

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, ECE,
CIVIL, IT)

NAGAPATTINAM–611002



B.E. Civil Engineering Full Time Curriculum and Syllabus

SEMESTER VIII										
Course Code	Course Name	L	T	P	C	Maximum Marks			Category	
						CIA	ES	Total		
Theory Course										
1703CE019	Storage And Industrial Structures (Elective VII)	3	0	0	3	40	60	100	PE	
1703CE021	Repair And Rehabilitation of Structures (Elective VIII)	3	0	0	3	40	60	100	PE	
1703CE025	Traffic Engineering and Management (Elective IX)	3	0	0	3	40	60	100	PE	
Laboratory Course										
1702CE851	Project	0	0	18	9	50	50	100	PC	
Total		09	0	18	18	170	230	400	-	

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

1703CE019	STORAGE AND INDUSTRIAL STRUCTURES				L	T	P	C
	B.E CIVIL ENGINEERING				3	0	0	3
Course Objectives:								
<ol style="list-style-type: none"> To study the design of material storage structures To study the design procedures and practices of complex steel structures like industrial structures and Gantry girders. 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 over head and under slung girders - Gantry girder - Design of gantry columns – Heavy duty plate girders.								
Unit V	BUNKERS AND SILOS:						12 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 + 15 Hours
Further Reading:								
design concrete and steel material storage structures.								
Course Outcomes:								
After completion of the course, Student will be able to								
1. Discuss the planning and functional requirements of Industrial structures.								
2. Discover the need to learn about the design concepts, and constructional aspects of Industrial structures								
3. Design of Simple Industrial shed-gantry girder								
4. Design steel gantry girders and portal frames								
5. Design storage structures, bunkers and silos								
References:								
1. Dunham C W, "Planning Industrial Structures", McGraw Hill Book Company, Inc., 1980.								
2. Subramanian N," Design of Steel Structures", Oxford University Press, NewDelhi 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								

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	12 Hours				
Strengthening of Structural elements, Repair of structures distressed due to corrosion, fire, Leakage, earthquake – Demolition Techniques - Engineered demolition methods - Case studies.						
					Total:	45 + 15 Hours
Course Outcomes:						
After completion of the course, Student will be able to						
1. Suggest maintenance and repair strategies						
2. Examine the durability due to various climate conditions						
3. Suggest the suitable materials and techniques for repair						
4. Choose various rehabilitation and retrofitting techniques.						
5. Select suitable demolition techniques for structures.						
References:						
1. 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.						
4. CPWD and Indian Buildings Congress, Hand book on Seismic Retrofit of Buildings, Narosa Publishers, 2008.						
5. Gambhir.M.L., "Concrete Technology", McGraw Hill, 2013						

1703CE025	TRAFFIC ENGINEERING AND MANAGEMENT	L	T	P	C	
		3	0	0	3	
Course Objectives:						
	To learn the fundamentals of traffic engineering					
	To learn the methods of intersection design					
	To learn the skills of traffic control					
	To be introduced to the different theories of traffic flow					
	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 – Integrated planning of town, country, regional and all urban infrastructure – Towards Sustainable approach.						
Unit II	TRAFFIC SURVEYS AND TRAFFIC DESIGN	10 Hours				
Traffic Surveys – Speed, journey time and delay surveys – Vehicles Volume Survey including non-motorized transports – Methods and interpretation – Origin Destination Survey – Intersection Design – channelization, Rotary intersection design – Signal design – Coordination of signals – Grade separation						
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	ROAD SAFETY AND RULES	9 Hours				
Road Safety Audit - Global & Local perspective – Road safety issues – Road safety programmes – Types of RSA, planning, design, construction & operation stage audits – Methodology – Road safety audit measures						
Unit V	Traffic System Management	9 Hours				
Traffic System Management- Management techniques, one-way, tidal flow, turning restrictions etc. – Transportation System Management Process – TSM Planning & Strategies						
					Total:	45 Hours
Course Outcomes:						
	After completion of the course, Student will be able to					
	1. Carry out traffic studies					
	2. Design intersections					
	3. Implement traffic system management					
	4. Be aware of traffic flow theory					
	5. Enhance safety in all design aspects					
References:						
1. Kadiyali, L.R., <i>Traffic Engineering and Transport Planning</i> , Khanna Publishers, New Delhi, 2012						
2. Khisty C J, Lall B. Kent; <i>Transportation Engineering - An Introduction</i> , Prentice-Hall, NJ, 2005						
3. May, A.D., <i>Traffic Flow Fundamentals</i> , Prentice – Hall, Inc., New Jersey, 1990						

1704CE851

PROJECT WORK

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Course Objectives:

To guide the students such a way that they carry out a comprehensive work on the chosen topic which will stand them in good stead as they face real life situations. The project work so chosen by the student shall culminate in gaining of major design experience in the related area of specialization.

Course Outcomes (COs)

Upon completion of the course, the student should be able to,

- a) Formulate a real world problem, identify the requirement and develop the design solutions.
- b) Express the technical ideas, strategies and methodologies of civil engineering.
- c) Utilize the new tools,softwares and techniques that contribute to obtain the solution of the project.
- d) Test and validate through conformance of the developed prototype and analysis the cost effectiveness.
- e) Prepare report and present the oral demonstrations.

The students in a group of 3 to 4 works on a topic approved by the head of the department under the guidance of a faculty member and prepares a comprehensive project report after completing the work

to the satisfaction of the supervisor. The progress of the project is evaluated based on a minimum of three reviews. The review committee may be constituted by the Head of the Department. A project report is required at the end of the semester. The project work is evaluated based on oral presentation and the project report jointly by external and internal examiners constituted by the Head of the Department.

Total: 180 Periods