



RAAJDHANI ENGINEERING COLLEGE, BHUBANESWAR
Department of Civil Engineering

LESSON PLAN

2023-2024

Session : March 2024- Aug 2024
Course Type : Theory
Semester/Branch :: 4th Semester, Civil Engineering
Subject (with code) :: Structural Design – I (Th.1)
Contact hours/week :: 5 hours
Name of Faculty :: Prof. Achintya Sahoo

S L. N O.	CLASS /ID	COURSE CONTENT	EXHIBIT/REFERENCE
1	1.1	Objectives of design and detailing. State the different methods of design of concrete structures,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
2	1.2	Introduction to reinforced concrete, R.C. sections their behavior, grades of concrete and steel. Permissible stresses, assumption in W.S.M.,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
3	1.3	Flexural design and analysis of single reinforced sections from first principles.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
4	1.4	Concept of under reinforced, over reinforced and balanced sections.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
5	1.5	Advantages and disadvantages of WSM, reasons for its obsolescence	https://www.youtube.com/playlist?list=PL51300B0778FB5784
6	2.1	Definition, Advantages of LSM over WSM, IS code suggestions regarding design philosophy.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
7	2.2	Types of limit states, partial safety factors for materials strength, characteristic strength,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
8	2.3	characteristic load, design load, loading on structure as per I.S. 875	https://www.youtube.com/playlist?list=PL51300B0778FB5784
9	2.4	Study of I.S specification regarding spacing of reinforcement in slab, cover to reinforcement in slab, beam column & footing,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
10	2.5	Minimum reinforcement in slab, beam & column, lapping, anchorage, effective span for beam & slab.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
11	3.1	Limit state of collapse (flexure), Assumptions	https://www.youtube.com/playlist?list=PL51300B0778FB5784
12	3.2	Stress-Strain relationship for concrete and steel,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
13	3.3	Neutral axis, stress block diagram and strain diagram for singly reinforced section.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
14	3.4	Concept of under- reinforced, over-reinforced and limiting section,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
15	3.5	Neutral axis co-efficient, limiting value of moment of resistance and limiting percentage of steel required for limiting singly R.C. section	https://www.youtube.com/playlist?list=PL51300B0778FB5784
16	3.6	Analysis and design: determination of design constants.	https://www.youtube.com/playlist?list=PL51300B0778FB5784

17	3.7	Moment of resistance and area of steel for rectangular sections	https://www.youtube.com/playlist?list=PL51300B0778FB5784
18	3.8	Necessity of doubly reinforced section, design of doubly reinforced rectangular section	https://www.youtube.com/playlist?list=PL51300B0778FB5784
19	4.1	Nominal shear stress in R.C. section, design shear strength of concrete,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
20	4.2	Maximum shear stress, design of shear reinforcement,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
21	4.3	Minimum shear reinforcement, forms of shear reinforcement	https://www.youtube.com/playlist?list=PL51300B0778FB5784
22	4.4	Bond and types of bond, bond stress, check for bond stress,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
23	4.5	Development length in tension and compression	https://www.youtube.com/playlist?list=PL51300B0778FB5784
24	4.6	Anchorage value for hooks 90° bend and 45° bend standards lapping of bars	https://www.youtube.com/playlist?list=PL51300B0778FB5784
25	4.7	Check for development length.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
26	4.8	Numerical problems on deciding whether shear reinforcement is required or not,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
27	4.9	Check for adequacy of the section in shear. Design of shear reinforcement	https://www.youtube.com/playlist?list=PL51300B0778FB5784
28	4.10	Minimum shear reinforcement in beams (Explain through examples only).	https://www.youtube.com/playlist?list=PL51300B0778FB5784
29	5.1	General features, advantages, effective width of flange as per IS: 456-2000 code provisions	https://www.youtube.com/playlist?list=PL51300B0778FB5784
30	5.2	Analysis of singly reinforced T-Beam,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
31	5.3	Strain diagram & stress diagram, depth of neutral axis	https://www.youtube.com/playlist?list=PL51300B0778FB5784
32	5.4	Moment of resistance of T-beam section with neutral axis lying within the flange	https://www.youtube.com/playlist?list=PL51300B0778FB5784
33	5.5	Simple numerical problems on deciding effective flange width.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
34	5.6	Problems only on finding moment of resistance of T-beam section when N.A. lies within	https://www.youtube.com/playlist?list=PL51300B0778FB5784
35	6.1	Design of simply supported one-way slabs for flexure check for deflection control and shear	https://www.youtube.com/playlist?list=PL51300B0778FB5784
36	6.2	Design of one-way cantilever slabs and cantilevers chajjas for flexure check for deflection control and check for development length and shear	https://www.youtube.com/playlist?list=PL51300B0778FB5784

37	6.3	Design of two-way simply supported slabs for flexure with corner free to lift	https://www.youtube.com/playlist?list=PL51300B0778FB5784
38	6.4	Design of dog-legged staircase	https://www.youtube.com/playlist?list=PL51300B0778FB5784
39	6.5	Detailing of reinforcement in stairs spanning longitudinally.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
40	7.1	Assumptions in limit state of collapse-compression	https://www.youtube.com/playlist?list=PL51300B0778FB5784
41	7.2	Definition and classification of columns,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
42	7.3	Class Test	PERFORMANCE DISCUSSION
43	7.4	Effective length of column. Specification for minimum reinforcement;	https://www.youtube.com/playlist?list=PL51300B0778FB5784
44	7.5	Cover, maximum reinforcement, number of bars in rectangular,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
45	7.6	Square and circular sections,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
46	7.7	Diameter and spacing of lateral ties.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
47	7.8	Analysis and design of axially loaded short square,	https://www.youtube.com/playlist?list=PL51300B0778FB5784
48	7.9	Rectangular and circular columns (with lateral ties only).	https://www.youtube.com/playlist?list=PL51300B0778FB5784
49	7.10	Types of footing	https://www.youtube.com/playlist?list=PL51300B0778FB5784
50	7.11	Design of isolated square column footing of uniform thickness for flexure and shear.	https://www.youtube.com/playlist?list=PL51300B0778FB5784
51		CLASS TEST	PERFORMANCE DISCUSSION
52		MONTHLY CLASS TEST	PERFORMANCE DISCUSSION
53		PRIVIOUS YEAR QUESTION DISCUSSION	PERFORMANCE DISCUSSION

