

# GOPALAN COLLEGE OF ENGINEERING AND MANAGEMENT

Department of Civil Engineering

Academic Year: **2016-17**

Semester: **EVEN**

## COURSE PLAN

Semester: **VIII**

Subject Code& Name: **10CV834 &EARTHQUAKE RESISTANT DESING OF STRUCTURES**

Name of Subject Teacher: **KALYANI DONGARKAR**

Name of Subject Expert (Reviewer): **K PRABHAKAR**

For the Period: From: 26-01-17 to 19-05-17

Details of Book to be referred:

Text Books	T1: Earthquake Resistant Design of Structures- Pankaj Agarwal, Manish Shrikhande, PHI India T2: Earthquake Resistant Design of Structures- S K Duggal, Oxford University Press, 2007
Reference Books	R1: Earthquake Resistant Design -Anil Chopra R2: Earthquake Engineering Damage Assessment and Structural design -S F Borg (John Wiley and sons. 1983) R3: IS 1893: 2002
Website	W1: www.nicee.org

Lecture NO	Topic Planned	Practical Applications & Brief objectives	Book referred with pg no.	Planned Date	Executed Date	Deviation Reasons thereof	How Made Good / Reciprocate arrangement	Remarks by HOD
1.	<b>UNIT-1 Introduction</b> Engineering Seismology Earthquake ground motion	<b>Objective:</b> To know the interiors of the earth, seismology, Causes and the	T1- 3,7	7-2-17				
2.	Theory of plate tectonics		T1- 4-9	8-2-17				

3.	Seismic waves	effects of earthquakes  <b>Application:</b> Calculations of Seismic loads for earthquake resistant designs.  <b>OUTCOME:</b> Knowledge of seismology and earthquakes	T1- 10-12	9-2-17					
4.	Magnitude and Intensity of Earthquakes		T1- 13-22	9-2-17					
5.	Local site effects		T1- 24-29	13-2-17					
6.	Seismic zoning map of India		T2: 25 IS1893:2002	14-2-17					
7.	Revision/ Tutorial			15-2-17					
8.	<b>UNIT-2 Seismic Design Parameters</b> Introduction		<b>Objective:</b> To know the Design parameters (Structural Dynamics)  <b>Application:</b> Calculation of seismic load on the structure  <b>OUTCOME:</b> Construction of design spectrum from the parameters	T1- 88-89	15-2-17				
9.	Types of Earthquakes- Intensity and magnitudes			T1- 88-89	20-2-17				
10.	Earthquake ground Motion Characteristics: Amplitude properties, Duration, Effect of distance	T1- 90-93		21-2-17					
11.	Ground Motion Characteristics	T1- 96		22-2-17					
12.	Design Spectrum	T1- 100		23-2-17					
13.	Response Spectrum	T1- 101		23-2-17					
14.	Revision			27-2-17					
15.	<b>UNIT 3</b> Structural modeling- 1D,2D, 3D	<b>Objective:</b> To understand simplification of the structures for load calculations,	T1- 194	28-2-17					
16.	Code based Seismic design method- Static analysis		T1-197	1-3-17					

17.	Code based Seismic design method- dynamic analysis	evaluation of affected buildings and techniques of retrofitting  <b>Application:</b> Calculation of seismic loads, condition assessment, retrofitting  <b>Outcome:</b> knowledge of structural modeling, seismic evaluation and retrofitting techniques	T1-198	2-3-17				
18.	Response Reduction factors Response Control concept		T1- 199	2-3-17				
19.	Seismic evaluation		T1-201-205, 505-522	6-3-17				
20.	Retrofitting Methods		T1-524-540, 204	7-3-17				
21.	Ductile Detailing		IS 13920:1993	8-3-17				
22.	Revision			13-3-17				
23.	<b>UNIT 4</b> Building characteristics, Irregularities	<b>Objective:</b> To know the effect of architecture on seismic behaviour  <b>Application:</b> Planning Earthquake resistant architecture  <b>OUTCOME:</b> Knowledge of earthquake resistant architecture	T2-107 IS1893:2002	14-3-17				
24.	Vertical irregularity		T1:231-421 IS1893:2002	15-3-17				
25.	Horizontal irregularity, plan configuration problems		T2:114 IS1893:2002	16-3-17				
26.	Effect of structural irregularities on RC building		T1 IS1893:2002	16-3-17				
27.	Seismo resistant building architecture		W1	20-3-17				
28.	Lateral load resisting systems		T1:239-240 T2:120-122	21-3-17				
29.	Revision			22-3-17				

