internal Exam
10 th	1 st	Revision of taught theories
	2 nd	Assignment
	3 rd	Checking of assignment
	4 th	Class test
11 th	1 st	Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
	2 nd	Role of an individual in prevention of pollution.
	3 rd	Disaster management: Floods, earth quake, cyclone and landslides.
	4 th	Form unsustainable to sustainable development.
12 th	1 st	Urban problems related to energy.
	2 nd	Water conservation, rain water harvesting, water shed management.
	3 rd	Resettlement and rehabilitation of people; its problems and concern.
	4 th	Environmental ethics: issue and possible solutions.
13 th	1 st	climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
	2 nd	Air (prevention and control of pollution) Act. Water (prevention and control of pollution) Act.
	3 rd	QUIZ Test - 2
	4 th	Public awareness.
14 th	1 st	Population growth and variation among nations.
	2 nd	Population explosion- family welfare program.
	3 rd	Environment and human health.
	4 th	Human rights.
15 th	1 st	Value education
	2 nd	Role of information technology in environment and human health.
	3 rd	Previous year question discussion
	4 th	Revision

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

LESSON PLAN Session (2022-2023)

Discipline : Civil Engineering	Semester: 3 rd , W/2022	Name of the Faculty: Sipra Suravi Behera (Lecturer)
Subject: Structural Mechanics	No. of Days/week: 05	

Week	Class Day	Theory Topics
1st	1st	Basic Principle of Mechanics: Force, Moment, support conditions, Conditions of equilibrium, C.G & MI, Free body diagram
	2nd	Review of CG and MI of different sections
	3rd	Introduction to stresses and strains: Mechanical properties of materials – Rigidity, Elasticity, Plasticity, Compressibility, Hardness, Toughness, Stiffness, Brittleness, Ductility, Malleability, Creep, Fatigue, Tenacity, Durability
	4th	Types of stresses -Tensile, Compressive and Shear stresses, Types of strains - Tensile, Compressive and Shear strains
	5th	Problem Practice
2nd	1st	Complimentary shear stress - Diagonal tensile / compressive Stresses due to shear, Elongation and Contraction, Longitudinal and Lateral strains, Poisson's Ratio, Volumetric strain
	2nd	Computation of stress, Strain, Poisson's ratio, change in dimensions and volume etc., Hooke's law - Elastic Constants, Derivation of relationship between the elastic constants.
	3rd	Review and Doubt Clearing
	4th	Behaviour of ductile and brittle materials under direct loads, Stress Strain curve of a ductile material, Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress
	5th	Percentage elongation, Percentage reduction in area, Significance of percentage elongation and reduction in area of

		cross section, Deformation of prismatic bars due to uniaxial load, Deformation of prismatic bars due to its self-weight.
3rd	1st	Problem Practice
	2nd	Unit Test-1
	3rd	Major and minor principal stresses and their orientations, Mohr's Circle and its application to solve problems of complex stresses
	4th	Problem Practice
	5th	Problem Practice
4th	1st	Bending stress in beams – Theory of simple bending – Assumptions – Moment of resistance – Equation for Flexure– Flexural stress distribution
	2nd	Problem Practice
	3rd	Curvature of beam – 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	Problem Practice
5th	1st	Unit Test-2
	2nd	Concept of torsion, basic assumptions of pure torsion, torsion of solid and hollow circular sections
	3rd	Problem Practice
	4th	Quiz-1
	5th	polar moment of inertia, torsional shearing stresses, angle of twist, torsional rigidity, equation of torsion
6th	1st	Problem Practice
	2nd	Unit Test-3
	3rd	Combination of stresses, Combined direct and bending stresses, Maximum and Minimum stresses in Sections, Conditions for no tension
	4th	Problem Practice
	5th	Limit of eccentricity, Middle third/fourth rule, Core or Kern for square, rectangular and circular sections, chimneys, dams and retaining walls
7th	1st	Problem Practice
	2nd	Problem Practice

	3rd	Unit Test-4
	4th	Columns and Struts, Definition, Short and Long columns, End conditions, Equivalent length / Effective length, Slenderness ratio, Axially loaded short and long column
	5th	Euler's theory of long columns, Critical load for Columns with different end conditions
8th	1st	Problem Practice
	2nd	Problem Practice
	3rd	Unit Test-5
	4th	Doubt Clearing
	5th	Quiz-2
9th	1st	Types of Loads: Concentrated (or) Point load, Uniformly Distributed load (UDL), Types of Supports: Simple support, Roller support, Hinged support, Fixed support, Types of Reactions: Vertical reaction, Horizontal reaction, Moment reaction, Types of Beams based on support conditions
	2nd	Calculation of support reactions using equations of static equilibrium
	3rd	Problem Practice
	4th	Problem Practice
	5th	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
10th	1st	S.F and B.M diagrams for Cantilevers, Simply supported beams and Over hanging beams, Position of maximum BM, Point of contra flexure, Relation between intensity of load, S.F and B.M.
	2nd	Problem Practice
	3rd	Problem Practice
	4th	Unit Test-5
	5th	Shape and nature of elastic curve (deflection curve); Relationship between slope, deflection and curvature (No derivation), Importance of slope and deflection
11th	1st	Slope and deflection of cantilever and simply supported beams under concentrated and uniformly distributed load (by Double Integration method, Macaulay's method).

