

3rd semester

2023(w)

Subi-strength of material

AJAYA KU SAHOO

Discipline	Mech	Semester	3rd	Name of teaching faculty	AJAYA KU SATHI
Subject	Strength of material	No. of Days/week class allotted	④	Semester Exam to	No. of week - 18 01-08-23 to 09-12-23
Week	Class/day	Theory Topics			
	1st	X			
	2nd				
1st	3rd	X			
	4th				Stresses and strains (Axial) and Tangential
	5th	X			
	6th				Hooke's Law and Young's modulus
	1st				Bulk modulus, modulus of rigidity
	2nd				Poisson's ratio and Relation between three elastic constants
2nd	3rd	X			
	4th				principle of superposition
	5th	X			
	6th				Stresses in Composite section
	1st				Temperature stress and strain
	2nd	X			
3rd	3rd	X			
	4th				Determination of temp stress in Composite bars
	5th	X			
	6th				Strain energy and resilience

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Week	Class day	Theory Topics
		1st Stress due to gradually applied Load
		2nd Stress due to suddenly applied Load
4th	3rd	X
	4th	Sample problems on gradual, sudden and impact Load.
	5th	X
	6th	Defination of hoop and Longitudinal Stress and strain
		1st Derivation of hoop stress
		2nd Derivation of Longitudinal stress
5th	3rd	X
	4th	*Hoop strain and Longitudinal strain
	5th	X
	6th	volumetric strain
		1st change in length, diameter and volume of thin cylindrical shell due to internal pressure
		2nd change in diameter and volume of thin spherical shell
6th	3rd	X
	4th	Sample problem on hoop stress, longitudinal stress
	5th	X
	6th	Determination of Normal stress
		1st Shear stress and Resultant stress on oblique plane
		2nd Location of principal plane
7th	3rd	X
	4th	computation of principal stress
	5th	X
	6th	Maximum shear stress using Mohr's circle

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week	class day	Theory Topics
	1st	x
	2nd	x
8th	3rd	x
	4th	Types of beam and Load
	5th	x
	6th	Concept of shear force
	1st	x
	2nd	Bending moment
9th	3rd	x
	4th	Shear force and Bending moment diagram
	5th	x
	6th	Salient feature of S.F and B.M diagram
	1st	Cantilever beam with point Load
	2nd	Simply supported beam with point Load
10th	3rd	x
	4th	Overhanging beam with point Load
	5th	x
	6th	Cantilever beam with U.d.l
	1st	Simply supported beam with U.d.l
	2nd	Overhanging beam with U.d.l
11th	3rd	x
	4th	Assumptions on the theory of bending
	5th	x
	6th	Bending equation

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week	class/day	Theory Topics
	1st	
	2nd	
12th	3rd	puja vacation
	4th	
	5th	
	6th	
	1st	moment of resistance
	2nd	section modulus and Neutral axis
13th	3rd	x
	4th	simple problems on bending equation
	5th	x
	6th	Define column and strut
	1st	Axial Load, Eccentric load on Column
	2nd	Direct stresses, Bending stresses
14th	3rd	x
	4th	maximum and minimum stress
	5th	x
	6th	Numerical problems on Direct stress
	1st	x
	2nd	Buckling Load, Euler's formula
15th	3rd	x
	4th	Various end conditions of column
	5th	x
	6th	Numerical problems of various end conditions of column

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Week	Class/ days	Theory Topics
	1st	Assumption of pure torsion
	2nd	The torsion equation for solid shaft
16th	3rd	x
	4th	Torsion equation for hollow shaft
	5th	x
	6th	Numerical problems on solid shaft
	1st	x
	2nd	Numerical problems on hollow shaft
17th	3rd	x
	4th	Strength of solid shaft
	5th	x
	6th	Strength of hollow shaft
	1st	Numerical problems on above
	2nd	
18th	3rd	x
	4th	Comparison between solid shaft and hollow shaft subject to pure torsion
	5th	x
	6th	
		Address