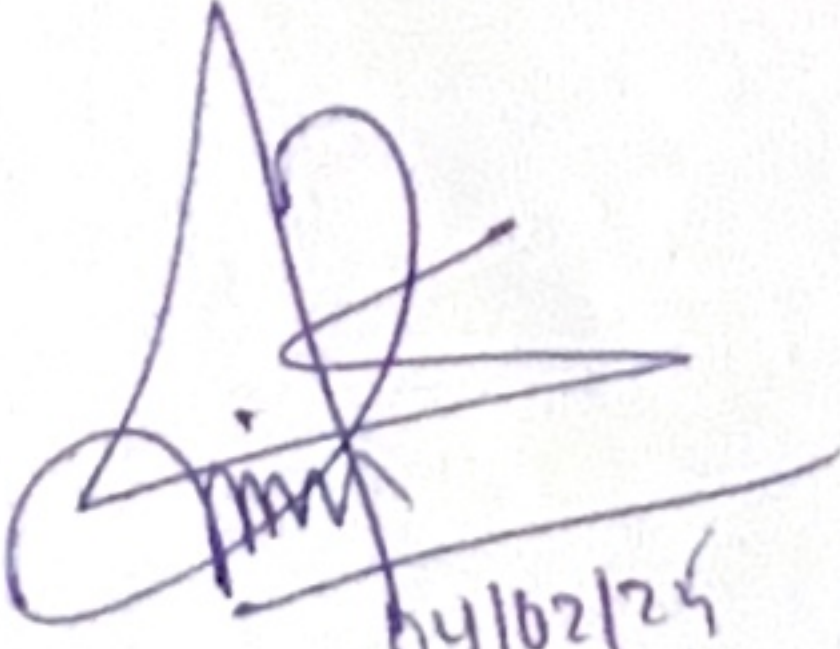
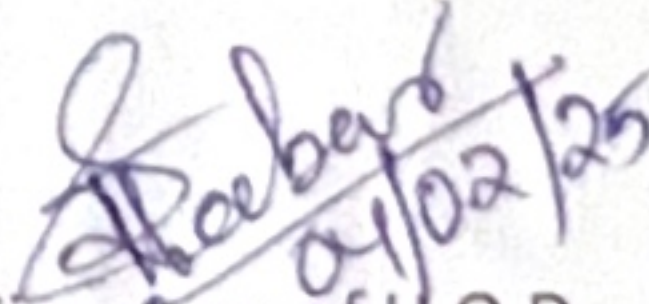


LESSON PLAN OF 4th SEMESTER CIVIL ENGINEERING

Discipline :- CIVIL	Semester:- 4th	Name of the Teaching Faculty:- SWAYAN RANJAN MISRA
Subject:- Hydraulics & Irrigation Engg.	No of Days/per Week Class Allotted :- 03	Semester From:- 04.02.2025 To:- 17.05.2025 No of Weeks:- 16
Week	Class Day	Theory Topics
1st	1 st	HYDROSTATICS Properties of fluid density, specific gravity, surface tension,
	2 nd	capillarity, viscosity and their uses
	3 rd	Pressure and its measurements: intensity of pressure, atmospheric pressure, gauge pressure, absolute pressure and vacuum pressure
2nd	1 st	Relationship between atmospheric pressure absolute pressure and gauge pressure
	2 nd	Pressure head; pressure gauges.
	3 rd	Pressure exerted on an immersed surface: Total pressure
3rd	1 st	Resultant pressure,
	2 nd	Expression for total pressure exerted on horizontal
	3 rd	Example and Numerical Problem
4th	1 st	Expression for total pressure vertical surface
	2 nd	Example and Numerical Problem
	3 rd	KINEMATICS OF FLUID FLOW: Basic equation of fluid flow and their application Rate of discharge, equation of continuity of liquid
5th	1 st	Total energy of a liquid in motion- potential, Kinetic & pressure
	2 nd	Bernoulli's theorem and its limitations
	3 rd	Practical applications of Bernoulli's equation
6th	1 st	Flow over Notches and Weirs Notches, Weirs, types of notches and weirs
	2 nd	Discharge through different types of notches and weirs-their application
	3 rd	Types of flow through the pipes uniform and non uniform
7th	1 st	laminar and turbulent
	2 nd	steady and unsteady
	3 rd	Reynolds's number and its application
8th	1 st	Losses of head of a liquid flowing through pipes Different types of major and minor losses
	2 nd	Simple numerical problems on losses due to friction using Darcy's equation

