

**Instructional Objectives**

<b>Instructional Objective No.</b>	<b>Instructional Objectives (IO)</b>
1	To understand the behavior of moment resistant frames, shear walls and wall – frame structures
2	To design flat slab system
3	To design underground sumps and overhead tanks.
4	To design retaining walls forming part of multistoried building
5	To understand the detailing requirements to ensure ductility.

**Student Outcomes**

<b>Student Outcomes No.</b>	<b>Student Outcome (SO)</b>
a	an ability to apply knowledge of mathematics, science, and engineering
c	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
e	an ability to identify, formulate, and solve engineering problems

**Mapping of Instructional Objectives (IOs) with Student Outcomes (SOs)****CE1108 DESIGN OF MULTISTORIED BUILDINGS**

<b>Instructional Objective No</b>	<b>Instructional Objectives (IO)</b>	<b>Student Outcomes</b>		
		<b>a</b>	<b>c</b>	<b>e</b>
1	To understand the behavior of moment resistant frames, shear walls and wall – frame structures	<b>x</b>	<b>x</b>	<b>x</b>
2	To design flat slab system	<b>x</b>	<b>x</b>	<b>x</b>
3	To design underground sumps and overhead tanks.	<b>x</b>	<b>x</b>	<b>x</b>
4	To design retaining walls forming part of multistoried building	<b>x</b>	<b>x</b>	<b>x</b>
5	To understand the detailing requirements to ensure ductility.	<b>x</b>	<b>x</b>	<b>x</b>

**Lesson Plan – 2015-16**

<b>CE1108</b>	<b>DESIGN OF MULTISTORIED BUILDINGS</b>	<b>Lecture Hours (L)</b>	<b>Tutorial Hours (T)</b>	<b>Practical Hours (P)</b>	<b>Credits (C)</b>
		<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

<b>Lecture No.</b>	<b>Topic</b>	<b>No. of Hours</b>	<b>Instructional Objectives</b>	<b>Student Outcome</b>	<b>References</b>
<b>UNIT I - BEHAVIOUR OF TALL STRUCTURAL SYSTEMS (12 hours)</b>					
1	Behavior under gravity and lateral loads	1	1	a, c	1,2
2,3,4	Moment resistant frames-Shear walls -Wall frame systems	3	1	a, c	1,2
5,6,7	Portal and cantilever methods of analysis	3	1	a, c	1,2
8,9,10	Design of shear walls	3	1	a, c	1,2
11,12,13	Analysis of wall frame systems using charts	3	1	a, c	1,2
<b>CYCLE TEST 1</b>					
<b>UNIT II - FLAT-SLABS (9 hours)</b>					
14,15,16	Design of flat slab type of construction-direct design method as per BIS code	3	2	a,c,e	1,2
17,18,19	Design of edge beams	3	2	a,c,e	1,2
20,21,22	Design of columns- use of design aids (SP16)	3	2	a,c,e	1,2
<b>UNIT III - RCC WATER TANKS (9 hours)</b>					
23	Design of water tanks – underground sumps- with water table	1	3	a,c,e	1,2,3
24,25,26	Overhead circular, Rectangular	3	3	a,c,e	1,2,3
27,28	Intze type tanks	2	3	a,c,e	1,2,3
29	staging- column- brace type and shaft type	1	3	a,c,e	1,2,3
30,31,32	Design of circular raft foundation.	3	3	a,c,e	1,2,3
<b>CYCLE TEST 2</b>					

<b>UNIT IV – RETAINING WALLS (9 hours)</b>					
33	Introduction of retaining wall	1	4	a,c,e	1,2,3,4
34,35,36	Design of cantilever retaining walls in basements surcharge- water pressure	3	4	a,c,e	1,2,3,4

37,38,39,40	Design of counterfort retaining walls in basements surcharge- water pressure	4	4	a,c,e	1,2,3,4
<b>UNIT V - DETAILING FOR DUCTILITY (6 hours)</b>					
41	Requirement of ductility in multistoried structures	5	5	c,e	1,2,3
42,43	- ductile detailing of beams, columns, foundation	2	5	c,e	1,2,3
44,45	- design of transverse reinforcement in columns and shear stirrups in beams - confining reinforcement	2	5	c,e	1,2,3
<b>MODEL EXAMINATION</b>					
	<b>Total Hours</b>	45			

#### TEXT BOOKS

1. Smith .B.S, Alex Coull, "Tall Building Structures, Analysis and Design", John Wily & Sons. Inc., USA, 1991.
2. Varghese .P.C, "Advanced Reinforced Concrete Design" , Pretince-Hall India, 2005.
3. Unnikrishna Pillai .S and Deavadas Menon, "Reinforced Concrete Design", Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.

#### REFERENCES

1. Krishnaraju .R, Pranesh .R.N, "Design of Reinforced concrete" IS : 456- 2000, New age International Publication (P) Ltd., New Delhi, 2007.
2. Punmia .B.C, Ashok Kumar Jain, Arun Kumar Jain, "Limit State Design of Reinforced Concrete", Laxmi Publications, New Delhi, 2007.
3. IS456:, "Code of Practice for Plain and Reinforced Concrete", BIS, New Delhi, 2000.
4. "Design Aids for Reinforced Concrete to" IS 456, Special Publication (SP16), BIS New Delhi,1980.
5. IS13920:1993, "Ductile Detailing Of Reinforced Concrete Structures Subjected To Seismic Forces - Code Of Practice", BIS New Delhi, 2008.

**Course Coordinator: C.SUDHA**

Sl.No	FACULTY HANDLING THE COURSES	SIGN
1	D.ARULPRAKESH	
2	C.SUDHA	
3	S.KESEVAN	
4	M.BHUVANESWARI	

**Course Coordinator**

**HOD / CIVIL**