



## LESSON PLAN

Discipline: Civil Engg/Electrical Engg/E&TC Engg	Semester: 2 <sup>nd</sup> (Common)	Name of the Teaching Faculty: Rashmi Ranjan Lenka
Subject: Engg Mechanics [Th-(b)]	No. of days/per week class allotted: 04	Semester From Date: 09.01.2026 To Date: 08.05.2026 No of weeks-18
Week	Class Day	Theory Topics
1 <sup>st</sup>	1 <sup>st</sup>	<b>*Unit – I Basics of Mechanics and Force System</b> Significance and relevance of Mechanics, Applied Mechanics in the field of Engineering, Statics, Dynamics, Space, time, mass, particle, Definition of Rigid Bodies and flexible bodies
	2 <sup>nd</sup>	Scalar and vector quantity, Units of measurement(SI units), Fundamental units and derived units
	3 <sup>rd</sup>	Force – unit, representation as a vector and by Bow's notation
	4 <sup>th</sup>	Characteristics and effects of a force
2 <sup>nd</sup>	1 <sup>st</sup>	Principle of transmissibility of force, Force system and its classification
	2 <sup>nd</sup>	Resolution of a force - Orthogonal components of a force
	3 <sup>rd</sup>	Moment of a force, its unit, classification, Varignon's Theorem
	4 <sup>th</sup>	Composition of forces – Resultant, analytical method for determination of resultant for concurrent forces
3rd	1 <sup>st</sup>	Resultant of non-concurrent & parallel forces system by Analytical Method
	2 <sup>nd</sup>	Simple problem solved, Q & A Discussion as per SCTE & VT Exam pattern
	3 <sup>rd</sup>	Law of triangle, parallelogram and polygon of forces.
	4 <sup>th</sup>	Simple problems solved, Q & A Discussion as per SCTE & VT Exam pattern
4 <sup>th</sup>	1 <sup>st</sup>	<b>*Unit– II Equilibrium</b> Definition, Equilibrium and Equilibrant, Free body and Free body diagram,
	2 <sup>nd</sup>	Conditions of equilibrium, Analytical and graphical methods of analyzing equilibrium
	3 <sup>rd</sup>	Lami's Theorem – statement and explanation
	4 <sup>th</sup>	Proof of Lami's theorem, Monthly Class Test-1

5 <sup>th</sup>	1 <sup>st</sup>	Lami's Theorem application for various engineering problems
	2 <sup>nd</sup>	Types of beams, supports (simple, hinged, roller and fixed)
	3 <sup>rd</sup>	Loads acting on beam (vertical and inclined point load, uniformly distributed load, couple)
	4 <sup>th</sup>	Beam reaction for cantilever, simply supported beam with or without overhang
6 <sup>th</sup>	1 <sup>st</sup>	Simple problems solved, Q & A Discussion as per SCTE & VT Exam pattern
	2 <sup>nd</sup>	Beam subjected to combination of Point load and uniformly distributed load.
	3 <sup>rd</sup>	Simple problems solved, Q & A Discussion as per SCTE & VT Exam pattern
	4 <sup>th</sup>	Beam reaction graphically for simply supported beam subjected to vertical point loads only.
7 <sup>th</sup>	1 <sup>st</sup>	<b>* Unit- III Friction</b> Friction and its relevance in engineering, types and laws of friction
	2 <sup>nd</sup>	limiting equilibrium, limiting friction, co-efficient of friction, angle of friction, angle of repose,
	3 <sup>rd</sup>	Relation between co-efficient of friction and angle of friction, Advantages and disadvantages of friction
	4 <sup>th</sup>	Problems solved, Q & A Discussion as per SCTE & VT Exam
8 <sup>th</sup>	1 <sup>st</sup>	Equilibrium of bodies on level surface subjected to force horizontal to the plane
	2 <sup>nd</sup>	Simple problems solved
	3 <sup>rd</sup>	Equilibrium of bodies on level surface subjected to force inclined to plane
	4 <sup>th</sup>	problems solved
9 <sup>th</sup>	1 <sup>st</sup>	Equilibrium of bodies on inclined plane subjected to force parallel to the plane only
	2 <sup>nd</sup>	Simple problems solved
	3 <sup>rd</sup>	<b>*Unit- IV Centroid and Centre of Gravity</b> Define Centre of gravity and Centroid, Centroid of some common geometrical plane figures (square, rectangle, triangle, circle, semi-circle, quarter circle etc.)
	4 <sup>th</sup>	Centroid of composite figures composed of not more than three geometrical figures
10 <sup>th</sup>	1 <sup>st</sup>	solved simple problems on Centre of gravity of some geometrical figure
	2 <sup>nd</sup>	Centre of Gravity of some cut-out section
	3 <sup>rd</sup>	Solved numerical on the above
	4 <sup>th</sup>	Centre of Gravity of simple solids (Cube, Cuboid, Cone, Cylinder, Sphere, Hemisphere etc.)
11 <sup>th</sup>	1 <sup>st</sup>	Continued...
	2 <sup>nd</sup>	Centre of Gravity of composite solids composed of not more than two simple solids.
	3 <sup>rd</sup>	Simple problems solved, Q & A Discussion as per SCTE & VT Exam

