



C.U.SHAH UNIVERSITY – Wadhwan City

FACULTY OF: - Technology and Engineering (Diploma Engineering)

DEPARTMENT OF: - Mechanical Engineering

SEMESTER: - IV **CODE:** - 2TE04SMT1

NAME OF SUBJECT: - Strength of Materials

Teaching & Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
<u>2TE04SMT1</u>	Strength of Materials	03	00	02	05	04	30	1.5	70	03	30	20	----	150

Objective: -

We have already studied the external effects due to action of force system in engineering mechanics in Second Semester. All Mechanical Engineering Components are subjected to different loadings and behave in a specific way. In this course, analysis of determinate structures / components under action of transverse loading, along with analysis of members under direct and lateral along with shear loading & torsion is analysed. This course will lay sound foundation to analysis & design of Machine Components.

Prerequisites: - Engineering mechanics

Course outline:-

Sr. No.	Course Contents	Teaching Hours
1	Direct Stress & Strain Direct Stress , linear Strain , Hook's Law, Calculate Numerical on Direct Stress & Linear Strain , Stress Strain curve of Mild, Steel , Modulus of Elasticity ,Yield , Breaking & Ultimate Stress and factor of Safety, Lateral Strain and Poission's ratio, Temperature Stresses & Strain with & without yielding, Shear Stress , Shear Strain & Shear Modulus, Bulk Modulus & Volumetric Strain	10
2	S.F & B.M In Beam Statically Determinate Beams Like Cantilever , Simply Supported & Over Hang Beam, Relation between Shear Force and Bending Moment, Sagging & Hogging Bending Moment and its importance, Point of Contra flexure & its importance, S.F & B.M Diagram for Cantilever , Simply Supported & Over Hang Beam elements like shaft , axle , spindle subjected to Point Load and/ or U.D.L	10
3	Moment Of Inertia Moment of Inertia & its Importance, Parallel & Perpendicular Axis Theorem, Formula of Moment of Inertia of solid & Hollow sections like Rectangle , Triangle, Circle, Moment of Inertia about C.G for I section , H section , Channel Section , Angle Section , T Section	06
4	Deflection Of Beams Slope & Deflection, Formulae for Cantilever Beam subjected to Point Load at free end and	04

	with full UDL, Formulae for S.S Beam subjected to Point Load at MID SPAN and with full UDL, Numerical problems on Slope and Deflection	
5	Columns & Struts Column & Strut, Short & Long Column, End Condition of Column and effective Length of Column & Modes of Failure in column, Radius of Gyration , Slenderness Ratio, Euler's Crippling Load & its numerical	04
6	Principal Plane & Principal Stress Formulae for Normal , Tangential & Resultant Stresses due to Direct Orthogonal Stresses & Shear Stress, Numerical on Principal Plane & Principal Stress, Formulae for Principal Stresses and for Location of Principal Planes	06
7	Mechanical Properties Of Materials Various Mechanical Engineering Materials, Classification of engineering materials, Test Mechanical Properties like HARDNESS , IMPACT	02

List of Experiments:-

- Draw Stress Strain Curve for Tension Test on Ductile Materials like Mild Steel , Aluminium
- Calculate Impact Value of Mild Steel using IZOD Impact Test Apparatus
- Calculate Impact Value of Mild Steel using Charpy Impact Test Apparatus
- Calculate Brinell Hardness Number of given material
- Calculate Hardness of given material using Rockwell Hardness machine
- Find out Compressive Strength of C.I , M.S using Compression Testing Machine

Books Recommended:-

- Strength of materials, R.S.Khurmi, S. Chand , New Delhi
- Strength of materials, R.P.Rethaliya, Atul Prakashan