NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY

SERGARH-756060, BALASORE (ODISHA)

(Approved by AICTE& affiliated to SCTE&VT, Odisha)

LESSON PLAN

SUBJECT: Th-2 (STRENGTH OF MATERIAL)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Simple Stress & Strain	10	10
2	Thin cylindrical and spherical shell under internal pressure	8	8
3	Two dimensional stress systems	10	12
4	Bending moment& shear force	10	12
5	Theory of simple bending	10	10
6	Combined direct & Bending stresses	6	6
7	Torsion	6	6
	Total Period:	60	64

Discipline: AUTOMOBILE ENGINEERING	Semester: 3rd	**Name of the Teaching Faculty:** Er. Nihar Ranjan Sahoo
		SESSION : 2023-24 **EXAMINATION :** 2023 (W)
Week	**Class Day**	**Theory / Practical Topics**
1st	1st	Introduction to Strength of Material .
	2nd	**1.0 Simple stress& strain** 1.1 Types of load, stresses & strains,(Axial and tangential) Hooke's law, Young's modulus, bulk modulus, modulus of rigidity.
	3rd	Poisson's ratio, derive the relation between three elastic constants,
	4th	1.2 Principle of super position, stresses in composite section
2nd	1st	1.2 Principle of super position, stresses in composite section
	2nd	1.3 Temperature stress, determine the temperature stress in composite bar (single core)
	3rd	1.3 Temperature stress, determine the temperature stress in composite bar (single core)
	4th	1.4 Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
3rd	1st	1.4 Strain energy and resilience, Stress due to gradually applied, suddenly applied and impact load
	2nd	1.5 Simple problems on above.
	3rd	1.5 Simple problems on above.
	4th	**2.0 Thin cylinder and spherical shell under internal pressure** 2.1 Definition of hoop and longitudinal stress, strain
4th	1st	2.1 Definition of hoop and longitudinal stress, strain
	2nd	2.2 Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain
	3rd	2.2 Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain
	4th	2.3 Computation of the change in length, diameter and volume
5th	1st	2.3 Computation of the change in length, diameter and volume
	2nd	2.4 Simple problems on above
	3rd	2.4 Simple problems on above
	4th	**3.0 Two dimensional stress systems** 3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
6th	1st	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane

6th	**2**nd	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
	3rd	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
	4th	3.2 Location of principal plane and computation of principal stress
7th	**1**st	3.2 Location of principal plane and computation of principal stress
	2nd	3.2 Location of principal plane and computation of principal stress
	3rd	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	4th	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
8th	**1**st	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	2nd	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	3rd	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	4th	**4.0 Bending moment& shear force** 4.1 Types of beam and load
9th	**1**st	4.2 Concepts of Shear force and bending moment
	2nd	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam
	3rd	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam
	4th	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam
10th	**1**st	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam
	2nd	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam
	3rd	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load
	4th	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load
11th	**1**st	**INTERNAL ASSESMENT**
	2nd	**INTERNAL ASSESMENT**
	3rd	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load
	4th	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load
12th	**1**st	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam and over hanging beam under point load and uniformly distributed load

12th	2nd	**5.0 Theory of simple bending** 5.1 Assumptions in the theory of bending,
	3rd	5.2 Bending equation, Moment of resistance, Section modulus& neutral axis.
	4th	5.2 Bending equation, Moment of resistance, Section modulus& neutral axis.
13th	1st	5.2 Bending equation, Moment of resistance, Section modulus& neutral axis.
	2nd	5.2 Bending equation, Moment of resistance, Section modulus& neutral axis.
	3rd	5.3 Solve simple problems.
	4th	5.3 Solve simple problems.
14th	1st	5.3 Solve simple problems.
	2nd	5.3 Solve simple problems.
	3rd	5.3 Solve simple problems.
	4th	**6.0 Combined direct & bending stresses** 6.1 Define column
15th	1st	6.2 Axial load, Eccentric load on column,
	2nd	6.3 Direct stresses, Bending stresses, Maximum& Minimum stresses. Numerical problems on above.
	3rd	6.3 Direct stresses, Bending stresses, Maximum& Minimum stresses. Numerical problems on above.
	4th	6.4 Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
16th	1st	6.4 Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	2nd	**7.0 Torsion** 7.0 Assumption of pure torsion
	3rd	7.1 The torsion equation for solid and hollow circular shaft
	4th	7.1 The torsion equation for solid and hollow circular shaft
17th	1st	7.1 The torsion equation for solid and hollow circular shaft
	2nd	7.2 Comparison between solid and hollow shaft subjected to pure torsion
	3rd	7.2 Comparison between solid and hollow shaft subjected to pure torsion
	4th	Revision .