VEER SURENDRA SAI UNIVERSITY OF TECHNOLOHY, BURLA

Semester**: Eighth (B Tech)** **LESSON PLAN**Subject:**Prestressed Concrete (BCE409)**

Session:**Spring Semester**, **2016-17**Theory/Sessional: **Theory**
Branch/Course: **Civil Engineering**Name of the Faculty Member:**Dr. S. K. Panigrahi**

COURSE OBJECTIVES:

- To understand various prestressing systems and material characteristics.
- To understand various prestressing losses and prestresssed member deflection under load.
- To understand the analysis and design under flexure, shear and torsion for both pre tensioned post tensioned beam.
- To understand stress distributions in end blocks of post tensioned beam.
- To understand the design for Indeterminate structures.

Period	Module /Number	Topic to be covered	Remark/Sign of the Faculty member
1	Module I	Introduction to concrete behavior	
2		Difference in properties between RCC and PSC	
3		Different systems of prestressing	
4		Characteristics of concrete and steel	
5		Other suitable material for prestressing	
6		Losses in prestress	
7		Losses in prestress	
8		Losses in prestress	
9		Losses in prestress	
10		Analysis and Design of section for Flexure	
11		Analysis and Design of section for Flexure	
12		Analysis and Design of section for Shear	
13		Analysis and Design of section for Torsion	
14		Analysis and Design of section for Torsion	
15		Limit state design as per IS code	
16	Module II	Deflection of prestressed member	
17		Short term deflection of un-cracked member	
18		Short term deflection of un-cracked member	
19		Short term deflection of un-cracked member	
20		Long term deflection of un-cracked member	
21		Long term deflection of un-cracked member	
22		Deflection of cracked member	
23		Deflection of cracked member	
24	Module III	Stress distribution in end block of post tensioned section	
25		Magnel's method	
26		Guyen's method	
27		Rowe's method	
28		IS code method	
29	Module IV	Principles of design of prismatic continuous beams with two equal span (same moment of inertia)	

30		Principles of design of prismatic continuous beams with two equal span (same moment of inertia)	
31		Principles of design of prismatic continuous beams with two equal span (variable moment of inertia)	
32		Principles of design of prismatic continuous beams with two equal span (variable moment of inertia)	
33		Principles of design of prismatic continuous beams with two unequal span (same moment of inertia)	
34		Principles of design of prismatic continuous beams with two unequal span (same moment of inertia)	
35		Principles of design of prismatic continuous beams with two unequal span (variable moment of inertia)	
36		Principles of design of prismatic continuous beams with two unequal span (variable moment of inertia)	
37		Cap cable and Design concept of concordancy of cable	
38		Secondary design consideration	
39		Design of pre-tensioned beam	
40		Design of pre-tensioned beam	
41		Design of pre-tensioned beam	
42		Design of post-tensioned beam	
43		Design of post-tensioned beam	
44		Design of post-tensioned beam	

COURSE OUTCOME

- Ability to calculate the possible deformations, losses and stress distribution in the end block of post tensioned beam. .
- Ability to design a prestressed member under flexure, shear and torsion.
- Ability to design a continuous prestressed beam. .
- Ability to design a pre-tensioned and post-tensioned prestressedbeam..

REFERENCES

- E. W. Bennet-" Prestressed concrete theory and design"-Chapman and Hall, London-1962.
- T.Y. Lin and H. Burns Ned-"Design of Prestressed concrete structures", Johnwilley and sons. New York-1982.
- N. Krishnaraju-, "Prestressed concrete"- Tata McGraw Hill, New Delhi-2004.
- S. K. Mallik and A. P. Gupta- " Prestressed concrete"- Oxford and IBH, New Delhi-1982.

Signature of the faculty member:

Date: 04/01/2017 Counter Signature of H.O.D