MOHAMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN Department of Civil Engineering											
Name of the Subject	Name of the CONSTRUCTION TECHNIQUES AND PRACTICES Name of the Dr. R. Someswaran										
Subject Code	CE8401	Year / Sem	II / IV								
Acad Year 2021-2022 Batch 2020-2024											
Course Objective											

The main objective of this course is to make the student aware of the various construction techniques, practices and the equipment needed for different types of construction activities. At the end of this course the student shall have a reasonable knowledge about the various construction procedures for sub to super structure and also the equipment needed for construction of various types of structures from foundation to super structure.

Course Outcome

- 1. know the different construction techniques and structural systems
- 2. Understand various techniques and practices on masonry construction, flooring and roofing.
 - 3. Plan the requirements for substructure construction.
- 4. Know the methods and techniques involved in the construction of various types of super structures
- 5. Select, maintain and operate hand and power tools and equipment used in the building construction sites.

		Lesson	Plan				
		T / R*	n . 1	Mode of Teaching	Blooms Level (L.		
Sl. No.	Topic(s)	Book	Periods Required	(BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L: L6)	CO	PO
	UNIT I - INTROD	UCTION AND A	ALLOW	ABLE STRESS D	ESIGN		
1	Structural systems, Load Bearing Structure, Framed Structure, Load transfer mechanism	T1, T2	1	BB, PPT	L1	CO1	PO1
2	Floor system, Development of construction techniques, High rise Building Technology	T1, T2	1	BB, PPT	Ll	CO1	PO1, PO8
3	Seismic effect, Environmental impact of materials, responsible sourcing	T1, T2	1	BB, PPT	L1	CO2	PO1, PO8
4	Eco Building (Green Building), Material used, Construction methods	T1, T2	1	BB, PPT	L2	CO1	PO1
5	Natural Buildings, Passive buildings	T1, T2	1	BB, PPT	L1	CO1	PO1, PO8
6	Intelligent(Smart) buildings, Meaning, Building automation	T1, T2	1	BB, PPT	L3	CO1	PO1- PO3,
7	Energy efficient buildings for various zones	T1, T2	1	BB, PPT	L3	CO1	PO2,PO3
8	Case studies of residential, office buildings and other buildings in each zones	T1, T2	1	BB, PPT	L3	CO1	PO3
9	Case studies of residential, office buildings AND Unit I review	T1, T2	1	BB, PPT	L3	CO1	PO3
Suggested	Activity: Assignment - Structural Loads		Į			·	<u> </u>

