

Sankalchand Patel University
Faculty of Engineering and Technology
First Year Master of Technology in Civil Engineering
(Computer Aided Structural Analysis and Design)
In Effect from Academic Year 2023-24

Branch Name:	Civil Engineering (Computer Aided Structural Analysis & Design)
Semester/Year:	Semester II/ First Year
Subject Title:	CASAD Lab
Subject Code:	2ET2100201P
Pre-requisite:	Elementary design of structures, Structure Design Project

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
2	0	0	4	4	00	00	00	00	10	25	10	25	50

Course Objective:

1. For understanding the practical aspects of analysis and design and get used to the professional software which are currently in use in structural consultancies.

Subject Contents			
Sr. No	Topic	Total Hours	Weightage (%)
1	Application: Excel spread sheets for the design of 1. Structural elements like slabs, beams, columns, isolated, combined and raft footings, steel connections and members. 2. Structures like water tank, retaining walls, Portal frame, Gantry girder, Plate girder etc	14	45
2	Software Usage: Modelling, analysis and design using professional software's.	14	45
3	Drafting: Application of Drafting software's.	04	10

List of Tutorials:

Minimum 10 problems Based on above mentioned.

List of Reference Books

1. Introduction to Computer Aided Drafting –Voisinet
2. Mastering AutoCAD- George Omura
3. Computer programming and engineering analysis - Syal& Gupta
4. Analysis and Design of Structures- A Practical Guide to Modeling- D. Trevor Jones
5. Principles of Structural Analysis – Static and Dynamic Loads – Krishnan Sathaia
6. Earthquake Resistant Design- Manish Shrikhande& Pankaj Agrawal
7. Plain & Reinforced Concrete Vol. II - Jain &Jaikrishna
8. Advanced reinforced concrete design - P. C. Verghese
9. Design of Steel Structures -Arya A. S
10. Structural Analysis and Design of Tall Buildings -BungaleS.Taranath
11. IS-456(2000),IS-800(2007),IS-875(1987),IS-1893(2002), IS-13920(1993), IS-3370, SP-16, SP-34.
12. IITK-GSDMA guidelines for design of water retaining structures

Course Outcome:

After learning the course, the students should be able to:

1. Analyze and design for flexure shear, bond and torsion Skill development
2. Design of tension members Skill development
3. Design of compression members with and without flexure Skill development
4. Analysis and design of beams Skill development



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Open Ended Problems:

Apart from above tutorials/experiments a group of students has to undertake one open ended problem/design problem few examples of the same are given below:

1. Analysis and design of structure like building, etc. using pen-source / professional software or other suitable means.

List of Open Source Software/learning website:

<http://nptel.ac.in/>

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Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Analyze and design for flexure shear, bond and torsion	L-3 and L-4
CLO2	Design of tension members	L-3 L-4 and L-5
CLO3	Design of compression members with and without flexure	L-5
CL04	Analysis and design of beams	L-4 and L-5

L1- Remember, L2- Understand, L3- Apply, L4- Analyze, L5- Evaluate, L6- Create

Mapping of CLOs with POs & PSOs

	Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
Course Learning Outcomes	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
CLO1	M	M	M	M	M	M	M	M	M				M		M
CLO2	M	M	M	M	M	M		M	M				M		M
CLO3	M	M	M	M	M	M		M	M				M	H	M
CL04	M	M	M	M	M	M		M					M	M	M

H: High, M: Medium, L: Low