	3 rd	Total energy lines & hydraulic gradient lines
9th	1 st	Types of channel sections-rectangular, trapezoidal and circular section
	2 nd	Simple Numerical
	3 rd	discharge formulae- Chezy's and Manning's equation
10th	1 st	Best economical section.
	2 nd	Simple Numerical
	3 rd	PUMPS: Type of pumps
11th	1 st	Centrifugal pump: basic principles, operation, discharge.
	2 nd	horse power & efficiency. Of Centrifugal pump
	3 rd	Reciprocating pumps: types, operation, discharge
12th	1 st	horse power & efficiency of Reciprocating pump
	2 nd	Hydrology Hydrology Cycle
	3 rd	Rainfall: types, intensity, hyetograph
	1 st	Estimation of rainfall, rain gauges, Its types
13th	2 nd	Concept of catchment area, types, run-off, estimation of flood discharge by Dicken's and Ryve's formulae
	3 rd	Water Requirement of Crops Definition of irrigation, necessity, benefits of irrigation, types of irrigation
14th	1 st	Types of irrigation Crop season
	2 nd	Duty, Delta and base period their relationship, overlap allowance,
	3 rd	Kharif and rabi crops, Gross command area, culturable command area
15th	1 st	Intensity of Irrigation, irrigable area, time factor, crop ratio
	2 nd	WATER LOGGING AND DRAINAGE Causes and effects of water logging
	3 rd	detection, prevention and remedies
		DOUBT CLEARING CLASS AND REVISION & PREVIOUS FIVE YEARS QUESTION ANSWER DISCUSSION


 04/02/25
 Signature of lecturer


 04/02/25
 Signature of H.O.D

LESSON PLAN OF 4th SEMESTER CIVIL ENGINEERING

DISCIPLINE :- CIVIL ENGG.	SEMESTER: -4 th	NAME OF THE TEACHING FACULTY:- MISS JYOTIRMAYEE SABAR, SENIOR LECTURER
SUBJECT:- LAND SURVEY-I	No of Days/per Week Class Allotted :- 05	SEMESTER FROM:- <u>04.02.2025 TO 17.05.2025</u> SUMMER 2025 NO OF WEEKS:- 15
Week	Class Day	Theory Topics
1 st	1 st	1.Introduction to Surveying ,Linear measurements:- Definitions,Aim and objectives.
	2 nd	Principles of Survey.
	3 rd	Precisions and accuracy of measurements.
	4 th	Types of tapes and chains.
	5 th	Errors and mistakes in linear measurements.
2 nd	1 st	Corrections to measured due to incorrect length,sag,pull,temp. variation.
	2 nd	Numerical problems.
	3 rd	2.Chaining and Chain Surveying:- Equipment accessories for chaining.
	4 th	Ranging- ,Line ranger, Errors due to incorrect ranging.
	5 th	Methods of chaining, Clinometer
3 rd	1 st	Setting perpendiculars with chain & tape, Chaining across different obstacles.
	2 nd	Purpose of chain surveying, Concept of field book.
	3 rd	Offsets, Instruments for setting offsets.
	4 th	Errors in chain surveying.
	5 th	3.Angular measurement and compass surveying:- Measurement of angle with chain, tape and compass.
4 th	1 st	Compass-Types, features
	2 nd	Compass-Merits, Demerits,Testing and adjustment of compass.
	3 rd	Designation of angles, concept of bearing
	4 th	Numerical problems on bearings
	5 th	Use of compass,FB,BB,Numerical problems
5 th	1 st	Effects of earth magnetism, numericals problems on declination
	2 nd	Errors in angle measurement with compass
	3 rd	Principals of traversing
	4 th	Local attractions-causes ,detections & corrections and numericals.
	5 th	Errors in compass surveying
6 th	1 st	Plotting of traversing
	2 nd	4.Map reading cadastrin maps and nomenclature:- study of direction, scale grid
	3 rd	study of signs and symbols
	4 th	Cadastral map preparations
	5 th	Unique identification of number of parcel
7 th	1 st	Control points and its types
	2 nd	Adjacent boundaries and features
	3 rd	Topology creations and verification
	4 th	5.plane table surveying:- Objectives, principles and use
	5 th	Instruments and accessories
8 th	1 st	Methods-Radiations, intersection
	2 nd	Traversing, resection method