		pattern
	4 <sup>th</sup>	Monthly Class Test-2
12 <sup>th</sup>	1 <sup>st</sup>	<b>*Unit – V Simple Lifting Machine</b> Definition of machine, simple machine, Compound Machine, Load, effort of simple machine
	2 <sup>nd</sup>	Explanation of simple lifting machine, Explanation of compound lifting machine
	3 <sup>rd</sup>	Define M.A, V.R. & Efficiency of a lifting machine, The relationship between M.A, V.R. & Efficiency of a lifting machine
	4 <sup>th</sup>	Simple problems solved
13 <sup>th</sup>	1 <sup>st</sup>	State the Law of Machine and its equation, Reversibility of Machine, conditions for reversibility of a lifting machine
	2 <sup>nd</sup>	Explanation of non-reversible machine or Self-Locking Machine
	3 <sup>rd</sup>	Ideal machine, friction in machine. Simple problem solved
	4 <sup>th</sup>	Derive the Maximum Mechanical advantage and Maximum efficiency of a lifting machine
14 <sup>th</sup>	1 <sup>st</sup>	Simple problems solved, Q & A Discussion as per SCTE & VT Exam pattern
	2 <sup>nd</sup>	Study of simple machines with some examples, Simple wheel and axle
	3 <sup>rd</sup>	Differential wheel and axle, Single purchase crab winch and its velocity ratio
	4 <sup>th</sup>	Double purchase crab winch and its V.R.
15 <sup>th</sup>	1 <sup>st</sup>	Worm and worm wheel its V.R.
	2 <sup>nd</sup>	Weston's differential pulley block, geared pulley blocks its V.R.
	3 <sup>rd</sup>	Worm & Worm Wheel, Screw Jack, simple problem solved continued...,
	4 <sup>th</sup>	Q & A Discussion as per SCTE & VT Exam pattern, Monthly Class Test-3
16 <sup>th</sup>	1 <sup>st</sup>	Revision of previous unit-I Taught
	2 <sup>nd</sup>	Simple problems solved of unit-I. Q & A Discussion as per SCTE & VT Exam pattern
	3 <sup>rd</sup>	Revision of previous unit-II Taught
	4 <sup>th</sup>	Problems solved of unit-II. Q & A Discussion as per SCTE & VT Exam pattern
	1 <sup>st</sup>	Revision of previous unit-III Taught

17 <sup>th</sup>	2 <sup>nd</sup>	Simple problems solved of unit-III. Q & A Discussion as per SCTE & VT Exam pattern
	3 <sup>rd</sup>	Revision of previous unit-IV Taught
	4 <sup>th</sup>	Simple problems solved of unit-IV. Q & A Discussion as per SCTE & VT Exam pattern
18 <sup>th</sup>	1 <sup>st</sup>	Revision of previous unit-V Taught
	2 <sup>nd</sup>	Simple problems solved of unit-V .Q & A Discussion as per SCTE & VT Exam pattern
	3 <sup>rd</sup>	Simple problems solved of unit-V. Q & A Discussion as per SCTE & VT Exam pattern continued...
	4 <sup>th</sup>	Monthly Class Test-4

#### Suggested Learning Resources:

1. Engineering Mechanics by Prof. Bhankhar Bharat Gokaldas (Download from <https://ekumbh.aicte-india.org/dbook.php>)
2. D.S. Bedi, Engineering Mechanics, Khanna Publications, New Delhi (2008)
3. Khurmi, R.S., Applied Mechanics, S. Chand & Co. New Delhi.
4. Bansal R K, A text book of Engineering Mechanics, Laxmi Publications.
5. Ramamrutham, Engineering Mechanics, S. Chand & Co. New Delhi.
6. Dhade, Jamadar & Walawalkar, Fundamental of Applied Mechanics, Pune VidhyarthiGruh.
7. Ram, H. D.; Chauhan, A. K., Foundations and Applications of Applied Mechanics, Cam- bridge University Press.
8. Meriam, J. L., Kraige, L.G., Engineering Mechanics- Statics, Vol. I, Wiley Publication, New Delhi.



Principal

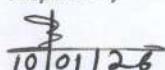


Signature of HOD

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