SYNERGY SCHOOL OF ENGINEERING, DHENKANAL

Academic Lesson Plan for Strength of Material(Winter-2023)		
Discipline: Mechanical Engineering	**Semester: 3rd**	**Name of Faculty:SOMANATH SETHY**
Subject:Strength of Materials	**No.ofdays/perweek Class Allotted: 4**	**Semesterfrom:01/08/2023-30/11/2023**
		No.of weeks:15
Week	**ClassDay**	**Theory Topics**
1st	1st	1)-SIMPLESTRESSANDSTRAIN-INTRODUCTION.,Types of load , Define stress andstrain,StressandStraindiagramforductileand brittle material
	2nd	Types of stress and strain , Hooke's law,Define young's modulus , modulus of rigidity , Bulkmodulus,Definepoission'sratioandderieve relation between young's modulus,modulus of rigidity,bulk modulus and poission's ratio
	3rd	Derivetherelationbetweenthreeelasticconstant
	4th	principleofsuperposition,stressincomposite section
2nd	1st	problemsrelatedsuperposition,Tremperaturestress and derieve the deformation and strain due to it
	2nd	Determinethetemperaturestressincompositebar
	3rd	DefinestrainenergyandResilianceandEstablish the formulae associated with it,
	4th	DefinestrainenergyandResilianceandEstablish the formulae associated with it,
3rd	1st	Determinestressduetograduallyappliedload, suddenly applied load and impact load
	2nd	Determinestressduetograduallyappliedload, suddenly applied load and impact load
	3rd	2)THINCYLINDERANDSPHERICALSHELL UNDERINTERNALPRESSURE-Definitionof hoop and longitudinal stress, strain

	4th	DerievеHoopstressandLongitudinalstressfor thin cylinder
4th	1st	DerievеHoopstrain,Longitudinalstrainand Volumetric strain
	2nd	Numericalsonthincylinderandsphericalshell under internal pressure
	3rd	Computationofchangeinlength,diameterand volume for thin cylinder
	4th	Computationofchangeinlength,diameterand volume for thin cylinder
5th	1st	Numericalsonthincylinderandsphericalshell under internal pressure
	2nd	Numericalsonthincylinderandsphericalshell under internal pressure
	3rd	3)Two dimensional stress systems-Determination ofnormalstress,shearstressandresultantstresson oblique plane
	4th	Locationofprincipalplane
6th	1st	Locationofprincipalplane
	2nd	computationofprincipalstress
	3rd	Locationofprincipalplaneandcomputationof principal stress
	4th	Locationofprincipalplaneandcomputationof principal stress
7th	1st	computation of principal stress and MaximumshearstressusingMohr'scircle
	2nd	computation of principal stress and MaximumshearstressusingMohr'scircle
	3rd	MaximumshearstressusingMohr'scircle
	4th	MaximumshearstressusingMohr'scircle
	1st	4)Bendingmoment&shearforce -Typesofbeamandload

8th	2nd	bendingmoment
	3rd	bendingmoment
	4th	ShearForceandBendingmomentdiagramandits salient features illustrationincantileverbeam,
9th	1st	simplysupportedbeam
	2nd	simplysupportedbeam
	3rd	overhangingbeamunderpointloadanduniformly distributed load
	4th	overhangingbeamunderpointloadanduniformly distributed load
10th	1st	overhangingbeamunderpointloadanduniformly distributed load
	2nd	overhangingbeamunderpointloadanduniformly distributed load
	3rd	5)Theoryofsimplebending
	4th	Theoryofsimplebending
11th	1st	Bendingequation
	2nd	Momentofresistance
	3rd	sectionmodulus
	4th	sectionmodulus
	1st	neutralaxis.
	2nd	simpleproblems.

12th	3rd	simpleproblems.
	4th	simpleproblems.
13th	1st	6)Combineddirect&bendingstresses-Define column
	2nd	Axialload,Eccentricloadoncolumn,
	3rd	Directstresses,Bendingstresses,Maximum& Minimum stresses. Numericalproblemsonabove.
	4th	BucklingloadcomputationusingEuler'sformula (no derivation) in Columnswithvariousendconditions
14th	1st	BucklingloadcomputationusingEuler'sformula (no derivation) inColumns with various end conditions
	2nd	BucklingloadcomputationusingEuler'sformula (no derivation) inColumns with various end conditions
	3rd	7)Torsion-.Assumptionofpuretorsion
	4th	Thetorsionequationforsolidshaft
15th	1st	Thetorsionequationhollowcircularshaft
	2nd	Comparisonbetweensolidandhollowshaft subjected to pure torsion
	3rd	Comparisonbetweensolidandhollowshaft subjected to pure torsion
	4th	Revision

VERIFIED BY HOD- 23/7/2023

SOMANATH SETHY

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