



## C.U.SHAH UNIVERSITY – Wadhwan City

**FACULTY OF:** - Technology and Engineering (Diploma Engineering)

**DEPARTMENT OF:** - Mechanical Engineering

**SEMESTER:** - III **CODE:** - 2TE03EMS1

**NAME OF SUBJECT:** - Engineering Mechanics

### Teaching & Evaluation Scheme:-

Subject Code	Name of the Subject	Teaching Scheme					Evaluation Scheme							Total
		Th	Tu	Pr	Total	Credit	Theory				Practical (Marks)			
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
<u>2TE03EM</u> <u>S1</u>	Engineering Mechanics	03	00	02	05	04	30	1.5	70	03	30	20	----	150

### Objective: -

- To impart basic knowledge of Engineering Mechanics wherein Laws of Physics are applied to Solve Engineering problems, this programme /course will help the student to develop basic know how & awareness of the various laws of physics & it's real life applications in the various fields of engineering.
- All Mechanical Engineering Components are subjected to different loadings and behave in a specific way.

### Course outline: -

Sr. No.	Course Contents	Teaching Hours
1	<b>Introduction:</b> Scalar & Vector Quantities – like force, pressure, velocity, acceleration, Static & Dynamic – Kinetics & Kinematics, MKS, CGS & SI units and its conversion along with FPI and Metric System.	02
2	<b>Coplanar Concurrent Forces:</b> Force – units , elements , Laws/Principles of forces such as Principle of Superposition ,Principle of transmissibility, Composition & Resolution of Forces, Resultant & Equilibrium forces conditions of equilibrium, Analytical & graphical method for Law of Parallelogram , Law of Triangle , Lami's Theorems , Law of Polygon.	08
3	<b>Beam:</b> types of supports, types of loads like point load , U.D.L , U.V.L , Couple, Analytical method to Evaluate reactions in statically determinate beam subjected to point load and/ or U.D.L	08
4	<b>Centroid &amp; Centre of Gravity:</b> Distinguish between Centroid and Centre of Gravity Centroid, Axis of symmetry, State formula to find Centroid of plane, Centroid of standard shape section, Problems Centre of gravity, Axis of symmetry, State formula to find centre of gravity, Centre of gravity of standard solids, Problems	07
5	<b>Friction:</b> Friction , Laws of Friction , Angle of Friction , Angle of Repose, types of friction, Examples on friction for a block resting on horizontal plane & on inclined plane	05
6	<b>Work, Power &amp; Energy:</b> Work – work done , force displacement diagram , torque, work done by torque, Power – I.H.P	06

	and B.H.P of engine ,Equation of H.P in terms of Torque and R.P.M , Engineering Problems Energy – Kinetic & Potential energy and Engineering Problems	
7	<b>Simple Machines:</b> Principles of machines to evaluate Mechanical Advantage , Velocity Ratio of simple machine, Pulley blocks, Problems, Laws of Machines , reversible & non reversible machines	<b>06</b>

**List of Experiments: -**

- Verify and calculate resultant force through Polygon Law of Forces.
- Verify and calculate resultant force through Triangle Law of forces.
- Calculate reaction of beam by analytical method.
- Calculate Centroid of lamina and Centroid of different section.
- Calculate Co efficient of Sliding Friction for different surfaces.
- Work-out M.A & Efficiency of Single purchase crab, simple wheel and axle, and simple screw jack.

**Books Recommended: -**

- Engineering Mechanics, R S Khurmi, S. Chand , New Delhi.
- Engineering Mechanics, D S Kumar, S. K. Kataria & Sons.
- Engineering Mechanics, R P Rethaliya, Atul Prakashan.
- Applied Mechanics, H J Shah & Junarkar, Charotar Publication.