

	School of Planning and Architecture: Vijayawada	
	(An institution of National Importance under the Ministry of Human Resource Development, Govt. of India) S.No. 71/1, NH-5, Nidamanuru, Vijayawada – 521 104, Andhra Pradesh, India	
Department of Architecture		
Course:	10110205 Introduction to Structures	Class: I Yr B. Arch II Sem A.Y. 2017-18
Instructors:	Narendra Kumar Adapa	Internal Assessment: 50
Contact Periods/ week:	05 periods [2-Lecture & 3-Studio]	External Theory Exam: 50
Attendance: Min 75%	Min. Passing Marks: 40% each in Internal & External Assessment, 50% in Aggregate	Credits: 4
Objective: To make the students familiar with the basic theorems and mechanical properties of Engineering materials		
Out Line of the Course: Elastic constants, different types of stresses and strains, the deformation of elastic bodies under simple stress, analysis of perfect frames for vertical loads		

LESSON PLAN

S. No.	Week	TOPIC OF CLASS LECTURE & DISCUSSION	CLASS ACTIVITIES & ASSIGNMENTS
1	Week 1	Introduction to forces and moments Introduction of forces, composition, resolution, moments and couples, Resultant of forces.	Lecture/ Studio
		Exercise problems	
2	Week 2	Concurrent and non-concurrent co-planar force systems.	Lecture/ Studio
		Exercise problems	
3	Week 3	Principle of equilibrium. law's of forces Simple problems.	Lecture/ Studio
		Exercise practice	
		Assignment-1	
4	Week 4	Lami's theorem, principle of moments, Varignon's theorem.	Lecture/ Studio
		Resultant and equilibrate analytical and graphical solutions.	
		Practice of exercise problems	
5	Week 5	Compression test on Bricks and Solid Blocks.	Lab/ Studio
		Water absorption test on Bricks and pressed tiles. Flexure test on Tiles.	
		Submission – 1. Stresses and strains Elastic constants, linear strain, lateral strain, Poisson's ratio, volumetric strain, relation between E, N, and K.	
7	Week 7	Practice of exercise problems	Lecture/ Studio
		Composite sections.	
8	Week 8	Stresses due to change in temperature.	Lecture/ Studio
		Assignment-2	
9	Week 9	vaults, flying buttresses, tents, masted structures & bridges through ancient & medieval history.	

10	Week 10	Post Industrial modular construction of large span & suspension structures in steel and concrete- examples of iconic projects.	Lecture/ Studio
11	Week 11	Written assignment/ Exam	
12	Week 12	Analysis of trusses and frames Introduction to trusses, Elements of truss, Assumptions for truss analysis, structural Determinacy, methods of analysis of trusses	Lecture/ Studio
14	Week 13	Exercise Problems	Lecture/ Studio
13	Week 14	Study of UTM, Torsion testing machine, Hardness testing Machine, Compression testing Machine etc. understanding operation and application. Assignment-3	Lecture/ Studio
15	Week 15	Demonstration of Strain gauges and Strain indicators, Assignment, Test. Written assignment/ Exam	Lecture/ Studio
16	Week 16	Final-class written Examination	ASSESSMENT-III (40%) · Submission of Final Assignment

S.No.	Category of Evaluation	Marks	Note
1	Assessment – I	15	<i>The Marks allotted at each stage is tentative. Attending all the tests/labs/Assignments/ are mandatory. Categories of evaluation may be increased or decreased (merged) on</i>
2	Assessment – II	15	
3	Assessment – III	20	

References:

1. Ramamrutham, S.(2008). Engineering Mechanics.: A text book of applied mechanics. New Delhi : Dhanpath Rai pub company.
2. Dr.S.R,Laxmi Prasada, (2012). Engineering Mechanics. Flacon Publishers, Hyderabad
3. Junnarkar, S.B. (1991). Mechanics of Structures. Vol 1. 21 st Ed. Delhi : Charotar
4. Ferdinand, L.S. (1975). Engineering Mechanics : Statics and Dynamics. 3 rd Ed. Harper Collins Publishers.
5. Thimoshenko, S., Young, D.H. and Rao, J.V. (2007). Engineering mechanics. 4 tg Ed. New Delhi : Tata McGraw Hill Education

Signatures of the Instructors:

Head of the Department: