



AMITY UNIVERSITY

— UTAR PRADESH —

Course Title: THEORY OF STRUCTURES - II
Course Code:
Credit Units: 2
Level: UG

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
2	-	-		2

#	Course Title	Weightage (%)
	THEORY OF STRUCTURES - II	
1	Course Objectives: To understand the basic principles of structural system so that it forms the basis for study of structural design. To help students to understand the basic principles of structural behavior and requirements of buildings with emphasis laid on the principles of various load distribution in beams and columns.	
2	Prerequisites: NIL	
3	Student Learning Outcomes: Understanding of principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems	
Course Contents / Syllabus:		
4	Module I: Stability and determinacy of structures Free body diagrams, external stability, internal stability, external determinateness, internal determinateness and combined external and internal indeterminateness, Determinate vs. indeterminate structures.	10%
5	Module II: Stresses in Beams and Trusses Theory of simple bending- neutral layer, bending stresses in beams, Bending equation, Definitions, forces in members,	20%

	analytical method, Method of sections, graphical method, link polygon in trusses, Distribution of shear stress in section of a beam – rectangular, semi- circular, T and I sections.																															
6	Module III: Direct and Bending stresses	20%																														
	Combined bending and direct stresses, axial and eccentric loads, effects of eccentricity etc.																															
7	Module IV: Columns	20%																														
	Definition, end conditions, Euler’s Theory of long columns, effective length of columns, Empirical formulae for columns, buckling and critical loads, slenderness ratio																															
8	Module V: Forms of structure	30%																														
	Types of vector active, form active, surface active, bulk active or combinations- meaning, definition and illustrations; sketches and brief details of trusses, space structures, arches, cable structures, industrial frames, multistory frames, shells and folded plates.																															
9	Pedagogy for Course Delivery: Lectures and Site Visit.																															
10	Assessment/ Examination Scheme:																															
	<table border="1"> <thead> <tr> <th>Theory (%)</th> <th colspan="3">Lab/Practical/Studio (%)</th> <th colspan="2">End Term Examination</th> </tr> </thead> <tbody> <tr> <td>50</td> <td colspan="3">NIL</td> <td colspan="2">50%</td> </tr> <tr> <td colspan="6" style="text-align: center;">Theory Assessment</td> </tr> <tr> <td>Components (Drop down)</td> <td>A</td> <td>CP</td> <td>H</td> <td>C</td> <td>EE</td> </tr> <tr> <td>Weightage (%)</td> <td>05</td> <td>05</td> <td>20</td> <td>20</td> <td>50</td> </tr> </tbody> </table>	Theory (%)	Lab/Practical/Studio (%)			End Term Examination		50	NIL			50%		Theory Assessment						Components (Drop down)	A	CP	H	C	EE	Weightage (%)	05	05	20	20	50	
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	A – Attendance, CP – Class Performance, H – Home Assignment, C – Class Test, EE – External Examination																															

Text & References:

Text:

- Strength of Materials, Khurmi R. S.
- Applied Mechanics and Strength of Materials, Khurmi R.S.
- Civil Engineering Handbook, P.N. Khanna
- R.C.C. Design, Khurmi, Punmia, Sushil Kumar
- Design of Steel Structure, Negi
- Structure in Architecture, Salvadori and Heller

References:

- Elements of Structure, Morgan
- Structures in Architecture, Salvadori
- Building Construction, Mackay WB Vol. 1-4
- Construction Technology, Chudley Vol. 1-6
- Elementary Building Construction, Mitchell
- Structure and Fabric, Everet