	2nd	Problem Practice
	3rd	Problem Practice
	4th	Doubt Clearing
	5th	Unit Test-5
12th	1st	Indeterminacy in beams, Principle of consistent deformation/compatibility
	2nd	Analysis of propped cantilever
	3rd	Problem Practice
	4th	Problem Practice
	5th	Quiz-3
13th	1st	fixed and two span continuous beams by principle of superposition
	2nd	fixed and two span continuous beams by principle of superposition
	3rd	Problem Practice
	4th	SF and BM diagrams (point load and udl covering full span)
	5th	Unit Test-6
14th	1st	Types of trusses, statically determinate and indeterminate trusses, degree of indeterminacy, stable and unstable trusses, advantages of trusses.
	2nd	Analytical method (Method of joints, method of Section)
	3rd	Problem Practice
	4th	Problem Practice
	5th	Unit Test-7
15th	1st	Quiz-4
	2nd	Previous years Q&A Discussion
	3rd	Doubt Clearing
	4th	Previous years Q&A Discussion
	5th	Doubt Clearing

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING
Department of Civil Engineering

Lesson Plan

Subject : Structural Design-1			
Discipline: Civil Engineering		Name of the Faculty: Sasmita Kumari Das	
Course Code:	TH-1	Semester:	4th
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	5P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80
Week	Class day	Theory topics	
1 ST	1 ST	Working stress method (WSM) 1.1 Objectives of design and detailing. State the different methods of design of concrete structures.	
	2 ND	Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete and steel. Permissible stresses, assumption in W.S.M.	
	3 RD	Flexural design and analysis of single reinforced sections from first principles.	
	4 th	Concept of under reinforced, over reinforced and balanced sections.	
	5 th	Advantages and disadvantages of WSM, reasons for its obsolescence	
2 ND	1 ST	Philosophy Of Limit State Method (LSM) 2.1 Definition, Advantages of LSM over WSM,	
	2 ND	IS code suggestions regarding design philosophy.	
	3 RD	Types of limit states, partial safety factors for materials strength,	
	4 TH	characteristic strength, characteristic load, design load,	
	5 TH	loading on structure as per I.S. 875	
3 RD	1 ST	Study of I.S specification regarding spacing of reinforcement in slab, ,	
	2 ND	cover to reinforcement in slab	
4 TH	1 ST	beam column & footing, minimum reinforcement in slab, beam & column,	
	2 ND	lapping, anchorage, effective span for beam & slab.	
	3 RD	Analysis and Design of Single and Double Reinforced Sections (LSM) 3.1 Limit state of collapse (flexure), Assumptions,	
	4 TH	Stress-Strain relationship for concrete and steel, neutral axis, stress block diagram and strain diagram for singly reinforced section.	
	5 TH	Concept of under- reinforced, over-reinforced and limiting section, neutral axis	

		co-efficient
5 TH	1 ST	limiting value of moment of resistance and limiting percentage of steel required for limiting singly R.C. section.
	2 ND	Analysis and design: determination of design constants, moment of resistance and area of steel for rectangular sections
	3 RD	Necessity of doubly reinforced section
	4 TH	design of doubly reinforced rectangular section
	5 TH	Shear, Bond and Development Length (LSM) 4.1 Nominal shear stress in R.C. section,
6 TH	1 ST	design shear strength of concrete, maximum shear stress, design of shear reinforcement,
	2 ND	minimum shear reinforcement, forms of shear reinforcement.
	3 RD	Bond and types of bond, bond stress, check for bond stress,
	4 TH	development length in tension and compression, anchorage value for hooks 900 bend
	5 TH	450 bend standards lapping of bars, check for development length.
7 TH	1 ST	Numerical problems on deciding whether shear reinforcement is required or not, check for adequacy of the section in shear.
	2 ND	Design of shear reinforcement; Minimum shear reinforcement in beams (Explain through examples only).
	3 RD	Analysis and Design of T-Beam (LSM) 5.1 General features, advantages,
	4 th	effective width of flange as per IS: 456-2000 code provisions.
	5 th	Analysis of singly reinforced T-Beam,
8 TH	1 ST	strain diagram & stress diagram, depth of neutral axis,
	2 ND	moment of resistance of T-beam section with neutral axis lying within the flange.
	3 RD	Simple numerical problems on deciding effective flange width. (Problems only on finding moment of resistance of T-beam section when N.A. lies within or up

		to the bottom of flange shall be asked in written examination)..
	4 TH	Simple numerical problems on deciding effective flange width. (Problems only on finding moment of resistance of T-beam section when N.A. lies within or up to the bottom of flange shall be asked in written examination)..
	5 TH	Analysis and Design of Slab and Stair case (LSM).
9 TH	1 ST	6.1 Design of simply supported one-way slabs for flexure check for deflection control and shear
	2 ND	Design of one-way cantilever slabs
	3 RD	cantilevers chajjas for flexure check for deflection control
	4 TH	check for development length and shear.
10 TH	1 ST	Design of two-way simply supported slabs for flexure with corner free to lift.
	2 ND	Design of two-way simply supported slabs for flexure with corner free to lift.
	3 RD	Design of dog-legged staircase
	4 th	Design of dog-legged staircase
	5 th	Detailing of reinforcement in stairs spanning longitudinally.
11 TH	1 ST	Design of Axially loaded columns and Footings (LSM)
	2 ND	Assumptions in limit state of collapse- compression.
	3 RD	Definition and classification of columns
	4 TH	effective length of column.
	5 TH	Specification for minimum reinforcement
12 TH	1 ST	cover, maximum reinforcement
	2 ND	number of bars in rectangular
	3 RD	number of bars in square and circular sections
	4 TH	diameter and spacing of lateral ties.
	5 TH	Analysis and design of axially loaded short square
13 TH	1 ST	Analysis and design of axially loaded short square, rectangular
	2 ND	Analysis and design of axially loaded short square, rectangular and circular columns (with lateral ties only).
	3 RD	Types of footing,
14 TH	1 ST	Design of isolated square column footing of uniform thickness for flexure and shear.

