"PVC NSSK" GOVERNMENT POLYTECHNIC BILASPUR, AT KALOL

Lesson Plan

Session : March to June 2022

Name of Teacher : Sameer Sharma **Subject :** Strength of Materials Lab **Class :** Mechanical (4th Semester)

Sr. No.	Month	Week	Date	Practical	Content to be taught	Remarks
1	March	3rd	14(G1)		Introduction to Strength of Material Lab, Syllabus overview and Evalution scheme	
			15(G2)		Introduction to Strength of Material Lab, Syllabus overview and Evalution scheme	
		4th	21(G1)	1	Tensile test on bars of Mild steel and Aluminium.	
			22(G2)	1	Tensile test on bars of Mild steel and Aluminium.	
		5th	28(G1)	1	Evaluation and viva of Practical 1 : Tensile test on bars of Mild steel and Aluminium.	
			29(G2)	1	Evaluation and viva of Practical 1 : Tensile test on bars of Mild steel and Aluminium.	
2	April	2nd	4(G1)	2	Shear test on specimen of two different metals.	
			5(G2)	2	Shear test on specimen of two different metals.	
		3rd	11(G1)	3	Bending tests on a steel bar or a wooden beam.	
			12(G2)	3	Bending tests on a steel bar or a wooden beam.	
		4th	18(G1)	2,3	Evaluation and viva of Practical 2,3 : Bending tests on a steel bar or a wooden beam.	
			19(G2)	2,3	Evaluation and viva of Practical 2,3 : Bending tests on a steel bar or a wooden beam.	
		5th	25(G1)	4	Impact test on metals: Izod test, Charpy test	
			26(G2)	4	Impact test on metals: Izod test, Charpy test	
3	May	1st	2(G1)	4	Evaluation and viva of Practical 4 : Impact test on metals: Izod test, Charpy test	
		2nd	9(G1)	5	Torsion between on specimen of different metals for determining the angle of twist for a given torque.	
			10(G2)	4	Evaluation and viva of Practical 4 : Impact test on metals: Izod test, Charpy test	
		3rd	17(G2)	5	Torsion between on specimen of different metals for determining the angle of twist for a given torque.	
		4th	23(G1)	5	Evaluation and viva of Practical 5 : Torsion between on specimen of different metals for determining the angle of twist for a given torque.	
			24(G2)	5	Evaluation and viva of Practical 5 : Torsion between on specimen of different metals for determining the angle of twist for a given torque.	
		5th	30(G1)	6	To determine the stiffness of a helical spring and to plot a graph between load and extension.	
			31(G2)	6	To determine the stiffness of a helical spring and to plot a graph between load and extension.	
4	June	2nd	6(G1)	6	Evaluation and viva of Practical 6 : To determine the stiffness of a helical spring and to plot a graph between load and extension.	
			7(G2)	7	Hardness test on metal and finding the Brinell, Rockwell hardness	
		3rd	13(G1)	7	Hardness test on metal and finding the Brinell, Rockwell hardness	
		4th	20(G1)	7	Evaluation and viva of Practical 7: Hardness test on metal and finding the Brinell, Rockwell hardness	
			21(G2)	6,7	Evaluation and viva of Practical 6,7 : Hardness test on metal and finding the Brinell, Rockwell hardness	
		5th	27(G1)		Revision	
			28(G2)		Revision	

Signature of teacher

SAMEER SHARMA

(WLS SUPDT)

HOD (ME)

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Session : March to June 2022

Name of Teacher : Sameer Sharma **Subject :** Strength of Materials **Class :** Mechanical Engineering(4thSemester)

Sr. No.	Month	Week	Date	Name of Chapter	Content to be taught	Remarks
1	March	3rd	14,15, 16	Stresses and Strains	Introduction to Strength of Material, Syllabus overview and Evaluation Scheme, Pre-requisite revision, Area calculation of circle, semi-circle, triangle, square, rectangle, trapezoidal, cylinder,Numerical Practice, Identification of area and force (normal or parallel), Use of calculator, Concept of load, stresses and strain,Tensile compressive and shear stresses and strains, Concept of Elasticity, Elastic limit and limit of proportionality,Numerical Practice	
		4th	21,22, 23,25		Hook's Law, Young Modulus of elasticity, Nominal stress, Yield point, plastic stage, Strain hardening,Ultimate strength and breaking stress, Percentage elongation, Proof stress and working stress, Factor of safety, Shear modulus, Strain energy due to direct stresses, Proof resilience and modulus of resilience,Numerical Practice	
		5th	28,29, 30		Stresses due to gradual, sudden and falling load, Longitudinal and circumferential stresses in seamless thin walled cylindrical shells (derivation of these formulae not required), Numerical Practice	
2	April	1st	1	Moment of Inertia	Concept of moment of inertia and second moment of area, Radius of gyration, Numerical Practice	
		2nd	4,5,6, 8		Second moment of area of common geometrical sections: Rectangle, Triangle, Circle (without derivation), Second moment of area for L, T and I section, Section modulus,Numerical Practice	
		3rd	11,12, 13,	Beams and Bending Stress	Bending and shearing force, Concept of beam, form of loading,Concept of end supports Roller, hinged and fixed, Concept of bending moment and shearing force,Numerical Practice	
		4th	18,19, 20,22		B.M. and S.F. Diagram for cantilever and simply supported beams with and without overhang subjected to concentrated and U.D.L, Numerical Practice	
		5th	25,26, 27,29		Bending stresses, Concept of Bending stresses, Bending Equation, Theory of simple bending, Use of the equation f/y = M/I = E/R, Numerical Practice	
3	May	1st	2,4,6,		Concept of moment of resistance, Bending stress diagram, Calculation of maximum bending stress in beams of rectangular, circular, I and T section, Permissible bending stress Section modulus for rectangular, circular and symmetrical I section,Numerical Practice	
		2nd	9,10, 11,13	Columns	Concept of column, modes of failure, Types of columns, Buckling load, crushing load, Slenderness ratio, Factors effecting strength of a column, End restraints, Effective length,Numerical Practice	
		3rd	17,18, 20		Strength of column by Euler Formula, Rankine Gourdan formula, Combined direct and bending stresses, Simple cases of short columns of uniform section subjected to eccentric loading with stress diagram,Numerical Practice	
		4th	23,24, 25,27	Torsion	Concept of torsion- difference between torque and torsion, Torsion equation, Use of torque equation for circular shaft,Numerical Practice	
		5th	30,31		Comparison between solid and hollow shaft with regard to their strength and weight, Power transmitted by shaft, Concept of mean and maximum torque, Numerical Practice	
4	June	1st	1,3,	Springs	Closed coil helical springs subjected to axial load and impact load, Stress deformation, Numerical Practice	
		2nd	6,7,8, 10		Stiffness and angle of twist and strain energy, Proof resilience,Laminated Spring (Semi elliptical type only),Numerical Practice	
		3rd	13,15, 17		Determination of number of plates,Maximum bending stress and deflection, Numerical Practice	
		4th	20,21, 22,24		Revision of previous question paper	
		5th	27,28		Revision of previous question paper	

Signature of teacher

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(WLS SUPDT.)

HOD (ME)