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, IT, CIVIL, ECE)

NAGAPATTINAM – 611002

B.E. CIVIL ENGINEERING

R-2019

Final Year – Eighth Semester

Course Code	Course Name	L	T	P	C	Maximum Marks			Category
						CA	ES	Total	
Theory Course									
1902CE015	Pre-Stressed Concrete **(PC Elective)**	3	0	0	3	40	60	100	PCE
1902CE019	Coastal Zone Management **(PC Elective)**	3	0	0	3	40	60	100	PCE
Laboratory Course									
1902CE851	Project Work	0	0	14	7	50	50	100	EEC

1902CE015	PRE-STRESSED CONCRETE	L	T	P	C
		3	0	0	3

Course Objectives:

1. To learn the principles, materials, methods and systems of prestressing
2. To learn the design of prestressed concrete beams for flexural, shear and tension and to calculate ultimate flexural strength of beam
3. Useful course for structural engineers in designing economical structures.

Unit I	INTRODUCTION – THEORY AND BEHAVIOUR	9 Hours

Basic Concepts - Historical development - classification and types - advantages over ordinary reinforced concrete – Prestressing Materials – Loads – Design Concepts –Prestressing Techniques – Systems of Prestressing – Loss of Prestress.

Unit II	DESIGN FOR FLEXURE AND CABLE LAYOUT	9 Hours

Basic assumptions - permissible stresses in steel and concrete as per IS 1343-1980 code - Design of sections of post-tensioned and pre-tensioned beams (Type I and II) - check for strength limit state based on IS 1343 – 1980 code - Layout of cables in post-tensioned beams - location of wires in pre-tensioned beams.

Unit III	SHEAR AND DEFLECTION	9 Hours

Design for shear based on IS 1343 - 1980 code - Factors influencing deflections - short term deflections of uncracked members - prediction of long-term deflections - check for serviceability limit state of deflection- Anchorage Zone

Unit IV	COMPOSITE CONSTRUCTION	9 Hours

Composite Sections – Types – Advantages – Analysis and Design – Shear Keys.

Unit V	CIRCULAR PRESTRESSING	9 Hours

Prestressed Concrete Tanks - Columns – Poles – Tension Members – Masts – Pylons –Sleepers

Total:	45 Hours

Further Reading:

1.willstudyvarious methods of prestressing and the concepts of partial pre-stressing.

2.will design beams, pipes, water tanks, posts and similar structures

Course Outcomes:

After completion of the course, Student will be able to

1. Understand the concepts of pre-stressing in concrete structures and identify the materials for pre-stressing
2. Analyze a Pre-stressed Concrete section
3. Design pre-tensioned and post tensioned girders for flexure and shear
4. Design continuous pre-tensioned and post tensioned beams
5. design pre-stressed concrete tanks, poles and sleepers

References:

1. Krishna Raju N, " Prestressed Concrete", Tata McGraw Hill Publishing Company, Delhi, 2007. .
2. Edward G Nawy, “Prestressed Concrete”, A Fundamental Approach, 3rd Edition, Prentice Hall, Upper Saddle River, NewJersy, 2000
3. Rajagopalan N, “Prestressed Concrete”, Narosa Publishing House, New Delhi, 2002.
4. Sinha N C and Roy S K, “Fundamentals of Prestressed Concrete”, S Chand & Co, 1985.
5. Lin T Y and Ned H Burns, “Design of Prestressed Concrete Structures”, John Wiley Sons, New York, 1982
6. Mallik S K and Gupta A P, “Prestressed Concrete”, Oxford & IBH Publishing Co., Pvt. Ltd., India, 2nd Edition, 1986.

1902CE019	COASTAL ZONE MANAGEMENT	L	T	P	C
		3	0	0	3

Course Objectives:

At the end of the semester,

1.The student shall be able to understand the coastal processes

2.The student shall be able to understand the coastal dynamics

3.The student shall be able to understand impacts of structures like docks, harbours and quays leading to simple management perspectives along the coastal zone

Unit I	**COASTAL ZONE**	**9 Hours**

Coastal zone – Coastal zone regulations – Beach profile – Surf zone – Off shore – Coastal waters – Estuaries – Wet lands and Lagoons – Living resources – Non living resources.

Unit II	**WAVE DYNAMICS**	**9 Hours**

Wave classification – Airy's Linear Wave theory – Deep water waves – Shallow water waves – Wave pressure – Wave energy – Wave Decay – Reflection, Refraction and Diffraction of waves – Breaking of waves – Wave force on structures – Vertical – Sloping and stepped barriers – Force on piles.

Unit III	**WAVE FORECASTING AND TIDES**	**9 Hours**

Need for forecasting – SMB and PNJ methods of wave forecasting – Classification of tides – Darwin's equilibrium theory of tides – Effects on structures – seiches, Surges and Tsunamis.

Unit IV	**COASTAL PROCESSES**	**9 Hours**

Erosion and depositional shore features – Methods of protection – Littoral currents – Coastal aquifers – Sea water intrusion – Impact of sewage disposal in seas.

Unit V	**HARBOURS**	**9 Hours**

Structures near coast – Selection of site – Types and selection of break waters – Need and mode of dredging – Selection of dredgers – Effect of Mangalore Forest.

	Total:	**45 Hours**

Further Reading:

1.Richard Sylvester, "Coastal Engineering, Volume I and II", Elseiner Scientific Publishing Co., 1999

2.Quinn, A.D., "Design & Construction of Ports and Marine Structures", McGraw Hill Book Co., 1999

Course Outcomes:

After completion of the course, Student will be able to

1. Describe the Coastal zone regulations,
2. Describe the coastal processes
3. Explain the wave dynamics and forecast waves
4. Understand the erosion and depositional shore protection
5. Plan the coastal structures including harbours and tides

References:

1.Ed. A.T. Ippen, "Coastline Hydrodynamics", McGraw-Hill Inc., New York, 1993

2.Dwivedi, S.N., Natarajan, R and Ramachandran, S.,"Coastal Zone Management in Tamilnadu", Madras, 199

3.Richard Sylvester, "Coastal Engineering, Volume I and II", Elseiner Scientific Publishing Co., 1999

4.Quinn, A.D., "Design & Construction of Ports and Marine Structures", McGraw Hill Book Co., 1999

PROJECT WORK

1902CE851

Course Objectives:

To guide the students such a way that the 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