

E.G.S. PILLAY ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai
Accredited by NAAC with 'A' Grade | Accredited by NBA (CSE, EEE, MECH, CIVIL, ECE, IT)
NAGAPATTINAM – 611 002



B.E. Civil Engineering

Full Time Curriculum and Syllabus

Third Year – Eighth Semester

Course Code	Course Name	L	T	P	C	Maximum Marks		
						CA	ES	Total
Theory Course								
	Elective VII	3	0	0	3	40	60	100
	Elective VIII	3	0	0	3	40	60	100
	Elective IX	3	0	0	3	40	60	100
Laboratory Course								
1704CE851	Project Work	0	0	18	9	50	50	100

L – Lecture | T – Tutorial | P – Practical | C – Credit | CA – Continuous Assessment | ES – End Semester

1703CE019

STORAGE AND INDUSTRIAL STRUCTURES

L	T	P	C
3	0	0	3

COURSE OBJECTIVES:

1. To study the design of material storage structures
2. To study the design procedures and practices of complex steel structures like industrial structures and Gantry girders.
3. To develop an in-depth knowledge in the area of design of industrial structure with the latest code of practice as per the Indian Standard

UNIT I PLANNING AND LAYOUT

9 Hours

Planning and layout of low-rise buildings for different functions such as residences, office buildings, shopping centers, hospitals, auditoria, etc. STEEL MILL BUILDINGS: Planning the general framing scheme - Planning the Trusses - Bracing of roofs - Vertical bracing of buildings - Design of roof Trusses and lattice girders

UNIT II DESIGN OF FRAMES

9 Hours

Design of simple and rigid frames – Gable frames – Knee bents

UNIT III DESIGN OF CHIMNEYS

9 Hours

Self-supporting - Guyed Chimneys - Design of towers

UNIT IV INDUSTRIAL ROOFING STRUCTURES

9 Hours

Trusses – Design of lattice girders – design of arches – Plate girders - Design of industrial sheds - Design of overhead and under slung girders - Gantry girder - Design of gantry columns – Heavy duty plate girders.

UNIT V BUNKERS AND SILOS:

9 Hours

Pressure on side walls of bunkers and silos - Janssen's and Airy's theories - Complete design of single cell circular silos including their supporting structures and foundation - Design of rectangular and square bunkers - sloping bottom - design of staging.

Total:

45 Hours

FURTHER READING:

Design concrete and steel material storage structures.

REFERENCES:

1. Dunham C W, "Planning Industrial Structures", McGraw Hill Book Company, Inc., 1980.
2. Subramanian N, "Design of Steel Structures", Oxford University Press, New Delhi 2008
3. Jayagopal L S, "Structural Steel Design", Vikas Publications, 2012
4. Gaylord and Gaylord, "Structural Engineering Hand Book", McGraw Hill book Co., 1990
5. Charles G Salmon & John E Johnson, "Steel Structures – Design & Behaviour", Harper Collins Publishers, 3rd edition, 1990.
6. Robert Englekirk, "Steel Structures, Controlling Behaviour through Design", John Wiley & Sons, Inc., 2003.
7. Ram Chandra, "Design of Steel Structures", Vol.2, Scientific Publication (India), Jodhpur, 2007
8. <https://nptel.ac.in/courses/112/107/112107283/>

1703CE021	REPAIR AND REHABILITATION OF STRUCTURES	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

1. To make the students to gain knowledge on quality of concrete, durability aspects, causes of deterioration, assessment of distressed structures , repairing of structures and demolition procedures.
2. To make the students to assess the durability of concrete due to various climate conditions
3. To prepare the students to select the appropriate rehabilitation, retrofitting and demolition for structures

UNIT I MAINTENANCE AND REPAIR STRATEGIES 9 Hours

Maintenance, Repair and Rehabilitation, Facets of Maintenance, importance of Maintenance, Various aspects of Inspection, Assessment procedure for evaluating a damaged structure, causes of deterioration