30.	<b>UNIT 5:</b> Seismic Design philosophy	<p><b>Objective:</b> To understand the design procedure by static and dynamic analysis methods</p> <p><b>Application:</b> Calculation of Seismic load at different locations</p> <p><b>OUTCOME:</b> Knowledge of static and dynamic design procedure</p>		23-3-17			
31.	Determination of Design lateral forces by Equivalent lateral force procedure		T1: 251-281 IS1893:2002	27-3-17			
32.	Numerical problem		T1: 251-281 IS1893:2002	28-3-17			
33.	Numerical problem		T1: 251-281 IS1893:2002	30-3-17			
34.	Numerical problem		T1: 251-281 IS1893:2002	30-3-17			
35.	Determination of Design lateral forces by Dynamic Analysis procedure		IS 1893:2002	3-4-17			
36.	Numerical problem		T1: 251-281	4-4-17			
37.	Numerical problem		IS1893:2002	5-4-17			
38.	Numerical problem		T1: 251-281	6-4-17			
39.	Revision / Unit Test			6-4-17			
40.	<b>UNIT 6</b> Step by step procedure for seismic analysis of RC buildings	<p><b>Objective:</b> To know the step by step procedure of analysis and design</p>	T1-292-236 IS1893:2002	10-4-17			
41.	Equivalent static lateral force method (3 storey without infill) Numerical problem		T1-292-236 IS1893:2002	11-4-17			
42.	Equivalent static lateral force method (4 storey) Numerical problem.		T1-292-236 IS1893:2002	12-4-17			

43.	Equivalent static lateral force method (4 storey) Numerical problem.	<b>Application:</b> Earthquake resistant Design of buildings  <b>OUTCOME:</b> Knowledge of Earthquake resistant analysis and design	T1-292-236 IS1893:2002	13-4-17				
44.	Response spectrum Method Numerical problem (3 storey)		T1-292-236 IS1893:2002	13-4-17				
45.	Response spectrum Method Numerical problem (3 storey)		T1-292-236 IS1893:2002	20-4-17				
46.	Response spectrum Method Numerical problem (4 storey)		T1-292-236 IS1893:2002	24-4-17				
47.	Revision			25-4-17				
48.	<b>UNIT 7:</b> Analysis and design of RC buildings – Preliminary data	<b>Objective:</b> To learn Analysis and design of RC buildings  <b>Application:</b> Earthquake resistant Design of buildings  <b>OUTCOME:</b> Knowledge of Earthquake resistant analysis and design of RC buildings	T1:371-373	26-4-17				
49.	Loading data, Load combinations		T1:377-380	27-4-17				
50.	Analysis of sub frame (3 storey without infill)		T1: 375	27-4-17				
51.	Design of sub frame (3 storey without infill)		T1: 382-385	2-5-17				
52.	Analysis of sub frame (4 storey without infill)		T1: 375	3-5-17				
53.	Design of sub frame (4 storey without infill)		T1: 382-385	4-5-17				
54.	Revision / Numerical problem			4-5-17				
55.	Revision / Numerical problem			8-5-17				

56.	<b>UNIT 8:</b> Earthquake Resistant Design of Masonry Buildings general introduction	<b>Objective:</b> To gain the knowledge of elastic properties of masonry structures.  <b>Application:</b> Design of economical earthquake resistant structure in remote areas  <b>OUTCOME:</b> Knowledge of Earthquake Resistant Design of masonry Structures	T1-427, 449-451	9-5-17				
57.	Compressive and Flexural strength of Structural Masonry		T1:452-454	10-5-17				
58.	Tensile and Shear Strength of Structural Masonry		T1:455-456	11-5-17				
59.	Lateral Load Analysis – Determination of lateral loads		T1: 463-464	15-5-17				
60.	Lateral Load Analysis – Distribution of lateral loads		T1: 465-466	16-5-17				
61.	Design of 2 storey Masonry building- numerical problem			17-5-17				
62.	Design of 2 storey Masonry building- numerical problem		18-5-17					
63.	<b>Revision / Unit Test</b>		18-5-17					
64.	Revision	Solving VTU Question Paper		22-5-17				
65.	Revision			23-5-17				
66.	Revision			24-5-17				
67.	Revision			25-5-17				

Prepared By: \_\_\_\_\_  
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