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	10
4	Bending moment& shear force	10	10
5	Theory of simple bending	10	10
6	Combined direct & Bending stresses	6	6
7	Torsion	6	6
	Total Period:	60	60

Discipline: MECHANICAL ENGINEERING	**Semester:** 3rd	**Name of the Teaching Faculty:** Er. YASOBANTA DAS
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

4th	**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
	2nd	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
	3rd	3.2 Location of principal plane and computation of principal stress
	4th	3.2 Location of principal plane and computation of principal stress
7th	**1st**	3.2 Location of principal plane and computation of principal stress
	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	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
8th	**1st**	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle

8th	2nd	**4.0 Bending moment& shear force** 4.1 Types of beam and load
	3rd	4.2 Concepts of Shear force and bending moment
	4th	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam
9th	1st	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever 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
	4th	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam, simply supported beam
10th	1st	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
	2nd	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
	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	**INTERNAL ASSESMENT**
11th	1st	**INTERNAL ASSESMENT**
	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.

12th	**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.
13th	**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
14th	**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
15th	**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

15th	**4th**	7.1 The torsion equation for solid and hollow circular shaft
16th	**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 .