	2 ND	Design of isolated square column footing of uniform thickness for flexure and shear
	3 RD	Design of isolated square column footing of uniform thickness for shear
	4 TH	Design of isolated square column footing of uniform thickness for shear
	5 TH	Doubt clearing
15 TH	1 ST	Doubt clearing
	2 ND	Revision
	3 RD	Revision
	4 TH	Question discussion
	5 TH	Question discussion

Lesson Plan

Subject : Highway Engineering			
Discipline: Civil Engineering		Name of the Faculty: Snehasikta Tripathy	
Course Code:	TH-4	Semester:	4th
Total Periods:	60	Examination:	2023(Summer)
Theory Periods:	5P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class Day	Theory Topics
1st	1st	Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute. Functions of Indian Roads Congress
	2nd	IRC classification of roads Organisation of state highway department
	3rd	Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient
	4th	Problem Practice
	5th	Design and average running speed, stopping and passing sight distance
2nd	1st	Problem Practice
	2nd	Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods of providing super – elevation
	3rd	Problem Practice
	4th	Problem Practice
	5th	Unit-1
3rd	1st	Difference types of road materials in use: soil, aggregates, and binders Function of soil as highway Subgrade
	2nd	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	3rd	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	4th	Problem Practice
	5th	Review & Doubt Clearing
4th	1st	Quiz-1
	2nd	Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test

	3rd	Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
	4th	Unit Test- 2
	5th	Road Pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components
5th	1st	Flexible pavements: Sub-grade preparation: Setting out alignment of road, setting out bench marks
	2nd	control pegs for embankment and cutting, borrow pits, making profile of embankment
	3rd	construction of embankment, compaction, stabilization, preparation of subgrade
	4th	construction of embankment, compaction, stabilization, preparation of subgrade
	5th	methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation
6th	1st	Unit Test-3
	2nd	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
	3rd	Types of stabilization <ul style="list-style-type: none"> ● Mechanical stabilization ● Lime stabilization
	4th	<ul style="list-style-type: none"> ● Cement stabilization ● Fly ash stabilization
	5th	Base Course: Preparation of base course, Brick soling, stone soling and metalling,
7th	1st	Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
	2nd	Surfacing: <ul style="list-style-type: none"> ● Surface dressing <ul style="list-style-type: none"> (i) Premix carpet and (ii) Semi dense carpet ● Bituminous concrete Grouting
	3rd	Unit Test-4
	4th	Rigid Pavements: Concept of concrete roads as per IRC specifications
	5th	Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
8th	1st	Breast Walls, Retaining walls
	2nd	Different types of bend
	3rd	Necessity of road drainage work, cross drainage works Surface and sub-surface drains and storm water drains.
	4th	Review & Discussion

	5th	Quiz-2
9th	1st	Necessity of road drainage work, cross drainage works Surface and sub-surface drains and storm water drains.
	2nd	Location, spacing and typical details of side drains
	3rd	side ditches for surface drainage
	4th	Intercepting drains, pipe drains in hill roads
	5th	details of drains in cutting embankment, typical cross sections
10th	1st	Review and Discussion
	2nd	Unit Test- 5
	3rd	Common types of road failures – their causes and remedies
	4th	Common types of road failures – their causes and remedies
	5th	Maintenance of bituminous road such as patch work and resurfacing
11th	1st	Maintenance of concrete roads – filling cracks, repairing joints,
	2nd	maintenance of shoulders (berm), maintenance of traffic control devices
	3rd	maintenance of shoulders (berm), maintenance of traffic control devices
	4th	Basic concept of traffic study, Traffic safety
	5th	Traffic control signal
12th	1st	Quiz-3
	2nd	Unit Test-6
	3rd	Preliminary ideas of the following plant and equipment: Hot mixing plant
	4th	Tipper, tractors (wheel and crawler) scraper
	5th	Review & Discussion
13th	1st	graders, roller dragline
	2nd	bulldozer, dumpers, shovels
	3rd	graders, roller drag
	4th	Review & Discussion
	5th	Asphalt mixer and tar boilers
14th	1st	Road pavers
	2nd	Modern construction equipments for roads
	3rd	Modern construction equipments for roads
	4th	Review & Discussion
	5th	Unit Test-7
15th	1st	Quiz-4
	2nd	Previous years Q&A Discussion
	3rd	Doubt Clearing

	4th	Previous years Q&A Discussion
	5th	Doubt Clearing

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

LESSON PLAN

Session: 2022-2023

Discipline: Civil Engineering	Semester: 4 th	Name of the Teaching Faculty: Sipra Suravi Behera (Lecturer)
Subject: Hydraulics & Irrigation engineering	No. Of Days/Week: 5	
Week	Class Day	Theory/Practical Topics
1st	1st	Introduction
	2nd	Properties of fluid: density, specific gravity, surface tension
	3rd	Capillarity, viscosity and their uses
	4th	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure
	5th	Absolute pressure and vacuum pressure; relationship between atmospheric pressure, absolute pressure
2nd	1st	Gauge pressure; pressure head; pressure gauges.
	2nd	Assignment evaluation
	3rd	Pressure exerted on an immersed surface: Total pressure, resultant pressure, expression for total pressure exerted on horizontal & vertical surface
	4th	KINEMATICS OF FLUID FLOW: 2.1 Basic equation of fluid flow and their application: Rate of discharge,
	5th	Equation of continuity of liquid flow, total energy of a liquid in motion
3rd	1st	Potential, kinetic & pressure, Bernoulli's theorem and its limitations. Practical applications of Bernoulli's equation.
	2nd	Flow over Notches and Weirs: Notches, Weirs, types of notches and weirs

