Lesson Plan

Name of Institute : Ambala College of Engineering and Applied Research
Name of the Faculty member : Ashwani Verma (Assistant Professor)
Discipline : Mechanical Engineering
Semester : 4th
Subject : Mechanics of Solids-II   (MEC-206 A)
Lesson Plan Duration : 15 weeks (from January 2020 to April 2020)
Work Load : L-3   T-1   P-0

Week		Theory	Practical	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1st	1st	UNIT-I **Strain Energy & Impact Loading**: Definitions.	1st	
	2nd	Expression for strain energy stored in a body when load is applied gradually.		
	3rd	Expression for strain energy stored in a body when load is applied suddenly/with impact.		
	4th	Numericals.		
2nd	5th	Strain energy of beams in bending.	2nd	
	6th	Strain energy of beams in bending.		
	7th	Beam deflections.		
	8th	Numericals.		
3rd	9th	Strain energy of shafts in twisting. Energy methods in determining spring deflection.	3rd	
	10th	Castigliano's theorem.		
	11th	**Theories of Elastic Failures:** Various theories of elastic failures with derivations and graphical representations.		
	12th	Numericals.		
4th	13th	Applications to problems of 2- dimensional stress system with (i) Combined direct loading and bending.	4th	
	14th	Applications to problems of 2- dimensional stress system with (ii) combined torsional and direct loading. Assignment.		
	15th	Class Test-1		
	16th	Numericals.		
5th	17th	**TEST-1**	5th	
	18th	UNIT-II **Thin Walled Vessels:** Hoop & Longitudinal stresses & strains in cylindrical vessels & their derivations under internal pressure.		
	19th	Hoop & Longitudinal stresses & strains in cylindrical vessels & their derivations under internal pressure.		
	20th	Numericals.		
6th	21st	Hoop & Longitudinal stresses & strains in spherical vessels & their derivations under internal pressure.	6th	
	22nd	Hoop & Longitudinal stresses & strains in spherical vessels & their derivations under internal pressure.		
	23rd	Wire would cylinders.		
	24th	Numericals.		
7th	25th	**Thick Cylinders & Spheres**: Derivation of Lame's equations.	7th	
	26th	Derivation of Lame's equations.		
	27th	Radial & hoop stresses and strains in thick subjected to internal fluid pressure only.		
	28th	Numericals.		

8th	29th	Radial & hoop stresses and strains in compound cylinders subjected to internal fluid pressure only.	8th	
	30th	Radial & hoop stresses and strains in compound cylinders subjected to internal fluid pressure only.		
	31st	Radial & hoop stresses and strains in spherical shells subjected to internal fluid pressure only.		
	32nd	Numericals.		
9th	33rd	Hub shrunk on solid shaft.	9th	
	34th	Class Test-2		
	35th	UNIT-III **Rotating Rims & Discs:** Stresses in uniform rotating rings & discs.		
	36th	Numericals.		
10th	37th	Rotating discs of uniform strength.	10th	
	38th	Stresses in (I) rotating rims, neglecting the effect of spokes.		
	39th	Stresses in (ii) rotating cylinders, hollow/ solid cylinders. Assignment		
	40th	Numericals.		
11th	41st	**TEST-2**	11th	
	42nd	**Springs:** Stresses in closed coiled helical springs.		
	43rd	Stresses in open coiled helical springs subjected to axial loads and twisting couples.		
	44th	Numericals.		
12th	45th	Leaf springs.	12th	
	46th	Flat spiral/ Concentric springs.		
	47th	UNIT-IV **Bending of Curved Bars:** Stresses in bars of initial large radius of curvature.		
	48th	Numericals.		
13th	49th	Stresses in bars of initial small radius of curvature. Stresses in crane hooks.	13th	
	50th	Stresses in rings of circular & trapezoidal sections.		
	51st	Deflection of curved bars & rings.		
	52nd	Numericals.		
14th	53rd	Deflection of rings by Castigliano's theorem.	14th	
	54th	Stresses in simple chain links, deflection of simple chain links.		
	55th	**Unsymmetrical Bending:** Introduction to unsymmetrical bending. Stresses due to unsymmetrical bending. Deflection of beam due to unsymmetrical bending.		
	56th	Numericals.		
15th	57th	Shear center for angle and channel sections. Assignment.	15th	
	58th	Class Test-3		
	59th	Shear center for I-sections. Numerical.		
	60th	**TEST-3**		

(Signature of the teacher concerned with date)