

Design of Industrial Structure

01ST1215 (PEC)

Objective of the Course: Objectives of introducing this subject at first year level in Masters of civil engineering are:

- To understand the various structural systems used for the industrial structures.
- To evaluate the behavior of industrial structures under various loading conditions.

Credit Earned: 3

Students learning outcomes:

After successful completion of the course, it is expected that student will be able to

- Design RC and Steel Chimney
- Design Various Transmission Line Tower.
- Design Steel Bunker and silo.
- Design Industrial Water Tanks.

Teaching and Examination Scheme

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	CSE (I)	IA (M)	Viva (V)	Term Work (TW)	
03	00	00	03	50	20	30	25	25	150

Detailed Syllabus

Sr No.	Title of the unit	Number of hours
1	Analysis and Design of RC and Steel Chimney Design Factors, Stresses due to Temperature, Components & Safety Ladders, Analysis and Design of RC and Steel Chimney, Foundation design for Varied Soil Strata.	10
2	Design of transmission/ TV tower, Mast and trestles Types of Loads & Tower Configuration, bracing system, Analysis and Design for Vertical & Transverse Loads.	10
3	Steel Bunkers and Silos Design of square bunker – Jansen’s and Airy’s theories – IS Code	10

	provisions – Design of side plates – Stiffeners – Hooper – Longitudinal beams Design of cylindrical silo – Side plates – Ring girder – stiffeners.	
4	Design of Water Tanks Water Tanks – Design of rectangular riveted steel water tank – Tee covers – Plates – Stays –Longitudinal and transverse beams –Design of staging – Base plates – Foundation and anchor bolts – Design of pressed steel water tank – Design of stays – Joints – Design of hemispherical bottom water tank – side plates – Bottom plates – joints – Ring girder – Design of staging and foundation	12

Suggested Theory Distribution

The suggested theory distribution as per Bloom’s taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
5%	5%	20%	25%	25%	20%

Instructional Method and Pedagogy:

1. Use of Learning Management system like canvas
2. Demonstration through ppt and videos and lectures
3. Brainstorming and group discussion sessions
4. Collaborative learning

Recommended Study Material:

Reference Book:

1. Tall Chimneys, Manohar S. N., Tata McGraw Hill Publishing Company, New Delhi.
2. B. C. Punmia, Ashok Kr. Jain, Arun Kr. Jain, “Design of Steel Structure”, 2nd Edition, Lakshmi Publishers, 1998.
3. Ram Chandra, “Design of Steel Structures”, 12th Edition, Standard Publishers, 2009.
4. N. Subramanian, “Design of Steel Structures”, Oxford University Press.
5. Dayaratnam P “ Design of Steel Structures” S. Chand of Co.
6. IS Codes: IS:800, IS:456, IS:875, IS:1893, IS:4326, IS:13920, IS: 3370, IS: 4995 (I & II), SP:16, SP:34.