	3 rd	Two point problem
	4 th	Three point problem
	5 th	Errors in plane table surveying
9 th	1 st	6:-Theodolite surveying and traversing:- Purpose and definition
	2 nd	Transit theodolite -Features, parts
	3 rd	Fundamental axes of theodolite,t emporary adjustment
	4 th	Concept of transiting, measurement of horizontal and vertical angle
	5 th	Measurement of magnetic bearings, deflection angles
10 th	1 st	Setting out angles
	2 nd	Errors in theodolite
	3 rd	Methods of theodolite traversing
	4 th	Checks for open and closed traverse
	5 th	Travers computation
11 th	1 st	Numerical problems
	2 nd	Closing errors
	3 rd	Adjustment bearings and numerical problems
	4 th	Balancing of traverse
	5 th	Calculation of areas
12 th	1 st	7. Levelling and contouring:- Definition purpose and types
	2 nd	Essential features and use of different leveling instruments ,concept of different axis
	3 rd	Leveling staff-types, features and use, temporary and permanent adjustment of level
	4 th	Concept of BS,IS,FS,CP,HI,Principle of leveling
	5 th	Field data entry, HI and Rise and fall method, numerical problems
13 th	1 st	Different types of leveling, uses and methods, plotting of profiles
	2 nd	Curvature and refraction, reciprocal leveling
	3 rd	Difficulties in leveling, errors ,sensitiveness of bubble tube, setting grades and stakes
	4 th	CONTOURING -Definitions, concept and characteristics
	5 th	Methods of contouring
14 th	1 st	Plotting contour maps
	2 nd	Interpolation of contour maps
	3 rd	Use of contour maps
	4 th	Computation of volume from contour map
	5 th	Interpret physical land form, problem solving and decision making
15 th	1 st	8.Computation of area and volume:- Area from plans
	2 nd	Ordinate rule, trapezoidal rule, numerical problems
	3 rd	Simpson's rule and numerical
	4 th	Calculation of volume by different methods, Numerical problems
	5 th	REVISION, PREVIOUS YEAR QUESTION ANSWER DISCUSSION


Signature of Faculty

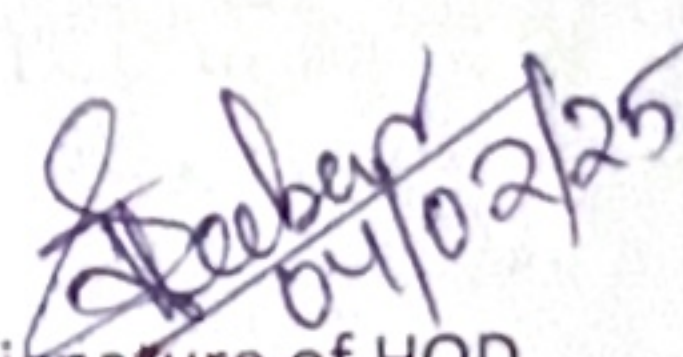
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LESSON PLAN OF 4th SEMESTER CIVIL ENGINEERING