Evaluatio	on method : Paper Based						
	UNIT II - Co	ONNECTIONS	IN STEE	L STRUCTURE	S		
9	Type of Fasteners, Bolts Pins and welds and types of simple bolted and welded connections,	T1, T2	1	BB, PPT	L1	CO2	PO1
10	Relative advantages and Limitations	T1, T2	1	BB, PPT	L2	CO2	PO2, PO8
12	Modes of failure and the concept of Shear lag	T1, T2	1	BB, PPT	L3	CO2	PO1-PO2
13	Efficiency of joints, Axially loaded bolted connections for Plates and Angle Members using bearing type bolts	T1, T2	1	BB, PPT	BB, PPT L2		PO3, PO8
14	Prying forces and Hanger connection, Design of Slip critical connections with High strength Friction Grip bolts	T1, T2	2	BB, PPT L3		CO2	PO1-PO3
15	Design of joints for combined shear and Tension, Eccentrically Loaded Bolted Bracket Connections	T1, T2	2	BB, PPT	L3	CO2	PO3, PO8
16	Welds-symbols, specifications and effective area of welds	T1, T2	2	BB, PPT	L3	CO2	PO3,
17	Fillet and but Welded connections	T1, T2	2	BB, PPT	L3	CO2	PO3, PO8
18	Axially Loaded connections for Plate and angle truss members and eccentrically Loaded bracket connections.	T1, T2	3	BB, PPT	L3	CO2	PO3, PO8
	d Activity: Case study on failures of connections						
Evaluatio	on method: Group Discussions						
	U	NIT III - TENS	ION ME	MBERS			
19	Tension Members, Types of Tension members and sections	T1, T2	1	BB, PPT	L1	CO3	PO1
20	Behaviour of Tension Members, modes of failure and slenderness ratio	T1, T2	1	BB, PPT	L1	CO3	PO2, PO8
21	Net area, Net effective sections for Plates ,Angles and Tee in tension	T1, T2	2	BB, PPT	Ll	CO3	PO8
22	Design of single section and compound section compression members	T1, T2	2	BB, PPT	L2	CO3	PO1-PO3, PO8
23	Concepts of Shear Lag, Design of plate and angle tension members	T1, T2	3	NPTEL	L3	CO3	PO1-PO3
34	Design of built up tension Members and Connections in tension members	T1, T2	3	NPTEL	L3	CO3	PO1-PO3, PO8
25	Use of lug angles and design of tension splice	T1, T2	3	NPTEL	L3	CO3	PO1-PO3
Suggeste	d Activity: Quiz						
Evaluatio	on method: MCQ						
	UNIT	T IV - COMPRI	ESSION N	MEMBERS			
26	Types of compression members and sections–Behaviour and types of failures	T1, T2	1	BB, PPT	L1	CO4	PO1
27	Short and slender columns and Current code provisions for compression members	T1, T2	1	BB, PPT	L2	CO4	PO2, PO8
28	Beamd subjected to uniaxial and biaxial bending	T1, T2	1	BB, PPT	L3	CO4	PO1-PO3
	umanar and oraniar contains						

	Level 2 (L2): Understanding Order	Hour	Le	vel 5 (L5) : Evalua	inσ	Order	1				
	Level 1 (L1): Remembering Lower Level 2 (L2): Understanding Order	Fixed		evel 4 (L4) : Analys		Higher	Projects / Mir				
	Y 14 (Y4) D	Bloom	ıs Level	1400	•	1					
2	http://w			ngmaterial/chapter2	7.pdf						
1	ht	tps://nptel.ac.in/	courses/10	5/105/105105162/							
		Website / UF									
8	SP 6(1) Hand book on structural Steel Sections IS800 :2007, General Construction In Steel - Code of Pra	actice, (Third Revis	sion), Bureau	of Indian Standards	New Delhi. 2007						
5	Shah.V.L. and Veena Gore, "Limit State Design of Steel	Structures", IS 800)–2007, Struc	etures Publications, 20	09.						
4	Bhavikatti.S.S, "Design of Steel Structures" By Limit Sta	te Method as per I	S:800– 2007,	IK International Publ	ishing House Pvt. Lt	d., 2009					
3	Shiyekar. M.R., "Limit State Design in Structural Steel",	Prentice Hall of In	dia Pvt. Ltd,	Learning Pvt. Ltd., 2n	d Edition, 2013						
2	Sai Ram. K.S. "Design of Steel Structures " Dorling Kin	dersley (India) Pvt.	Ltd., New D	elhi, 2nd Edition, 201	5, www.pearsoned.c	o.in/kssairar	n				
1	Narayanan.R.et.al. "Teaching Resource on Structural Ste	el Design", INSDA	G, Ministry	of Steel Publications,	2002						
			ice Books	·							
3	Duggal. S.K, "Limit State Design of Steel Structures", Ta	<u> </u>		·							
	Gambhir. M.L., "Fundamentals of Structural Steel Design										
1	Subramanian.N, "Design of Steel Structures", Oxford Ur			<u> </u>							
2	Boned Beam Connection	Tevt	Books								
1	Prying Forces Bolted Beam Connection										
	Beyond the Syllabus Planned										
aluati	on method: MCQ										
geste	d Activity: Quiz		,			•					
39	Purlin in Roof Trusses, Design of Channel and I section Purlins. T1, T2 3 BB, PPT L3 CO5 PO1-PO3,										
38	Design Strength of Laterally unsupported Beams and design of laterally unsupported rolled section Beams T1, T2 3 BB, PPT L3 CO5 PC										
37	Design of solid rolled section Beams and design of Plated beams with cover plates T1, T2 3 BB, PPT L3 CO5										
36	Shear Strength-Web Buckling, Crippling and defection of Beams- Design of laterally supported Beams T1, T2 3 BB, PPT L2 CO5										
35	Classification of cross sections- Flexural Strength and Lateral stability of Beams	T1, T2	2	BB, PPT	L2	CO5	PO1-PO3				
34	Types of steel Beam sections- Behaviour of Beams in flexure- Codal Provisions	T1, T2	1	BB, PPT	L1	CO5	PO1, PO8				
	UNIT V	DESIGN OF	FLEXURA	AL MEMBERS							
aluati	on method : Paper Based										
33	Splices for colums d Activity: Assignment - Design splice for columns	T1, T2	2	BB, PPT	L3	CO4	PO1-PO3, PO				
32	Design of column bases, Plate and Gusseted bases for Axially loaded colums T1, T2 3 BB, PPT L3 CC										
31	Design of Built up Laced and Battened type columns	CO4	PO1-PO3, PO								
	Design of single section and compound Angles, Axially Loaded solid section Columns T1, T2 BB, PPT L3 CO4 PC Design of Built up Laced and Battened type columns T1, T2 BB, PPT L3 CO4 PC										