UNIT II STRENGTH AND DURABILITY OF CONCRETE 9 Hours

Quality assurance for concrete – Strength, Durability and Thermal properties, of concrete - Cracks, different types, causes – Effects due to climate, temperature, Sustained elevated temperature, Corrosion - Effects of cover thickness

UNIT III SPECIAL CONCRETES 9 Hours

Polymer concrete, Sulphur infiltrated concrete, Fibre reinforced concrete, High strength concrete, High performance concrete, Vacuum concrete, Self compacting concrete, Geopolymer concrete, Reactive powder concrete, Concrete made with industrial wastes.

UNIT IV TECHNIQUES FOR REPAIR AND PROTECTION METHODS 9 Hours

Non-destructive Testing Techniques, Epoxy injection, Shoring, Underpinning, Corrosion protection techniques – Corrosion inhibitors, Corrosion resistant steels, Coatings to reinforcement, cathodic protection

UNIT V REPAIR, REHABILITATION AND RETROFITTING OF STRUCTURES 9 Hours

Strengthening of Structural elements, Repair of structures distressed due to corrosion, fire, Leakage, earthquake – Demolition Techniques - Engineered demolition methods - Case studies.

Total: 45 Hours

REFERENCES:

1. Shetty M.S., "Concrete Technology - Theory and Practice", S.Chand and Company, 2008
2. DovKominetzky.M.S., " Design and Construction Failures", Galgotia Publications Pvt.Ltd., 2001
3. Ravishankar.K., Krishnamoorthy.T.S, " Structural Health Monitoring, Repair and Rehabilitation of Concrete Structures", Allied Publishers, 2004.
5. CPWD and Indian Buildings Congress, Hand book on Seismic Retrofit of Buildings, Narosa Publishers, 2008.
6. Gambhir.M.L., "Concrete Technology", McGraw Hill, 2013
7. <https://nptel.ac.in/courses>

1703CE025	TRAFFIC ENGINEERING AND MANAGEMENT	L	T	P	C
		3	0	0	3

COURSE OBJECTIVES:

1. To learn the fundamentals of traffic engineering
2. To learn the methods of intersection design
3. To learn the skills of traffic control
4. To be introduced to the different theories of traffic flow
5. To be aware of the importance of traffic safety

UNIT I TRAFFIC PLANNING AND CHARACTERISTICS 9 Hours
Road Characteristics – Road user characteristics – PIEV theory – Vehicle – Performance characteristics – Fundamentals of Traffic Flow – Urban Traffic problems in India.

UNIT II TRAFFIC SURVEYS AND TRAFFIC DESIGN 10 Hours
Traffic Surveys –Speed, journey time and delay surveys – Vehicles Volume Survey including on- motorized transports–Methods and interpretation–Origin Destination Survey Intersection Design-channelization, Rotary intersection design

UNIT III TRAFFIC SAFETY AND ENVIRONMENT 8 Hours
Road accidents – Causes, effect, prevention, and cost – Street lighting– Traffic and environment hazards– Air and Noise Pollution, causes, abatement measures – Promotion and integration of public transportation–Promotion of non-motorized transport.

UNIT IV ROADS SAFETY AND RULES 9 Hours
Road Safety Audit - Global & Local perspective – Road safety issues – Road safety programmes – Types of RSA, planning, design.

UNIT V Traffic System Management 9 Hours
Traffic System Management- Management techniques, one-way, tidal flow – Transportation System Management Process

Total: 45 Hours

REFERENCES:

1. Kadiyali, L.R., Traffic Engineering and Transport Planning, Khanna Publishers, New Delhi, 2012.
2. Khisty C J, Lall B. Kent; Transportation Engineering-An Introduction, Prentice-Hall, NJ, 2005.
3. May, A.D., Traffic Flow Fundamentals, Prentice – Hall, Inc., New Jersey, 1990.
4. <https://nptel.ac.in/courses/>