DISCIPLINE :- CIVIL ENGG.	SEMESTER: -4 th	NAME OF THE TEACHING FACULTY:- MISS JYOTIRMAYEE SABAR, SENIOR LECTURER
SUBJECT:- HIGHWAY ENGINEERING	No of Days/per Week Class Allotted :- 03	SEMESTER FROM:- <u>04.02.2025 TO 17.05.2025</u> SUMMER 2025 NO OF WEEKS:- 15
Week	Class Day	Theory Topics
1 st	1 st	INTRODUCTION : Importance of highway transportation: importance organizations like indian roads congress, ministry of surface transport
	2 nd	central road research institute
	3 rd	Function of indian roads congress
2 nd	1 st	IRC classification of roads
	2 nd	Organisation of state highway department.
	3 rd	Glossary of terms used in geometric and their
3 rd	1 st	right of way , formation width
	2 nd	road margin
	3 rd	
4 th	1 st	road shoulders
	2 nd	carriage way
	3 rd	side slopes
5 th	1 st	kerbs
	2 nd	formation level
	3 rd	camber
6 th	1 st	<u>gradients</u>
	2 nd	stopping and passing sight distance
	3 rd	Necessity of curves
7 th	1 st	horizontal and vertical curve
	2 nd	super elevation
	3 rd	super elevation
8 th	1 st	methods of providing super elevation
	2 nd	methods of providing super elevation
	3 rd	methods of providing super elevation
9 th	1 st	ROAD MATERIALS: Different type of road materials in use: soil , aggregate and binders
	2 nd	Function of the soil , as highway subgrade
	3 rd	Function of the soil , as highway subgrade
10 th	1 st	California bearing ratio : method of finding CBR valued in the laboratories and a site
	2 nd	and their significance
	3 rd	Testing aggregates: Abrasion test , crushing test
11 th	1 st	water absorption test
	2 nd	soundness test
	3 rd	soundness test
12 th	1 st	ROAD PAVEMENTS: Flexible and rigid pavements, their merits and demerits
	2 nd	typical cross sections , functions of various components, flexible pavements
	3 rd	sub grade preparations : setting out alignments of road , setting out bench mark ,

		control page for embakment and cutting , borrow pit, making profil of embakment
13 th	1 st	construction of embakment , compaction , stabilization, preparation of sub grade , method of checking chamber, gradient and alignment as per recomandations
	2 nd	equipment used for subgrade preparation.
	3 rd	sub base course : stabilization sub base course , purpose of stabilization,
14 th	1 st	mechanical stabilization ,lime stabilization
	2 nd	cenment stabilization ,fly ash stabilization
	3 rd	surfacing : surface dressing : premix carpet , semi dence carpet
15 th	1 st	bituminous concrete ,grouting
	2 nd	base course : preparetion of base course , brick soiling ,stone soling ,metalling ,water bound macadam and wet mix macadam, bitumineous construction : different types.
	3 rd	REVISION, PREVIOUS YEAR QUESTION ANSWER DISCUSSION


