BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN

SUBJECT: STRENGTH OF MATERIAL (TH 2)

FACULTY: NARESH KUMAR PRADHAN

ACCADEMIC SESSION: 2022-23

SEMESTER: 3RD

SEC: A

FACULTY SIGNATURE

HOD SIGNATURE

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK
DEPARTMENT OF MECHANICAL ENGINEERING
LESSON PLAN

DISCIPLINE: **Mechanical Engineering**	**SEMESTER: 3rd A**		**NAME OF TEACHING FACULTY: N.K. Pradhan**
SUBJECT: (TH-2) STRENGTH OF MATERIAL	**No. of Days/ per week class allotted: 04 periods per week** **MON-1Period, TUE-1Period, THU-1Period, FRI-1Period**		**Semester From Date: 15-09-2022 To Date: 21-01-2023** **No. of weeks: 17 weeks**
Week	**Class Day**	**No of period available**	**Theory Topics**
1st	15/09/2022	1	1.1 Types of loads, stresses & strains, (Axial and tangential)
	16/09/2022	1	1.1 Hooke's law, young's modulus, bulk modulus, modulus of rigidity, Poisson's ratio
2nd	19/09/2022	1	1.1 Derive the relation between three elastic constants
	20/09/2022	1	1.2 Principle of super position
	22/09/2022	1	1.2 stresses in composite section
	23/09/2022	1	1.3 Temperature stress
3rd	26/09/2022	1	1.3 determine the temperature stress in composite bar (single core)
	27/09/2022	1	1.4 Strain energy and resilience
	29/09/2022	1	1.4 Stress due to gradually applied, suddenly applied and impact load

	30/09/2022	1	1.5 Simple problems on above
4th	10/10/2022	1	2.1 Definition of hoop and longitudinal stress, strain for thin cylinder 2.2 Derivation of hoop stress, longitudinal stress for thin cylinder
	11/10/2022	1	2.2 Derivation of hoop strain, longitudinal strain and volumetric strain for thin cylinder
	13/10/2022	1	2.3 Computation of the change in length, diameter and volume for thin cylinder
	14/10/2022	1	2.4 Simple problems on thin cylinder
5th	17/10/2022	1	2.1 Definition of hoop and longitudinal stress, strain for spherical shell
	18/10/2022	1	2.2 Derivation of hoop stress, longitudinal stress, hoop strain, longitudinal strain and volumetric strain for spherical shell
	20/10/2022	1	2.3 Computation of the change in length, diameter and volume for spherical shell
	21/10/2022	1	2.4 Simple problems on spherical shell
6th	25/10/2022	1	**Monthly Class Test 1**
	27/10/2022	1	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
	28/10/2022	1	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane

7th	31/10/2022	1	3.1 Determination of normal stress, shear stress and resultant stress on oblique plane
	01/11/2022	1	3.2 Location of principal plane and computation of principal stress
	03/11/2022	1	3.2 Location of principal plane and computation of principal stress
	04/11/2022	1	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
8th	07/11/2022	1	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	10/11/2022	1	3.3 Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	11/11/2022	1	4.1 Types of beams and load
9th	14/11/2022	1	4.2 Concepts of Shear force and bending moment
	15/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in cantilever beam under point load and under uniformly distributed load
	17/11/2022	1	**Internal Assessment**
	18/11/2022	1	**Internal Assessment**
10th	21/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in simply supported beam under point load

	22/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in simply supported beam under uniformly distributed load
	24/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in simply supported beam under uniformly distributed load
	25/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in over hanging beam under point load
11th	28/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in over hanging beam under uniformly distributed load
	29/11/2022	1	4.3 Shear Force and Bending moment diagram and its salient features illustration in over hanging beam under uniformly distributed load
	01/12/2022	1	**Monthly Class Test 2**
	02/12/2022	1	5.1 Assumptions in the theory of bending
12th	05/12/2022	1	5.2 Bending equation
	06/12/2022	1	5.2 Bending equation
	08/12/2022	1	5.2 Moment of resistance
	09/12/2022	1	5.2 Section modulus& neutral axis
13th	12/12/2022	1	5.2 Section modulus& neutral axis
	13/12/2022	1	5.3 Solve simple problems
	15/12/2022	1	5.3 Solve simple problems
	16/12/2022	1	6.1 Define column
14th	19/12/2022	1	6.2 Axial load, Eccentric load on column

	20/12/2022	1	6.3 Direct stresses, Bending stresses, Maximum & Minimum stresses
	22/12/2022	1	6.3 Direct stresses, Bending stresses, Maximum & Minimum stresses
	23/12/2022	1	6.3 Numerical problems on above
15th	02/01/2023	1	6.4 Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	03/01/2023	1	6.4 Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	05/01/2023	1	**Monthly Class Test 3**
	06/01/2023	1	7.0 Assumption of pure torsion
16th	09/01/2023	1	7.1 The torsion equation for solid circular shaft
	10/01/2023	1	7.1 The torsion equation for hollow circular shaft
	12/01/2023	1	7.2 Comparison between solid and hollow shaft subjected to pure torsion
	13/01/2023	1	7.2 Comparison between solid and hollow shaft subjected to pure torsion
17th	16/01/2023	1	**Revision**
	17/01/2023	1	**Revision**
	19/01/2023	1	**Previous year question discussion**
	20/01/2023	1	**Previous year question discussion**