

## SIRDA Polytechnic, Naulakha

### Lesson Plan (Even Semester)

**Name of the Faculty** : Er.Anu Singhta  
**Discipline** : Civil Engineering  
**Semester** : 6th  
**Subject** : Railways, Bridges & Tunnels  
**Lesson Plan Duration** : 16 Week ( from 14/Feb/2023 to 09/June/2023)  
**Work Load (Lectures/Practical) per week (in hours) : Lectures -04**

Week	Lecture Day	Date	Topic
1	1	30-01-2024	Part-1 Introduction to Indian Railways:
	2	31-01-2024	Railways surveys:
	3	01-01-2024	Same
	4	02-02-2024	Factors influencing the railways route,
	5	06-02-2024	brief description of various types of railway survey
	6	07-02-2024	Classification of permanent way describing
	7	08-02-2024	its component part Rail Gauge;
	8	09-02-2024	Definition, types, practice in India
	9	13-02-2024	Rail – types of rails
	10	14-02-2024	Rail Fastening: Rail joints, types of rail joints,
	11	15-02-2024	Rail Fastening: Rail joints, types of rail joints,
	12	16-02-2024	fastening for rails, fish plates,
	13	19-02-2024	fastening for rails, fish plates,
	14	20-02-2024	bearing plates
	15	21-02-2024	Sleepers: Functions of sleepers,
	16	22-02-2024	types of sleepers,
	17	23-02-2024	requirements of an ideal material of Sleepers.
	18	27-02-2024	Ballast: Function of ballast
	19	28-02-2024	Ballast: Function of ballast
	20	29-02-2024	requirements of an ideal material of ballast

21	<b>01-03-2024</b>	Crossing and signaling:
22	<b>05-03-2024</b>	Crossing and signaling:
23	<b>06-03-2024</b>	Brief description regarding different types of crossing/signalling
24	<b>07-03-2024</b>	Maintenance of track:
25	<b>12-03-2024</b>	Necessity, track fixtures;
26	<b>13-03-2024</b>	Necessity, track fixtures;
27	<b>14-03-2024</b>	maintenance and boxing of ballast,

Week			Topic
1	28	14-03-2024	maintenance gauges,
	29	15-03-2024	tools.
	30	19-03-2024	Drains, methods of construction.
	31	20-03-2024	CLASS TEST 1
2			<b>Part-2 Introduction:</b>
	32	21-03-2024	Bridge-its function and component parts,
	33	22-03-2024	difference between a bridge and a culvert
	34	22-03-2024	Classification of Bridges
	35	26-03-2024	Their structural elements and suitability:
	36	27-03-2024	According to life-permanent and temporary
	37	28-03-2024	According to deck level-Deck, through and semi-through
	38	02-04-2024	According to material-timber, masonry, steel, RCC, pre-stressed
	39	03-04-2024	IRC classification
	40	04-04-2024	Bridge Foundations: Introduction to open foundation pile foundation, well foundation
	41	05-04-2024	Piers, Abutments and Wing walls
	42	09-04-2024	Piers-definition, parts; types-solid (masonry and RCC), open
	43	10-04-2024	Abutment and wing walls-definition,
	44	12-04-2024	types of abutment (straight and tee),
	45	16-04-2024	abutment with wing walls (straight, splayed, return and curved)
	46	18-04-2024	Bridge bearings
	47	19-04-2024	Purpose of bearing;
	48	23-04-2024	types of bearing-fixed plate, rocker and roller,
	49	24-04-2024	Maintenance of Bridges ,Routine maintenance
	50	25-04-2024	Inspection of bridges
	51	26-04-2024	CLASS TEST 2
3			<b>Part-3 Definition and necessity of tunnels:</b>
	52	30-04-2024	Typical section of tunnels for a national highway
	53	01-05-2024	Typical section of tunnels for a national highway

J	54	<b>02-05-2024</b>	single and double broad gauge railway track.
	55	<b>03-05-2024</b>	Ventilation-necessity
	56	<b>07-05-2024</b>	and methods of ventilation by blowing,

Week		Date	Topic
3	57	08-05-2024	exhaust and combination of blowing and exhaust
	58	09-05-2024	Drainage method of draining water in tunnels
	59	21-05-2024	Drainage method of draining water in tunnels
	60	22-05-2024	Lighting in tunnels
	61	24-05-2024	lining of tunnels.

