

CE8T4A

**4/4 B.Tech. EIGHTH SEMESTER
INDUSTRIAL STRUCTURES**

Credits: 3

Lecture: 3 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Pre-requisites: Building planning and drawing, DDCS- I, DDCS- II and DDSS.

Learning objectives:

- To be familiar with the basic types of industrial structures and their role in the process of an industrial plant.
- To know the specific loads and typical types of structures used in construction

Course outcomes:

At the end of course, the student will be able to:

1. Draw the plan and layout of buildings, understand acoustics, fire safety and requirements for industries
2. Design the crane girders, bunkers and silos
3. Understand the principles of folded plates and shells and design chimneys
4. Analyze and design a single storey shed
5. Determine the functional requirements and principles for precast concrete units

UNIT I

PLANNING AND FUNCTIONAL REQUIREMENTS

Classification of Industries and Industrial structures – General requirements for industries like cement, chemical and steel plants – Planning and layout of buildings and components. Lighting – Ventilation – Acoustics – Fire safety – Guidelines from factories act

UNIT II

DESIGN OF STEEL STRUCTURES

Industrial roofs – Design of Bunkers and Silos

UNIT III

DESIGN OF R.C. STRUCTURES

Chimneys – Principles of folded plates and shell roofs

UNIT IV

ANALYSIS AND DESIGN OF SHEDS

Analysis and design of single storey shed, knee braced truss column structure

UNIT V

PREFABRICATION

Principles of prefabrication – Prestressed precast roof trusses- Functional requirements for Precast concrete units

Learning resources:

Text books:

1. Purushothaman, P. Reinforced Concrete Structural Elements, Tata MacGraw-Hill,1984.
2. Pasala Dayaratnam. Design of Steel Structure, London Hill Books,1995.

Reference books:

1. Henn, W. Buildings for Industry, vols .I and II, London Hill Books, 1995.
2. SP32 – 1986. Handbook on Functional requirements of Industrial buildings, Bureau of Indian Standards, New Delhi 1990.
3. Koncz, J. Course Notes on Modern Developments in the Design and Construction of Industrial Structures, Structural Engineering Research Centre, Madras, 1982.

4. Manual of Precast Construction Vol I & II Bauverlay GMBH, 1971.

e-learning resources:

<http://nptel.ac.in/courses.php>

<http://jntuk-coerd.in/>