राष्ट्रीय प्रौद्योगिकी संस्थान, मिजोरम
NATIONAL INSTITUTE OF TECHNOLOGY, MIZORAM
(An Institute of National Importance under Ministry of HRD, Govt. of India)
CHALTLANG, AIZAWL, MIZORAM – 796012

Phone/Fax: 0389-2341699 / 0389-2341236 / 0389-2341774 Email: nit_mizoram@nitmz.ac.in

DEPARTMENT OF MECHANICAL ENGINEERING

1st Semester:

SL.No	Course code	Course Title	L-T-P	Credits
1.	MEL1101	Engineering Mechanics	3-1-0	8
2.	MEP1102	Engineering Mechanics Practical	0-0-2	2
		Total		**10**

Course code	Course Title	Semester	L-T-P	Credits
MEL1101	Engineering Mechanics	1st	3-1-0	8

Basic principles: Equivalent force system; Equations of equilibrium; Free body diagram; Reaction; Static indeterminacy.

Structures: Difference between trusses, frames and beams, Assumptions followed in the analysis of structures; 2D truss; Method of joints; Method of section; Frame; Simple beam; types of loading and supports; Shear Force and bending Moment diagram in beams; Relation among load, shear force and bending moment.

Friction: Dry friction; Description and applications of friction in wedges, thrust bearing (disk friction), belt, screw, journal bearing (Axle friction); Rolling resistance.

Virtual work and Energy method: Virtual Displacement; Principle of virtual work; Applications of virtual work principle to machines; Mechanical efficiency; Work of a force/couple (springs etc.); Potential energy and equilibrium; Stability.

Center of Gravity and Moment of Inertia: First and second moment of area; Radius of gyration; Parallel axis theorem; Product of inertia, Rotation of axes and principal moment of inertia; Moment of inertia of simple and composite bodies. Mass moment of inertia.

Kinematics of Particles: Rectilinear motion; Curvilinear motion; Use of Cartesian, polar and spherical coordinate system; Relative and constrained motion; Space curvilinear motion.

Kinetics of Particles: Force, mass and acceleration; Work and energy; Impulse and momentum; Impact problems; System of particles.

Kinematics and Kinetics of Rigid Bodies: Translation; Fixed axis rotational; General plane motion; Coriolis acceleration; Work-energy; Power; Potential energy; Impulse-momentum and associated conservation principles; Euler equations of motion and its application.

Books:-

SL.No	Name of the book	Author	Publication
1	Engineering Mechanics - Static and Dynamic	R.C. Hibbeler	Pearson Publication.
2	Engineering Mechanics - Static	J.L. Meriam et.al.	Wiley India Pvt. Ltd.
3	Engineering Mechanics - Dynamic	J.L. Meriam et.al.	Wiley India Pvt. Ltd.