	3rd	Discharge through different types of notches and weirs-their application
	4th	Types of flow through the pipes: uniform and non uniform; laminar and turbulent; steady and unsteady; Reynold's number and its application
	5th	Losses of head of a liquid flowing through pipes: Different types of major and minor losses
4th	1st	Simple numerical problems on losses due to friction using Darcy's equation
	2nd	Total energy lines & hydraulic gradient lines
	3rd	Flow through the Open Channels: Types of channel sections-rectangular,
	4th	trapezoidal and circular, discharge formulae- Chezy's and Manning's equation
	5th	Best economical section.
5th	1st	Assignment evaluation, doubt clear
	2nd	Quiz test
	3rd	Type of pumps
	4th	Centrifugal pump: basic principles, operation, discharge
	5th	Assignment evaluation
6th	1st	horse power & efficiency
	2nd	Reciprocating pumps: types, operation, discharge,
	3rd	Horse power & efficiency
	4th	Assignment evaluation,
	5th	Revise class
7th	1st	Hydrology Cycle , Rainfall: types
	2nd	intensity, hyetograph
	3rd	Estimation of rainfall, rain gauges, Its types(
	4th	Concept of catchment area, types, run-off,
	5th	Estimation of flood discharge by Dicken's and Ryve's formulae
8th	1st	Assignment evaluation
	2nd	Definition of irrigation, necessity, benefits of irrigation, types of irrigation
	3rd	Crop season ,Duty, Delta and base period
	4th	Relationship, overlap allowance, kharif and rabi crops
	5th	Gross command area, culturable command area,

9 th	1st	Intensity of Irrigation,
	2nd	Time factor, crop ratio
	3rd	Irrigable area,
	4th	Canal irrigation, types of canals,
	5th	loss of water in canals
10 th	1st	Perennial irrigation
	2nd	Different components of irrigation canals
	3rd	Their functions
	4th	Sketches of different canal cross-sections
	5th	Classification of canals according to their alignment
11 th	1st	Various types of canal lining
	2nd	Advantages and disadvantages
	3rd	Assignment evaluation
	4th	WATER LOGGING AND DRAINAGE : Causes and effects of water logging, detection
	5th	Prevention and remedies
12 th	1st	DIVERSION HEAD WORKS AND REGULATORY STRUCTURES 5.1 Necessity and objectives
	2nd	Weirs and barrages, General layout, functions of different parts of barrage
	3rd	Silting and scouring , Functions of regulatory structures
	4th	Functions and necessity of Cross drainage works
	5th	Aqueduct, siphon
13 th	1st	Super passage, level crossing
	2nd	Concept of each with help of neat sketch
	3rd	Quiz Test
	4th	Doubt clearing
	5th	<i>Different types of reservoir</i>
14 th	1st	Necessity of storage reservoirs
	2nd	Types of dams
	3rd	Earthen dams: types, description
	4th	Causes of failure
	5th	Protection measures
15 th	1st	Gravity dam- types, description

	2nd	Causes of failure
	3rd	Protection measures
	4th	Spillways- Types (With Sketch)
	5th	Necessity of spill way

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING
Department of Civil Engineering

Lesson Plan

Subject : Railway & Bridge Engineering			
Discipline: Civil Engineering		Name of the Faculty: Sasmita Kumari Das	
Course Code:	TH-3	Semester:	5th
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class day	Theory topics
1ST	1 ST	Railway terminology
	2 ND	Advantages of railways Classification of Indian Railways
	3 RD	Definition and components of a permanent way
	4th	Concept of gauge, different gauges prevalent in India
2ND	1 ST	suitability of these gauges under different conditions
	2	Functions and requirement of rails
	3	Types of rail sections, length of rails
	4	Rail joints – types
3RD	1	Requirement of an ideal joint
	2	Purpose of welding of rails & its advantages
4TH	1	Creep definition, cause & prevention
	2	Definition, function & requirements of sleepers
	3	Classification of sleepers
	4	Advantages & disadvantages of different types of sleepers
5TH	1	Functions & requirements of ballast
	2	Materials for ballast
	3	Fixtures for Broad gauge 3.4.1 Connection of rails to rail-fishplate, fish bolts
	4	Connection of rails to sleepers
6TH	1	Geometric for Broad gauge 4.1 Typical cross – sections of single & double broad gauge railway track in cutting and embankment
	2	Permanent & temporary land width
	3	Gradients for drainage
7TH	1	Super elevation – necessity & limiting valued

	2	Definition, necessity of Points and crossings
	3	Types of points & crossings with tie diagram
8TH	1	Methods of Laying & maintenance of track
	2	Details of a permanent way inspector
	3	Introductions to bridge engineering
	4	Definitions Components of a bridge
9TH	1	Classification of bridges
	2	Requirements of an ideal bridge
	3	Bridge Site investigation, hydrology & planning
	4	Selection of bridge site
10TH	1	Bridge alignments
	2	Determination of flood discharge
	3	Waterway & economic span
11TH	1	Afflux, clearance & free board
	2	Collection of bridge design data & sub surface investigation
	3	Scour depth minimum depth of foundation
	4	Types of bridge
12TH	1	foundations – spread foundation,
	2	pile foundation- pile driving, well foundation – sinking of wells, caisson foundation
	3	Coffer dams
13TH	1	Bridge substructure and approaches 10.1 Types of piers
	2	Types of abutments
14TH	1	Types of wing walls
	2	Approaches
	3	Permanent bridges 11.1 Masonry bridges
	4	11.2 Steel bridges – classification with sketches
15TH	1	11.3 Concrete bridges – classification, brief description with sketches
	2	11.4 IRC bridge loading
	3	Culvert & cause ways 12.1 Types of culvers - brief description
	4	12.2 Types of causeways - brief description

GANDHIACADEMYOFTECHNOLOGYANDENGINEERING

Department of Civil Engineering

LessonPlan

Subject: ENTREPRENEURSHIP and MANAGEMENT & SMART TECHNOLOGY			
Discipline: Civil Engineering		NameoftheFaculty: Swagatika tripathy	
CourseCode:	TH-1	Semester:	5th
TotalPeriods:	60	Examination:	2022(Winter)
TheoryPeriods:	4P/W	ClassTest:	20
MaximumMarks:	100	EndSemesterExamination:	80