 Signature of Faculty


 Signature of HOD

Discipline: CIVIL	Semester: 4th	Name of Teaching Faculty: CHINMAYEE SUNANI	
Subject: -HIGHWAY ENGINEERING	No of Days/Week Class allotted: 02	Semester from date: 04.02.2025 to 17.05.2025 No of Weeks: 15	
Week	Claas Day	Theory Topics	
1st	1st	base course : preparation of base course , brick soiling ,stone soling	
	2nd	rigid pavement : concept of concrete roads as per IRC specifiacations.	
2nd	1st	HILL ROADS : intoduction : typical cross section showing all details of a	
	2nd	partly in cutting , partly in filling	
3rd	1st	Breast wall , retaining wall	
	2nd	different types of bends	
4th	1st	ROAD DRAINAGE :Necessity of road drainage work ,cross drainagr work.	
	2nd	surface and sub surface drain and stoms water drains ,location ,spacing	
5th	1st	intercepting drains	
	2nd	pipe drains in hill roads	
6t	1st	details of drains in cutting embankment	
	2nd	typical cross section	
7th	1st	typical cross section of road drains	
	2nd	ROAD MAINTENANCE: Common type of road failures -their cause and	
8th	1st	Maintenance of bituminous road such as patch work and resurfacing	
	2nd	maintenance of concrete roads - filling cracks	
9th	1st	repairing joints, maintenance of shoulders (berm)	
	2nd	maintenance of traffic control devices	
10th	1st	basic concept of traffic study,	
	2nd	traffic sefty and trafic control signals	
11th	1st	CONSTRUCTION EQUIPMENT: Preliminary ideas of the following plant	
	2nd	asphalt mixer	
12th	1st	tar boiler	
	2nd	road paver	
13th	1st	morden road constuction equipment for roads	
	2nd	morden road constuction equipment for roads	
14th	1st	morden road constuction equipment for roads	
	2nd	hot mixer	
15th	1st	modern road constuction equipment for roads.	
	2nd	modern road constuction equipment for roads.	

Sunani


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04/02/25

LESSON PLAN OF 4th SEMESTER CIVIL ENGINEERING

Discipline :- CIVIL	Semester:- 4 th	Name of the Teaching Faculty:- Mr.SWAYAN RANJAN MISRA
Subject:- Structural Design-1	No of Days/per Week Class Allotted :- 05	Semester From:- <u>4th Feb, 2025</u> To:- <u>17th May, 2025</u> No of Weeks:- 15
Week	Class Day	Theory Topics
1 st	1 st	1.1 Working stress method (WSM) 1.2 Objectives of design and detailing.
	2 nd	State the different methods of design of concrete structures.
	3 rd	1.2 Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete
	4 th	and steel Permissible stresses, assumption in WSM & LSM
	5 th	1.3 Basic concept of under reinforced, over reinforced and balanced section
2 nd	1 st	1.4 flexural design & analysis of singly and doubly reinforced rectangular sections.(WSM)
	2 nd	Numerical problems on Balanced section
	3 rd	Numerical problems on Balanced section
	4 th	Numerical problems on under reinforced section
	5 th	Numerical problems on under reinforced section
3 rd	1 st	Numerical problems on over reinforced section
	2 nd	2.1 Limit state method (LSM) Introduction
	3 rd	2.1 Definition, types of limit states, partial safety factors for materials strength.
	4 th	Characteristic load, design load, loading on structure 2.2 I.S specification regarding spacing of reinforcement in slab,
	5 th	Cover to reinforcement in slab Beam column & footing, minimum reinforcement in slab.
4 th	1 st	Beam & column, lapping, anchorage
	2 nd	Effective span for beam & slab.
	3 rd	3.0 Analysis and design of singly reinforced sections (LSM) 3.1 Limit state of collapse (flexure), Assumptions, Stress-Strain relationship for concrete and steel, neutral axis.
	4 th	Stress block diagram and strain diagram for singly reinforced section.
	5 th	3.2 Concept of under- reinforced, over-reinforced and limiting section
5 th	1 st	Neutral axis co-efficient,
	2 nd	Limiting value of moment of resistance and limiting percentage of steel required for limiting singly R.C. section.
	3 rd	Numerical problems on determining design constants
	4 th	Numerical problems on determining design constants
	5 th	Numerical problems on determining design constants
6 th	1 st	Moment of resistance and area of steel for rectangular sections.
	2 nd	Numerical problems on Moment of Resistance.
	3 rd	4.1 Analysis and design of doubly reinforced section (LSM) 4.1 General features, necessity of providing doubly reinforced section, reinforcement

