

## Engineering Mechanics

<b>Course Code</b> <b>ME-107</b>	<b>Credit Hours</b> <b>2-1</b>
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### Course Description

This course is setup to introduce students with basic concepts of Engineering mechanics based on equilibrium, principles and application of forces, calculation of resultants, geometrical properties related to different shapes and their application in Civil Engineering. Further to this an introduction to simple dynamics is given to the students

### Text Book:

1. Engineering Mechanics by J.L. Miriam, Latest Edition.

### Reference Book:

1. Engineering Mechanics – Statics and Dynamics by R.C. Hibbeler.
2. Vector Mechanics for Engineers by Ferdinand P. Beer and E. Russell

### Prerequisites

Nil

### ASSESSMENT SYSTEM FOR THEORY

	<b>Without Project (%)</b>	<b>With Project/Complex Engineering Problems (%)</b>
Quizzes	15	10-15
Assignments	10	5-10
Mid Terms	25	25
Project	-	5-10
End Semester Exam	50	45-50

### ASSESSMENT SYSTEM FOR LAB

Lab Work/ Psychomotor Assessment/ Lab Reports	70%
Lab Project/ Open Ended Lab Report/ Assignment/ Quiz	10%
Final Assesment/ Viva	20%

### Teaching Plan

<b>Week No</b>	<b>Topics/Learning Outcomes</b>
1-3	Forces and Moments, (polygon law and funicular polygon to be included)
4-5	Equilibrium of Rigid Bodies(including resultant and resolution of co-planer forces)
6-8	Geometrical Properties of Plane Areas, (Including calculation of centroids and moments of inertia for simple and complex configurations, shifting of member moment of inertia to non-parallel global axis)
9	<b>Mid Semester Exam</b>
10-13	Friction, (problems involving flat and curved surfaces)
14-15	Basics about beams, trusses & reactions, (Conditions for creation of reactions at typical supports)
16	Introduction to Kinematics including examples
17-18	<b>End Semester Exam</b>

**Practical:**

<b>Experiment No</b>	<b>Description</b>
1	To determine the surface area and volume of various shapes and objects in various systems of units
2	To determine the tension in various points of a hanging rope loaded at different points
3	Determine the center of gravity (centroid) of various objects by analytical solution and experimental observations
4	To prove that the body is in equilibrium when the sum of all clockwise moments is equal to the sum of all counterclockwise moments
5	To verify the laws of friction between various surfaces and to find out the coefficient of friction
6	To determine the reactions of a simply supported beam by following methods: a) Experimental observations (Using spring balances). b) Analytical solution (Using conditions of equilibrium)