*ANU SANGATA*  
Signature of Teacher  
with date:

*SANJAY KUMAR*  
HOD  
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*SD*  
Principal  
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# SIRDA Polytechnic,Naulakha

## Lesson Plan (Even Semester)

**Name of the Faculty :** Er.DHRUV SHARMA  
**Discipline :** Civil Engineering  
**Semester :** 6th  
**Subject :** Construction Management & Accounts  
**Lesson Plan Duration :** 16 Week ( from 29/JAN/2024 to 25/July/2024)  
**Work Load (Lectures/Practical) per week (in hours) : Lectures -04**

Week	Lecture Day	Date	Topic
1	1		<b>Chapter-1 Introduction:</b> Significance of construction management,Main objectives of construction management and overview of the subject
	2		Functions of construction management, planning, organising, staffing, directing, job.
	3		controlling and coordinating, meaning of each of these with respect to construction
	4		Classification of construction into light, heavy and industrial construction,Stages in construction from conception to completion
2	5		<b>Chapter-2 Construction Planning:</b> Importance of construction planning,Stages of construction planning,Pre-tender stage,Contract stage, construction contracts and specifications
	6		Scheduling construction works by bar charts,Definition of activity, identification of activities though,Limitations of bar charts
	7		Scheduling by network techniques,- Introduction to net work techniques; PERT and CPM, d
	8		differences between PERT and CPM terminology
	9		CPM Network including critical activities,
	10		slack, floats & critical path.
3	11		<b>Chapter-3 Organization:</b>
	12		Types of organizations:
	13		Line, line and staff,
	14		functional
	15		and their characteristics
4	16		<b>Chapter-4 Site Organization:</b>
	17		Principle of storing and stacking materials at site
	18		Location of equipment

	19		Organizing labour at site
	20		Site layout of construction project

Week	Lecture Day	Date	Topic
5	21		<b>Chapter-5 Construction Labour:</b>
	22		Conditions of construction workers in India, wages paid to workers
	23		Important provisions of the following Acts:Labour Welfare Fund Act 1936 (as amended),
	24		Payment of Wages Act 1936 (as amended)
	25		Minimum Wages Act 1948 (as amended)
6	26		<b>Chapter-6 Control of Progress:</b>
	27		Methods of recording progress
	28		Analysis of progress
	29		Taking corrective actions keeping head office informed
	30		Arbitration
	31		settlement.
7	32		<b>Chapter-7 Inspection and Quality Control:</b>
	33		Need for inspection and quality control
	34		Principles of inspection
	35		Stages of inspection and quality control for-Earthwork
	36		Masonry,RCC
8	37		<b>Chapter-8 Accidents and Safety in Construction:</b>
	38		Accidents-causes and remedies
	39		Safety measures for-Excavation work,Hot bituminous works,Scaffolding, form work
	40		Safety campaign and safety devices
9	41		<b>Chapter-9 Public Work Accounts:</b> Introduction
	42		Necessities of accounts,Public works department system of account
	43		Classification of transaction and head of account
	44		Classification of works,Condition to be fulfilled before a work can taken in hand,work order
	45		bill-first and final bill, running account bill, account of secured advances, running account bill "c",
	46		running account bill "D", final bill, Hand receipt, refund of security money, cash, debit and credit
	47		cashbook-procedure for maintain the cash book, cash found surplus or deficient, subsidiary cash Book