Level 3 (L3): Applying Thinking Exams							Le	evel 6 (L6) : Creati		Thinking	J		
		Ma	pping sy	llabus w	rith Bloor	n's Taxo	nomy L	OT and I	НОТ					
Unit	t No			Name		L1	L2	L3	L4	L5	L6	LOT	нот	Total
Uni	it 1	INTRO		AND ALLO S DESIGN	WABLE	4	1	3				8	0	8
Unit 2 CONNECTIONS IN STEEL STRUCTURES						1	2	6				9	0	9
Unit 3 TENSION MEMBERS						3	1	3				7	0	7
Unit 4 COMPRESSION MEMBERS					1	1	6				8	0	8	
Uni	it 5	DESIG	GN OF FLE	XURAL ME	MBERS	1	2	3				6	0	6
		To	otal			10	7	21				38	0	38
		Total Pe	ercentag	ge		26.3158	18.4211	55.2632				100	0	100
							СО РО М	apping						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	3					2					2	2
CO2	3	3	3					2					2	2
CO3	3	2	2					2					2	2
CO4	3	3	3					2					2	2
CO5	3	3	3					2					2	2
Avg	2.8	2.6	2.8					2					2	2
						Justific	ation for C	O-PO ma	pping					
CO1	PO3 : Desi	ign structui	ral element	s using wor	2 : formulate king stress r tural compo	nethod, PO			g structural	elements, l	PSO1 : Des	igning stru	ctural memb	oers for sustainab
CO2	PO3 : Desi	ign connec	tions, PO8				•		oment, PSO	01 : Design	ing connec	tions for su	stainability,	PSO2 : Design
CO3	PO1: Knowledge in theory of tension members, PO2: Analysing in tension member, PO3: Designing tension member, PO8: Ethics in designing sustainable members, PSO1: Designing structural members for sustainable solution, PSO2: Design cost effective structural components													
CO4	PO3 : Desi	igning bear	ns, plate gi	rders, flang	, PO2 : Prob e and web sp Design cost e	plice, PO8	: Ethics in	designing s	lenderness	ratio for su	stainable n	nember, PS	O1 : Design	ing structural
CO5	PO3 : Desi	igning flex	ural membe								ural membe	ers for susta	ainable solut	tion , PSO2 :
3	3		High level	I	2	2	М	oderate le	vel		1		Low l	evel
												-		
ame & S	Sign of Fa	culty Inch	arge :											
ame & S	Sign of Su	bject Exp	ert :											
ad of tl	he Departi	ment	:											