

<b>Discipline: Mechanical Engineering</b>	<b>Semester : 3<sup>rd</sup> Semester-2020-21</b>	<b>Name of the Teaching Faculty: Miss,Shradha Suman Adabar Lect. In Mechanical Engineering</b>
<b>Subject: STRENGTH OF MATERIAL</b>	<b>No. of Days/week Class Allotted: 60</b>	<b>Semester from date: 01/09/ 2020 to date: 19/03/2021 No of weeks: 18</b>
<b>week</b>	<b>Class Day</b>	<b>Theory Topics</b>
1 <sup>st</sup>	1 <sup>st</sup>	Types of load, stresses & strains,(Axial and tangential)
	2 <sup>nd</sup>	Hooke's law, Young's modulus, bulk modulus, modulus of rigidity,
	3 <sup>rd</sup>	Poisson's ratio, derive the relation between three elastic constants
	4 <sup>th</sup>	Principle of super position
2 <sup>nd</sup>	1 <sup>st</sup>	stresses in composite section
	2 <sup>nd</sup>	Temperature stress,.
	3 <sup>rd</sup>	Determine the temperature stress in composite bar (single core)
	4 <sup>th</sup>	Strain energy and resilience
3 <sup>rd</sup>	1 <sup>st</sup>	Stress due to gradually applied,
	2 <sup>nd</sup>	Suddenly applied and impact load
	3 <sup>rd</sup>	Simple problems on above. .
	4 <sup>th</sup>	Simple problems on above. .
4 <sup>th</sup>	1 <sup>st</sup>	Simple problems on above.
	2 <sup>nd</sup>	Definition of hoop and longitudinal stress, strain
	3 <sup>rd</sup>	Derivation of hoop stress, longitudinal stress, hoop strain.
	4 <sup>th</sup>	longitudinal strain and volumetric strain
5 <sup>th</sup>	1 <sup>st</sup>	Computation of the change in length, diameter and volume
	2 <sup>nd</sup>	Simple problems on above
	3 <sup>rd</sup>	Simple problems on above

	4 <sup>th</sup>	Simple problems on above
6 <sup>th</sup>	1 <sup>st</sup>	Determination of normal stress, shear stress and resultant stress on oblique plane
	2 <sup>nd</sup>	Location of principal plane and computation of principal stress
	3 <sup>rd</sup>	Location of principal plane and computation of principal stress
	4 <sup>th</sup>	Location of principal plane and computation of principal stress
7 <sup>th</sup>	1 <sup>st</sup>	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	2 <sup>nd</sup>	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	3 <sup>rd</sup>	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
	4 <sup>th</sup>	Location of principal plane and computation of principal stress and Maximum shear stress using Mohr's circle
8 <sup>th</sup>	1 <sup>st</sup>	Types of beams and loads.
	2 <sup>nd</sup>	Concepts of Shear force and bending moment
	3 <sup>rd</sup>	Shear Force and Bending moment diagram and its salient features illustration in cantilever beam.
	4 <sup>th</sup>	Shear Force and Bending moment diagram and its salient features illustration in cantilever beam
9 <sup>th</sup>	1 <sup>st</sup>	Shear Force and Bending moment diagram and its salient features illustration in simply supported beam
	2 <sup>nd</sup>	Shear Force and Bending moment diagram and its salient features illustration in simply supported beam

	3 <sup>rd</sup>	Shear Force and Bending moment diagram and its salient features illustration in overhanging beam
	4 <sup>th</sup>	Shear Force and Bending moment diagram and its salient features illustration in overhanging beam
10 <sup>th</sup>	1 <sup>st</sup>	Assumptions in the theory of bending, .
	2 <sup>nd</sup>	Bending equation, Moment of resistance, Section modulus & neutral axis
	3 <sup>rd</sup>	Solve simple numerical on above.
	4 <sup>th</sup>	Solve simple numerical on above.
11 <sup>th</sup>	1 <sup>st</sup>	Define column
	2 <sup>nd</sup>	Axial load, Eccentric load on column,
	3 <sup>rd</sup>	Direct stresses, Bending stresses, Maximum & Minimum stresses. Numerical problems on above. .
	4 <sup>th</sup>	Direct stresses, Bending stresses, Maximum & Minimum stresses. Numerical problems on above.
12 <sup>th</sup>	1 <sup>st</sup>	Direct stresses, Bending stresses, Maximum & Minimum stresses. Numerical problems on above.
	2 <sup>nd</sup>	Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	3 <sup>rd</sup>	Buckling load computation using Euler's formula (no derivation) in Columns with various end conditions
	4 <sup>th</sup>	Assumption of pure torsion

13 <sup>th</sup>	1 <sup>st</sup>	The torsion equation for solid and hollow circular shaft
	2 <sup>nd</sup>	The torsion equation for solid and hollow circular shaft
	3 <sup>rd</sup>	Comparison between solid and hollow shaft subjected to pure torsion
	4 <sup>th</sup>	Comparison between solid and hollow shaft subjected to pure torsion
14 <sup>th</sup>	1 <sup>st</sup>	Revision of Chapter – 1
	2 <sup>nd</sup>	Revision of Chapter – 1
	3 <sup>rd</sup>	Revision of Chapter – 1
	4 <sup>th</sup>	Revision of Chapter – 2
15 <sup>th</sup>	1 <sup>st</sup>	Revision of Chapter – 2
	2 <sup>nd</sup>	Revision of Chapter – 3
	3 <sup>rd</sup>	Revision of Chapter – 3
	4 <sup>th</sup>	Revision of Chapter – 4
16 <sup>th</sup>	1 <sup>st</sup>	Revision of Chapter – 4
	2 <sup>nd</sup>	Revision of Chapter – 5
	3 <sup>rd</sup>	Revision of Chapter – 6
	4 <sup>th</sup>	Revision of Chapter – 6
17 <sup>th</sup>	1 <sup>st</sup>	Revision of Chapter – 7
	2 <sup>nd</sup>	Revision of Chapter – 7
	3 <sup>rd</sup>	Discussion of Probable Questions and Answers (1)
	4 <sup>th</sup>	Discussion of Probable Questions and Answers(2)
18 <sup>th</sup>	1 <sup>st</sup>	Discussion of Probable Questions and Answers (3)
	2 <sup>nd</sup>	Discussion of Probable Questions and Answers(4)
	3 <sup>rd</sup>	Discussion of Probable Questions and Answers (5)
	4 <sup>th</sup>	Discussion of Probable Questions and Answers (6)