

# ENGR 212 : DYNAMICS

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## Transcript title

Dynamics

## Credits

4

## Grade mode

Standard letter grades

## Contact hours total

40

## Lecture hours

40

## Prerequisites

ENGR 211 and MTH 252.

## Description

Studies kinematics, Newton's law of motion, and work-energy and impulse-momentum relationships as applied to engineering systems.

## Learning outcomes

1. Identify and apply kinematic and dynamic equations for a particle in Cartesian, cylindrical and path coordinates.
2. Apply methods of work-energy and impulse-momentum to describe the motion of a particle.
3. Apply the parallel axis theorem to determine moments of inertia of a body for specified axes.
4. Apply relative motion concepts using translating and rotating reference frames for 2-dimensional systems.
5. Apply Newton's equations to solve problems involving rigid bodies in plane motion.

## Content outline

Kinematics - curvilinear motion, kinematics - relative motion, kinetics and equations of motion, kinetics - work and energy methods, kinetics - impulse and momentum, impacts, angular momentum, rigid body kinetics - relative motion and rotating axes, kinetics - force and acceleration, equations of motion - force and acceleration

## Required materials

A required Dynamics textbook.

## Grading methods

Grades will be given for homework, quizzes, exams and a final exam.