	4 th	4.2 Analysis of doubly reinforced section, strain diagram, stress diagram, depth of neutral axis
	5 th	Moment of resistance of the rectangular section.
7 th	1 st	4.3 Numerical problems on finding moment of resistance and design of beam sections.
	2 nd	Numerical problems
	3 rd	Numerical problems
	4 th	5.1 Shear, Bond and Development Length (LSM) 5.2 Nominal shear stress in R.C. section, design shear strength of concrete, maximum shear stress,
	5 th	Design of shear reinforcement, minimum shear reinforcement, forms of shear reinforcement.
8 th	1 st	5.3 Bond and types of bond, bond stress, check for bond stress, development length in tension and compression,
	2 nd	Anchorage value for hooks 90° bend and 45° bend standards lapping of bars check for development length.
	3 rd	5.3 Numerical problems on deciding whether shear reinforcement are required or not, check for adequacy of the section in shear. Design of shear reinforcement;
	4 th	Minimum shear reinforcement in beams; Determination of Development length required for tension reinforcement of cantilevers beam and slab, check for development length.
	5 th	6.1 Analysis and Design of T-Beam (LSM) 6.2 General features, advantages, effective width of flange as per IS: 456-2000 code provisions.
9 th	1 st	6.2 Analysis of singly reinforced T-Beam, 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	6.3 Design of T-beam for moment and shear for neutral axis within or up to flange bottom
	4 th	6.4 Simple numerical problems on deciding effective flange width.
	5 th	Problems on finding moment of resistance of T-beam section when N.A. lies within or up to the bottom of flange
10 th	1 st	Simple numerical problems
	2 nd	Simple numerical problems
	3 rd	7.1 Design of Slab and Stair case (LSM) 7.1 Design of simply supported one-way slabs for flexure
	4 th	Check for deflection control and shear.
	5 th	7.2 Design of one-way cantilever slabs for flexure
11 th	1 st	Check for deflection control and check for development length and shear.
	2 nd	Design of cantilevers chajjas for flexure
	3 rd	Check for deflection control and check for development length and shear.
	4 th	Simple numerical problems on design of one-way simply supported slabs
	5 th	Simple numerical problems on design of cantilever slab
12 th	1 st	7.3 Design of two-way simply supported slabs for flexure with corner free to lift
	2 nd	Simple numerical problems on design of two-way simply supported slab
	3 rd	7.4 Design of dog-legged staircase
	4 th	Simple numerical problems on dog-legged staircase
	5 th	Design of cantilever staircase.
13 th	1 st	Simple numerical problems on cantilever staircase
	2 nd	8.0 Design of Axially loaded columns and Footings (LSM) 8.1 Assumptions in limit state of collapse- compression.

		8.2 Definition and classification of columns
	3 rd	Length of column. Specification for minimum reinforcement; cover, maximum reinforcement
	4 th	Number of bars in rectangular, square and circular sections, diameter and spacing of lateral ties.
	5 th	8.3 Analysis and design of axially loaded short column with lateral ties only
	14 th	1 st Analysis and design of axially loaded square column with lateral ties only
14 th	2 nd	check for short column and check for minimum eccentricity
	3 rd	Analysis and design of axially loaded rectangular columns with lateral ties only
	4 th	Analysis and design of axially loaded circular with lateral ties only
	5 th	8.4 Types of footing
	15 th	1 st Design of isolated square column footing for flexure and shear
15 th	2 nd	Design of Strip footing for walls.
	3 rd	8.5 Simple numerical problems on axially loaded short columns
	4 th	Simple numerical problems on isolated footings.
	5 th	Simple numerical problems on wall footings.
	16 th	1 st
16 th	2 nd	DOUBT CLEARING CLASS AND REVISION & PREVIOUS FIVE YEARS QUESTION ANSWER DISCUSSION
	3 rd	
	4 th	
	5 th	


04/02/25

Signature of Lecturer


04/02/25
Signature of H.O.D