Week	Lecture Day	Date	Topic
9	48		contract ledger, completion report and completion certificate, Imprest, temporary advance or temporary Imprest, Cheques, Remittance transfer receipts, Advise of transfer debit/credit
	49		Receipt of money, Treasury challan, Treasury remittance book, Work abstract, Register of works, Transfer entries. Appropriation and re-appropriation
	50		Deposit works
	51		Stores, Necessity of stores, Unstamped receipt, Accounting procedure for store, Suspense head, Suspense sub-head, Reserve limit of stock, Indent
	52		Stock taking and shortage and surplus, Classification of store
	53		Road metal
	54		materials charged to work
	55		issue of material to contractor,
	56		Issue of machinery and
	57		equipment, bincard, stock register, write off
	58		Handing over taking over charge on transfer
	59		voucher
	60		Establishments in P.W.D.
	61		Same
	62		Cash payment to labourers
	63		Same
	64		Tools and plant

*DHRUV SHARMA*  
Signature of Teacher  
with date:

*SANJAY KUMAR*  
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Principal  
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# SIRDA Polytechnic,Naulakha

## Lesson Plan (Even Semester)

**Name of the Faculty** : Er.DHRUV SHARMA

**Discipline** : Civil Engineering

**Semester** : 6th

**Subject** : Irrigation Engineering

**Lesson Plan Duration** : 16 Week ( from 29/JAN/2024 to 25/June/2024)

**Work Load (Lectures/Practical) per week (in hours) : Lectures -04**

Week	Lecture Day	Date	Topic
1	1		<b>Chapter-1 Introduction:</b>
	2		Definition and Necessity of Irrigation
	3		Historical development of Irrigation systems
2	4		<b>Chapter-2 Water Requirement of Crops:</b>
	5		Principal crops in India and their water requirements
	6		Crop/base period,Crop seasons –Kharif and Rabi
	7		Duty, Factors affecting duty, Delta,
	8		Relationship between Base period, Duty and Delta
3	9		<b>Chapter-3 Methods of Irrigation:</b> Type of irrigation- Surface irrigation and sub-surface irrigation
	10		methods of supplying water to the field (Brief description)
	11		Free Flooding ,Border Flooding, Check Flooding, Furrow irrigation method
	12		Basin flooding,Sprinkler irrigation with its suitability
	13		Drip Irrigation with its suitability
4	14		<b>Chapter-4 Hydrology and Run-off:</b>
	15		Defination, importance of hydrology
	16		Hydrological cycle
	17		Precipitation,Types of precipitation,Raingauges, types with diagrams
	18		Runoff, Factors affecting runoff
5	19		<b>Chapter-5 Dams &amp; Canals:</b> Use of dams in irrigation
	20		Types of dams,Construction of earthen, gravity and rock fill dams
	21		Alluvial and non-alluvial canals

Week	Lecture Day	Date	Topic
5	22		Alignment of canal- ridge canal, contour canal, side slope canal
	23		Distribution system for canal irrigation- Main canal,
	24		Branch canal, Distributaries, water course
	25		Cross-section of canal showing- Side slope,
	26		Berm, Freeboard, Service road, Spoil bank
	27		Dowel and Borrowpit (with their definition & functions)
	28		Lining of canals and their types
	29		Maintenance of irrigation canal
	30		Closure of breaches
6	31		<b>Chapter-6 Well and Tube Well Irrigation:</b> Open well
	32		Shallow well ,Deep well,Construction of open well
	33		Yield of open well (brief description, no derivation and numerical)
	34		Pumping test,Recuperating test, Tube well
	35		Types of tube well (Brief description with neat diagram)
	36		Cavitytype tube well,Screen type tube well,Slotted type tube well,Methods of boring tube wells
	37		well development
	38		Advantages and disadvantages of tube well irrigation over canal irrigation
7	39		<b>Chapter-7 Diversion Head Works:</b>
	40		Definition, object, general layout, functions of different parts of diversion head works.
	41		Types of Weir
	42		Same
	43		Same
	44		Difference between weir and barrage
8	45		<b>Chapter-8 Cross Drainage Works:</b>
	46		Functions and necessity of the following types: aqueduct,
	47		super Passage, level crossing,
	48		inlet and outlet
	49		Sketches of the above cross drainage works