Week	Periodsinweek	TheoryTopics
1st	1 st	1. Entrepreneurship
	2 nd	Concept Meaning of Entrepreneurship & Need of Entrepreneurship
	3 rd	Characteristics, Qualities and Types of entrepreneur, Functions
	4 th	Barriers in entrepreneurship & Entrepreneurs vrs. Manager
2nd	1 st	forms of Business Ownership: Sole proprietorship, partnership forms and others
	2 nd	Types of Industries, Concept of Start-ups
	3 rd	Entrepreneurial support agencies at National, State, District Level(Sources)
	4 th	DIC, NSIC,OSIC, SIDBI, NABARD, Commercial Banks, KVIC etc.
3rd	1 st	Technology Business Incubators (TBI)
	2 nd	Science and Technology Entrepreneur parks
	3 rd	2. Market Survey and Opportunity Identification (Business Planning
	4 th	Business Planning
4th	1 st	SSI, Ancillary Units, Tiny Units, Service sector Units
	2 nd	Time schedule Plan
	3 rd	Agencies to be contacted for Project Implementation
	4 th	Assessment of Demand and supply and Potential areas of Growth
5th	1 st	Identifying Business Opportunity
	2 nd	Final Product selection
	3 rd	3 . Project report Preparation
	4 th	Preliminary project report & Detailed project report
	1 st	Techno economic Feasibility
	2 nd	Project Viability

6th	3 rd	4. Management Principles
	4 th	Definitions of management & Principles of management
7TH	1 st	Functions of management (planning, organising, staffing, directing and controlling etc.)
	2 nd	Level of Management in an Organisation
	3 rd	5. Functional Areas of Management, 5.(a) Production management Functions, Activities , Productivity
	4 th	Quality control & Production Planning and control
8TH	1 st	5.(b) Inventory Management Need for Inventory management
	2 nd	Models/Techniques of Inventory management
	3 rd	5.(c) Financial Management Functions of Financial management, Management of Working capital
	4 th	Costing (only concept)
9TH	1 st	Break even Analysis
	2 nd	Brief idea about Accounting Terminologies: Book Keeping, Journal entry, Petty Cash book, P&L Accounts, Balance Sheets(only Concepts)
	3 rd	5.(d) Marketing Management Concept of Marketing and Marketing Management Marketing Techniques (only concepts)
	4 th	Concept of 4P s (Price, Place, Product, Promotion) 5.(e) Human Resource Management Functions of Personnel Management
10TH	1 st	Manpower Planning, Recruitment, Sources of manpower, Selection process, Method of Testing, Methods of Training & Development, Payment of Wages
	2 nd	6. Leadership and Motivation
	3 rd	6.(a) Leadership Definition and Need/Importance , Qualities and functions of a leader
	4 th	Manager Vs Leader Style of Leadership (Autocratic, Democratic, Participative)
11TH	1 st	6.(b) Motivation Definition and characteristics , Importance of motivation
	2 nd	Factors affecting motivation , Theories of motivation (Maslow)
	3 rd	Methods of Improving Motivation , Importance of Communication in Business , Types and Barriers of Communication
	4 th	7. Work Culture, TQM & Safety Human relationship and Performance in Organization
12th	1 st	Relations with Peers, Superiors and Subordinates
	2 nd	TQM concepts: Quality Policy, Quality Management, Quality system
	3 rd	Accidents and Safety, Cause, preventive measures
	4 th	General Safety Rules , Personal Protection Equipment(PPE)
13th	1 st	8. Legislation
	2 nd	8.(a) Intellectual Property Rights(IPR)
	3 rd	Patents
	4 th	Trademarks, Copyright

14th	1st	8.(b) Features of Factories Act 1948 with Amendment (only salient points)
	2nd	8.(c) Features of Payment of Wages Act 1936 (only salient points)
	3rd	9. Smart Technology
	4th	Concept of IOT, How IOT works
15th	1st	Components of IOT, Characteristics of IOT, Categories of IOT Applications of IOT- Smart Cities, Smart Transportation, Smart Home, Smart Healthcare, Smart Industry, Smart Agriculture, Smart Energy Management etc.

Lesson Plan

Subject : Estimation & Cost Evaluation-II			
Discipline: Civil Engineering		Name of the Faculty: Snehasikta Tripathy	
Course Code:	TH-5	Semester:	5th
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class Day	Theory Topics
1st	1st	Introduction to different types of culverts.
	2nd	Elaboration about slab culvert with right angled type wing wall with the help of model.
	3rd	Detailed estimate of a RCC slab culvert with right angled wing walls
	4th	Discussion about the previous knowledge about different slabs.
2nd	1st	Explanation by the help of model
	2nd	Estimation of bar bending schedule for one way slab
	3rd	Introduction of two way slab with the help of detail drawing.
	4th	Estimation of bar bending schedule for two way slab
3rd	1st	Detail explanation and calculation for slab
	2nd	Construction site visit for practical knowledge
	3rd	RCC Hume pipe culvert with splayed angled wing wall detail drawing discussion.
	4th	Estimation of Hume pipe culvert with splayed wing wall.
4th	1st	PRACTICE TEST
	2nd	Estimate of irrigation structures Detailed drawing elaboration of simple type of vertical fall to given specification
	3rd	Discussion about different parts of a vertical fall by the help of model
	4th	Detail estimation of vertical fall(only Earth work)
5th	1st	Estimation of vertical fall(concrete in foundation/W)

