

Discipline :MECHANICAL ENGG	Semester :3rd	Name of the Teaching Faculty: SAURAV RANJAN PRADHAN
Subject: STRENGTH OF MATERIAL	No. of days/per week class allotted: 04	Semester From date : 01.09.2020 To Date: 19.03.2021 No. of Weeks: 15
Week	Class Day	Theory / Practical Topics
1 ST	1 ST	Types of load, stresses & strains,(Axial and tangential),
	2 ND	Hooke's law, Young's modulus, bulk modulus, modulus of rigidity,
	3 RD	Poisson's ratio, derive the relation between three elastic constants
	4 TH	Principle of super position, stresses in composite section
2 ND	1 ST	Temperature stress, determine the temperature stress in composite bar (single core)
	2 ND	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
	3 RD	Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
	4 TH	Simple problems on above
3 RD	1 ST	Simple problems on above
	2 ND	Simple problems on above
	3 RD	Definition of hoop and longitudinal stress, strain
	4 TH	Definition of hoop and longitudinal stress, strain
4 TH	1 ST	Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain
	2 ND	Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain
	3 RD	Computation of the change in length, diameter and volume
	4 TH	Simple problems on above
5 TH	1 ST	Simple problems on above
	2 ND	Simple problems on above
	3 RD	Determination of normal stress, shear stress and resultant stress on oblique plane
	4 TH	Determination of normal stress, shear stress and resultant stress on oblique plane
6 TH	1 ST	Determination of normal stress, shear stress and resultant stress on oblique plane
	2 ND	Location of principal plane and computation of principal stress
	3 RD	Location of principal plane and computation of principal stress
	4 TH	Location of principal plane and computation of principal stress
7 TH	1 ST	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	2 ND	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	3 RD	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	4 TH	Location of principal plane and computation of principal stress and Maximum

		shear stress using Mohr's circle
8 TH	1 ST	Types of beam and load
	2 ND	Types of beam and load
	3 RD	Types of beam and load
	4 TH	ConceptsofShearforceandbendingmoment
9 TH	1 ST	ConceptsofShearforceandbendingmoment
	2 ND	ConceptsofShearforceandbendingmoment
	3 RD	ShearForceandBendingmomentdiagramanditssalientfeaturesillustration in cantilever beam, simply supported beam and overhangingbeamunderpointloadanduniformlydistributedload
	4 TH	ShearForceandBendingmomentdiagramanditssalientfeaturesillustration in cantilever beam, simply supported beam and overhangingbeamunderpointloadanduniformlydistributedload
10 TH	1 ST	ShearForceandBendingmomentdiagramanditssalientfeaturesillustration in cantilever beam, simply supported beam and overhangingbeamunderpointloadanduniformlydistributedload
	2 ND	ShearForceandBendingmomentdiagramanditssalientfeaturesillustration in cantilever beam, simply supported beam and overhangingbeamunderpointloadanduniformlydistributedload
	3 RD	Assumptionsinthetheoryofbending,
	4 TH	Assumptionsinthetheoryofbending,
11 TH	1 ST	Bendingequation,Momentofresistance,Sectionmodulus&neutralaxis.
	2 ND	Bendingequation,Momentofresistance,Sectionmodulus&neutralaxis.
	3 RD	Bendingequation,Momentofresistance,Sectionmodulus&neutralaxis.
	4 TH	Solvesimpleproblems
12 TH	1 ST	Solvesimpleproblems
	2 ND	Solvesimpleproblems
	3 RD	Solvesimpleproblems
	4 TH	Solvesimpleproblems
13 TH	1 ST	Definecolumn
	2 ND	Axialload,Eccentricloadoncolumn
	3 RD	Directstresses,Bendingstresses,Maximum&Minimumstresses.Numerical problemson above.
	4 TH	Directstresses,Bendingstresses,Maximum&Minimumstresses.Numerical problemson above.
14 TH	1 ST	BucklingloadcomputationusingEuler'sformula(noderivat ion)inColumns withvariousendconditions
	2 ND	BucklingloadcomputationusingEuler'sformula(noderivat ion)inColumns withvariousendconditions
	3 RD	Assumptionofpuretorsion
	4 TH	Thetorsionequationforsolidandhollowcircularshaft
15 TH	1 ST	Thetorsionequationforsolidandhollowcircularshaft
	2 ND	Thetorsionequationforsolidandhollowcircularshaft
	3 RD	Comparison between solid and hollow shaft subjected to pure torsion
	4 TH	Comparison between solid and hollow shaft subjected to pure torsion

Learning Resouces:

01. StrengthofMaterials, bySRamamrutham,DhanpatRai
02. StrengthofMaterialsbyRKRajput, S.Chand
03. StrengthofMaterials, byR.Skhurmi, , S.Chand
04. StrengthofMaterials,byGHRyder, Mcmillonandco.lmtd
05. StrengthofMaterials by STimoshenkoandDH,TMH

Saurav Ranjan Pradhan
Lect. in Mech. Engg.