Week	Lecture Day	Date	Topic
9	50		<b>Chapter-9 Regulatory works:</b> Introduction
	51		Cross and head regulators
	52		Outlets
	53		Canal Escapes
	54		Falls
10	55		<b>Chapter-10 River Training Works:</b> Control and river training
	56		Objective of river training
	57		Method of river training (Brief description)
	58		Marginal embankment,
	59		Groynes,Pitched island
	60		Guide banks
11	61		<b>Chapter-11 Water Logging:</b> Definition
	62		Causes
	63		Preventive & remedial measures
	64		Reclamation of water logged areas,Well point system

*Dhruv Sharma*

Signature of Teacher  
with date:

*SANJAY KUMAR*

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# SIRDA Polytechnic,Naulakha

## Lesson Plan (Even Semester)

**Name of the Faculty :** Er.Sanjay Kumar  
**Discipline :** Civil Engineering  
**Semester :** 6th  
**Subject :** Steel Structures Design & Drawing  
**Lesson Plan Duration :** 16 Week ( from 14/Feb/2023 to 09/June/2023)  
**Work Load (Lectures/Practical) per week (in hours) :** Lectures -04/04

Week	Lecture Day	Date	Topic
1	1		<b>Chapter-1 Structural Steel and Sections:</b>
	2	29-01-2024	Terminology, Properties of structural steel as per IS Code, grades of steel
	3	31-01-2024	Designation of structural steel sections as per IS handbook and IS: 800
	4	05-02-2024	Classification of sections in Limit State Method
	5	07-02-2024	Hollow Sections; Hot rolled
	6	09-02-2024	Cold Formed, advantages and applications
2	7	12-02-2024	<b>Chapter-2 Bolted Connections:</b>
	8	14-02-2024	Types of Bolts
	9	16-02-2024	Forces in Bolts
	10	17-02-2024	Types of Bolted joints with Sketches
	11	19-02-2024	Design of bolted connections (limit state)
	12	21-02-2024	Numerial Problems
		23-02-2024	Numerial Problems
		26-02-2024	Numerial Problems
3	13	28-02-2024	Welded Connections (LSM)
		01-03-2024	Introduction, types of welds, defects in welds, Permissible stress in weld,
	14	02-03-2024	strength of weld, advantages and disadvantages of welded joint.Types of weld sand their symbols.
		04-03-2024	Design of fillet weld and butt weld subjected to axial load.(Descriptive No numerical on plug and slot welds)

Week	Lecture Day		Topic
	15		<b>Class Test-I</b>
<b>3</b>	16	06-03-2024	Numerial Problems
	17	11-03-2024	Numerial Problems
	18	13-03-2024	Numerial Problems
	19	15-03-2024	Numerial Problems
	20	16-03-2024	Numerial Problems
	21	18-03-2024	Numerial Problems
		20-03-2024	CLASS TEST 1
<b>4</b>	22	22-03-2024	<b>Chapter-3 Tension Members (LSM):</b> Types of section used, permissible stresses in axial tension.
	23	27-03-2024	Gross and net cross-sectional area of tension member,
	24	30-03-2024	Analysis and Design of tension member with welded and riveted connection.
	25	01-04-2024	Numerial Problems
	26	03-04-2024	Numerial Problems
	27	05-04-2024	Numerial Problems
		06-04-2024	Introduction to Lug Angle and Tension splice. (Theory only)
<b>5</b>	28	08-04-2024	<b>Chapter-4 Compression Members (LSM):</b> Types of sections used, Effective length, Radius of gyration, slenderness ratio and its limit,
	29	10-04-2024	permissible compressive stresses. Analysis and Design of axially loaded angle struts with welded and riveted connection.
	30	12-04-2024	Stanchion and Columns Types of sections-simple and builtup sections,
		19-04-2024	Effective length, Introduction to lacing and battening (No numerical problem on Lacing and Battening)
		20-04-2024	<b>Class Test-II</b>
		22-04-2024	Numerial Problems
		24-04-2024	Numerial Problems