	2nd	1 st class brick work in cement mortar
	3rd	Pointing work
	4th	Detailed drawing elaboration of drainage syphon from B.N dutta.
6 th	1st	Estimation of drainage syphon
	2nd	QUIZ TEST
	3rd	Detailed drawing elaboration of drainage syphon from M.chakraborty.
	4th	Estimation of drainage syphonE/W,cement concrete
7 th	1st	B/W,pointing
	2nd	Detailed estimate of roads Detail drawing discussion of road cutting.
	3rd	Detailed estimate of a flexible pavement in cutting
	4th	Detail drawing discussion of road in banking.
8 th	1st	Detailed estimate of a flexible pavement in banking.
	2nd	Recap (doubt clearing)
	3rd	Introduction to water bound macadam road detail drawing discussion
	4th	Detail estimation of water bound macadam road.
9 th	1st	Introduction to septic tank with the help of drawing.
	2nd	Detailed estimate of septic tank and soak pit for 50 users
	3rd	PRACTICE TEST
	4th	Miscellaneous estimates Introduction of tube well
10 th	1st	Estimation of tube well various parts.
	2nd	pile and pile cap.detail drawing elaboration.
	3rd	Tube well, Piles and Pile cap
	4th	Detail drawing elaboration of footings
11 th	1st	Isolated and combined footings
	2nd	PWD account works Classification of work-original, major, petty, repair work, , annual repair, special repair, quadrantal repair
	3rd	QUIZ TEST
	4th	Concept of Method of execution of works through the contractors and department, contract and agreement, work order

12 th	1st	Types of contract, piece work agreement
	2nd	CLASS TEST
	3rd	Administrative approval, technical sanction, tender, preparation of notice inviting tender, quotations, earnest money
	4th	E-tendering, security deposit, advance payment, intermediate payment
13 th	1st	Final payment, running bill, final bill, regular and temporary establishment, cash
	2nd	Major & subhead of account, temporary advance (imprest money), supervision charges, suspense account,
	3rd	Debit, credit, book transfer, voucher and related accounts
	4th	Measurement book use & maintenance, procedure of marking entries of measurement of work and supply of materials
14 th	1st	Muster roll : Its preparation & use for making payment of pay & wages , Acquittance Roll : Its preparation & use for making payment of pay & wages
	2nd	Labour & labour report, method of labour payment
	3rd	use of forms and necessity of Submission, Classification of stores, receipt / issue statement on standard form
	4th	method of preparation of stock account, preparation and submission of returns
15 th	1st	verification of stocks, shortage and excess
	2nd	Building BYLAWS and REGULATORY Bodies
	3rd	Development authorities, types and their levels, RERA etc.
	4th	Previous year question paper discussion

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

LESSON PLAN

Session (2022-2023)

Discipline : CIVIL ENGINEERING	Semester:5th sem,winter/2022	Name of the Teaching Faculty: Sipra Suravi Behera (Lecturer)
Subject:Structural Design-II(Th.2)	No. Of Days/Week Class Allotted :04	
Week	Class Day	Theory Topics
1 st	1st	Common steel structures.
	2nd	Advantages & disadvantages of steel structures.
	3rd	Types of steel, properties of structural steel.
	4th	Rolled steel sections.
2 nd	1st	special considerations in steel design.
	2nd	Loads and load combinations.
	3rd	Structural analysis and design philosophy
	4th	Brief review of Principles of Limit State design.
3 rd	1st	Bolted Connections
	2nd	Classification of bolts.
	3rd	advantages and disadvantages of bolted connections
	4th	Different terminology, spacing and edge distance of bolt holes.
4 th	1 st	Types of bolted connections.
	2 nd	Problems on bolted connection
	3 rd	Problems on bolted connection
	4 th	Types of fasteners
5 th	1 st	Class test
	2 nd	Strength of plates in a joint, strength of bearing type bolts (shear capacity& bearing capacity) assumptions and principles of design
	3rd	reduction factors, and shear capacity of HSFG bolts

	4 th	Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces)
6 th	1 st	Quiz test
	2 nd	Problems on HSFG bolt.
	3 rd	Efficiency of a joint.
	4 th	problems
7 th	1 st	Doubt clearing class
	2 nd	Welded Connections:
	3 rd	Advantages and Disadvantages of welded connection
	4 th	Types of welded joints .
8 th	1 st	Design stresses in welds.
	2 nd	Strength of welded joints
	3 rd	specifications for welding
	4 th	Problems
9 th	1 st	Problems
	2 nd	Common shapes of tension members.
	3 rd	Maximum values of effective slenderness ratio.
	4 th	Analysis and Design of tension members.(Considering strength only and concept of block shear failure.
10 th	1 st	problems
	2 nd	problems
	3 rd	Common shapes of compression members
	4 th	Builtup sections
11 th	1 st	Buckling class of cross sections, slenderness ratio
	2 nd	Design compressive stress and strength of compression members
	3 rd	Analysis and Design of compression members (axial load only).
	4 th	Problems
12 th	1 st	Doubt clearing class
	2 nd	Common cross sections and their classification.
	3 rd	Deflection limits, web buckling and web crippling.
	4 th	Design of laterally supported beams against bending and shear
13 th	1 st	Problems
	2 nd	Quiz Test

	3 rd	Round Tubular Sections, Permissible Stresses
	4 th	Tubular Compression & Tension Members
14 th	1 st	Joints in Tubular trusses
	2 nd	Problems
	3 rd	Class test
	4 th	Design considerations for Masonry walls & Columns
15 th	1 st	Load Bearing & Non-Load Bearing walls, Permissible stresses. Slenderness Ratio
	2 nd	Effective Length, Height & thickness
	3 rd	Problems
	4 th	revision

GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

Department of Civil Engineering

Lesson Plan

Subject : LAND SURVEY - 2			
Discipline: Civil Engineering		Name of the Faculty: Swagatika Tripathy	
Course Code:	TH-1	Semester:	6th
Total Periods:	75	Examination:	3hr.
Theory Periods:	5P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Periods in week	Theory Topics
1st	1 st	1. Tachometry
	2 nd	1.1 Principles
	3 rd	1.1 stadia constants determination
	4 th	1.2 Stadia tacheometry with staff held vertical
	5 th	1.2 Stadia tacheometry with line of collimation horizontal or inclined
2nd	1 st	numerical problems
	2 nd	1.3 Elevations and distances of staff stations
	3 rd	numerical problems
	4 th	2. CURVES
	5 th	2.1 compound, reverse and transition curve, Purpose & use of different types of curves in field
3rd	1 st	2.2 Elements of circular curves, numerical problems
	2 nd	2.3 Preparation of curve table for setting out
	3 rd	2.4 Setting out of circular curve by chain and tape and by instrument angular methods
	4 th	(i) offsets from long chord
	5 th	(ii) successive bisection of arc, (iii) offsets from tangents
4th	1 st	(iv) offsets from chord produced,
	2 nd	(v) Rankine's method of tangent angles
	3 rd	2.5 Obstacles in curve ranging – point of intersection inaccessible
	4 th	3 BASICS ON SCALE AND BASICS OF MAP:
	5 th	3.1 Fractional or Ratio Scale, Linear Scale, Graphical Scale 3.2 What is Map, Map Scale and Map Projections
5th	1 st	3.3 How Maps Convey Location and Extent 3.4 How Maps Convey characteristics of features
	2 nd	3.5 How Maps Convey Spatial Relationship 3.5.1 Classification of Maps
	3 rd	3.5.1 Physical Map 3.5.2 Topographic Map 3.5.3 Road Map
	4 th	3.5.4 Political Map 3.5.5 Economic & Resource

	5th	3.5.6 Thematic Map 3.5.7 Climate Map
6th	1st	4 SURVEY OF INDIA MAP SERIES:
	2nd	4.1 Open Series map
	3rd	4.2 Defense Series Map
	4th	4.3 Map Nomenclature
	5th	4.3.1 Quadrangle Name

7TH	1 st	4.3.2 Latitude, Longitude, UTM's
	2 nd	4.3.4 Contour Lines
	3 rd	4.3.5 Magnetic Declination
	4 th	4.3.6 Public Land Survey System
	5 th	4.3.7 Field Notes
8TH	1 st	5.BASICS OF AERIAL PHOTOGRAPHY, PHOTOGRAMMETRY, DEM AND ORTHO IMAGE GENERATION:
	2 nd	5.1 Aerial Photography: 5.1.1 Film, Focal Length, Scale
	3 rd	5.1.2 Types of Aerial Photographs (Oblique, Straight)
	4 th	5.2 Photogrammetry: 5.2.1 Classification of Photogrammetry
	5 th	5.2.2 Aerial Photogrammetry 5.2.3 Terrestrial Photogrammetry
9TH	1 st	5.3 Photogrammetry Process: 5.3.1 Acquisition of Imagery using aerial and satellite platform
	2 nd	5.3.2 Control Survey 5.3.3 Geometric Distortion in Imagery
	3 rd	Application of Imagery and its support data Orientation and Triangulation
	4 th	Stereoscopic Measurement 19.9.1 X-parallax 19.2.2 Y-parallax
	5 th	5.4 DTM/DEM Generation 5.5 Ortho Image Generation
10TH	1 st	6 MODERN SURVEYING METHODS :
	2 nd	6.1 Principles, features and use
	3 rd	Micro-optic theodolite, digital theodolite
	4 th	6.2 Working principles of a Total Station
	5 th	Set up and use of total station to measure angles
11TH	1 st	distances of points under survey from total station
	2 nd	the co-ordinates (X,Y & Z or northing, easting)
	3 rd	elevation of surveyed points relative to Total Station
	4 th	position using trigonometry and triangulation.
	5 th	Revision of chapter 6
12th	1 st	7.BASICS ON GPS & DGPS AND ETS: 7.1 GPS: - Global Positioning
	2 nd	7.1.1 Working Principle of GPS,GPS Signals, 7.1.2 Errors of GPS,Positioning Methods
	3 rd	7.2 DGPS: - Differential Global Positioning System 7.2.1 Base Station Setup 7.2.2 Rover GPS Set up
	4 th	7.2.3 Download, Post-Process and Export GPS data
	5 th	7.2.4 Sequence to download GPS data from flashcards
13th	1 st	7.2.5 Sequence to Post-Process GPS data 7.2.6 Sequence to export post process GPS data
	2 nd	7.2.7 Sequence to export GPS Time tags to file 7.3 ETS: - Electronic Total Station
	3 rd	7.3.1 Distance Measurement 7.3.2 Angle Measurement
	4 th	7.3.3 Leveling 7.3.4 Determining position
	5 th	7.3.5 Reference networks 7.3.6 Errors and Accuracy
14th	1 st	8 BASICS OF GIS AND MAP PREPARATION USING GIS
	2 nd	8.1 Components of GIS, Integration of Spatial and Attribute Information
	3 rd	8.2 Three Views of Information System 8.2.1 Database or Table View, Map View and Model View

	4th	8.3 Spatial Data Model 8.4 Attribute Data Management and Metadata Concept
	5th	8.5 Prepare data and adding to Arc Map. 8.6 Organizing data as layer
15th	1st	8.7 Editing the layers.
	2nd	8.8 Switching to Layout View.
	3rd	8.9 Change page orientation. 8.10 Removing Borders.
	4th	8.11 Adding and editing map information.
	5th	8.12 Finalize the map

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GANDHI ACADEMY OF TECHNOLOGY AND ENGINEERING

LESSON PLAN

Session: **2022-2023**

Discipline: Civil Engineering	Semester: 6 th Summer-2023	Name of the Teaching Faculty: Sipra Suravi Behera (Lecturer)
Subject: Concrete Technology (Th-4)	No. Of Days/Week:4	
Week	Class Day	Theory/Practical Topics
1st	1st	Concrete as a construction material Grades of concrete.
	2nd	Advantages and disadvantages of concrete
	3rd	Cement: Composition, hydration of cement
	4th	Water cement ratio , compressive strength, and fineness of cement
2nd	1st	Setting time, soundness,
	2nd	Types of cement
	3rd	Aggregate, Introduction, Classification
	4th	Characteristics of aggregate, fineness modulus
3rd	1st	Grading of aggregate,
	2nd	Quality of water for mixing and curing
	3rd	Impurities present in water
	4th	Introduction, Important functions, classification of admixtures,

4th	1st	Accelerating admixtures, retarding admixtures, water reducing admixtures, air containing admixtures
	2nd	Concept of fresh concrete
	3rd	Workability ,factors affecting workability
	4th	Slump test, compacting factor test
5th	1st	V-bee consistency test and flow test,
	2nd	Requirement of workability,
	3rd	Properties of hardened concrete introduction
	4th	Cube and cylinder compressive strengths
6th	1st	Flexural strength of concrete, stress-strain and elasticity
	2nd	Phenomena of creep and shrinkage, permeability
	3rd	Durability of concrete
	4th	Sulphate, chloride and acid attack on concrete, efflorescence.
7th	1st	Quiz Test
	2nd	Concrete mix Design introduction
	3rd	Data or input required for mix design
	4th	Nominal mix concrete & design mix concrete
8 th	1st	Basic consideration for concrete mix design, Methods of proportioning concrete mix I.S Code method of mix design(I.S.10262)
	2nd	Production of concrete Batching of materials,
	3rd	Mixing of concrete materials, transportation, placing of concrete
	4th	Compaction of concrete (vibrators), Curing of concrete
9 th	1st	Formwork-requirements

	2nd	Formwork types ,
	3rd	Stripping of forms
	4th	Doubt Clearing class
10 th	1st	Inspection and Quality Control of Concrete Quality control of Concrete as per I.S.456
	2nd	Factors causing the variations in the quality of concrete
	3rd	Mixing, Transporting, Placing &curing requirements of Concrete as per I.S.456
	4th	Inspection and Testing as per Clause 17 of IS:456
11 th	1st	Durability requirements of Concrete as per I.S:456
	2nd	Special Concrete Introduction to ready mix concrete
	3rd	High performance concrete
	4th	Silica fume concrete
12 th	1st	Shot-Crete concrete or gunniting
	2nd	Quiz Test
	3rd	Deterioration of concrete and its prevention, introduction
	4th	Types of deterioration
13 th	1st	Prevention of concrete deterioration
	2nd	Corrosion of reinforcement
	3rd	Effects and prevention
	4th	Repair technology for concrete structures Symptoms
14 th	1st	Cause and prevention of defect in concrete
	2nd	Remedy of defects during construction
	3rd	Cracking of concrete due to different reasons
	4th	Repair of cracks for different purposes

15 th	1st	Selection of techniques
	2nd	Polymer based repairs ,
	3rd	Common types of repairs of concrete
	4th	Previous year question paper discussion

Lesson Plan

Subject : Construction Management			
Discipline: Civil Engineering		Name of the Faculty: Sasmita Kumari Das	
Course Code:	TH-2	Semester:	6th
Total Periods:	60	Examination:	2022(Winter)
Theory Periods:	4P/W	Class Test:	20
Maximum Marks:	100	End Semester Examination:	80

Week	Class Day	Theory Topics
1st	1st	Objectives, functions of construction management and construction team
	2nd	Resources for construction management-men, machines, materials, money
	3rd	Importance of construction planning, developing work breakdown structure
	4th	Construction planning stages-pre-tender stage, post-tender stage
2nd	1st	Doubt clearing class
	2nd	Scheduling by bar charts-preparation of bar charts and limitation of bar charts
	3rd	Estimation of time and critical path, application of PERT and CPM
	4th	Doubt clearing class
3rd	1st	Organization types-line and staff, functions
	2nd	Class test-1
	3rd	Line and staff characteristics
	4th	Principles of organization-meaning
4th	1st	Significances of terms-control, authority, responsibility, job, task
	2nd	Leadership-necessity, style and role
	3rd	Doubt clearing class
	4th	Principle of effective supervision
5th	1st	Motivation-classification Of motives
	2nd	Different approaches of motives
	3rd	Human relations with subordinates, peer, characteristics of group behaviour
	4th	Workshop done for students group behaviour development

6th	1st	Handling of grievances, absenteeism, labour welfare
	2nd	Conflicts in organization
	3rd	Morale
	4th	Factors influencing selection, design and layout of temporary facilities
7th	1st	Class test-2
	2nd	Services at construction site
	3rd	Doubt clearing class
	4th	Principles of storing material at site
8th	1st	Location of equipment organizing labour at site
	2nd	Concept of Quality control
	3rd	Concept of quality in construction
	4th	Quality standard-during construction after construction
9th	1st	Destructive and non destructive method
	2nd	Preparing labour schedule, steps for optimum labour output
	3rd	Group discussion quality of construction
	4th	Labour characteristics
10th	1st	Wages and their payment
	2nd	Labour incentives
	3rd	Relevant labour laws and case studies
	4th	Group discussion among students labour laws and case studies
11th	1st	Doubt clearing class
	2nd	Programme and progress of work
	3rd	Work study
	4th	Importance of safety
12th	1st	Group discussion about importance of safety
	2nd	Causes and effects of accidents in construction works
	3rd	Safety measures in worksites for excavation, scaffolding, formwork
	4th	Fabrication, erection, demolition
13th	1st	Safety legislation-workman's compensation act, contract labour
	2nd	Group discussion about safety legislation
	3rd	Preparing equipment schedule
	4th	Identification of different alternative equipment
14th	1st	Importance of owning and operating costs in making decisions for purchase of equipment
	2nd	Inspection and testing of equipment

	3rd	Group discussion equipment schedule, inspection and testing of equipment
	4th	Job layout for different construction sites, equipment maintenance and minor repairs
15 th	1st	Classification of stores-storage of stock
	2nd	Issue of materials-indent, in voice, bincard
	3rd	Stores accounting process
	4th	Group discussion on stores accounting process