Week	Lecture Day		Topic
6	32	26-04-2024	<b>Chapter-5 Beams (LSM):</b> Different steel sections used; Simple and built-up sections Permissible bending stresses.
	33	27-04-2024	Design of simple I beam section check for shear only. I
	34	29-04-2024	Numerial Problems
	35	01-05-2024	Numerial Problems
	36	03-05-2024	<b>Chapter-6 Introduction to Plate Girder:</b> Various components and their functions. (No numerical Problem on Plate Girder)
	37	04-05-2024	Plate Girder (Conceptual knowledge):
	38	06-05-2024	Flange plate
	39	08-05-2024	Flange angle
		20-05-2024	Flange splice
		22-05-2024	Web splice
7	42	24-05-2024	Vertical stiffener , Intermediate stiffener
	43	25-05-2024	Horizontal stiffener , Bearing stiffener

*SANJAY KUMAR*  
**Signature of Teacher**  
**with date:**

*SANJAY KUMAR*  
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**Principal**  
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# SIRDA Polytechnic, Naulakha

## Lesson Plan (Even Semester)

Name of the Faculty : Er.Pankaj Thakur

Discipline : Civil Engineering

Semester : 6th

Subject : Prestressed Concrete

Lesson Plan Duration : 16 Week (from 29 Jan,2024 to 25 May,2024)

Work Load (Lectures/Practical) per week (In hours) : Lectures -04

Week	Lecture Day	Date	Topic
	1	29.01.2024	<b>1. Introduction:</b> Basic concept of prestressed concrete
	2	30.01.2024	Advantages of prestressed concrete in comparison with RCC
	3	01.02.2024	application of prestressed to various building elements, bridges, water tanks and precast elements
	4	03.02.2024	Same
	5	05.02.2024	Same
	6	06.02.2024	Same
	7	08.02.2024	<b>2. Materials</b>
	8	12.02.2024	Materials requirement for prestressing concrete – High strength concrete, Prestressing steel wires, strands and high strength bars
	9	13.02.2024	Same
	10	15.02.2024	Same
	11	17.02.2024	Same
	12	19.02.2024	Stresses in high strength steel
	13	20.02.2024	Same
	14	22.02.2024	Stress-strain relationship
	15	26.02.2024	Same
	16	27.02.2024	Tend on profile
	17	29.02.2024	Same
	18	02.03.2024	Same
	19	04.03.2024	Same
	20	05.03.2024	<b>3. Prestressing Methods</b>
	21	07.03.2024	Introduction to prestressing methods–pre-tensioning and post-tensioning
	22	11.03.2024	Same



Week	Lecture Day	Date	Topic
1	23	12.03.2024	Forces due to pretensioning and post-tensioning
	24	14.03.2024	Same
	25	16.03.2024	Same
	26	18.03.2024	Their suitability and comparison
	27	19.03.2024	Same
	28	21.03.2024	Class Test-I
	29	23.03.2024	Circular prestressing and its application
2	30	26.03.2024	Same
	31	28.03.2024	Same
	32	30.03.2024	4. Bending and Shear Capacity
	33	01.04.2024	Concept of bending and shear capacity of prestressed members
	34	02.04.2024	Same
	35	04.04.2024	Calculation of bending stresses in rectangular simply supported beams with straight and parabolic profile of tendons
	36	06.04.2024	Same
	37	08.04.2024	Same
3	38	09.04.2024	Same
	39	16.04.2024	Same
	40	18.04.2024	Same
	41	20.04.2024	Class Test-2
	42	22.04.2024	5. Losses in Prestressing
	43	23.04.2024	Types of losses in prestress-Elastic shortening, creep and shrinkage of concrete
	44	25.04.2024	Same
	45	27.04.2024	Frictionless and stress relaxation in prestress steel
	46	29.04.2024	Same
	47	30.04.2024	Computation of losses for simple beam problems
	48	02.05.2024	Same
	49	04.05.2024	Same
	50	06.05.2024	Same

	51	07.05.2024	Revision
	52	09.05.2024	Revision
	53	20.05.2024	Revision
	54	21.05.2024	Revision
	55	25.05.2024	Revision

*Pankaj*  
27/01/2024  
Signature of Teacher  
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27/01/2024

Principal  
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