

# ENGR 211 : STATICS

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## Transcript title

Statics

## Credits

4

## Grading mode

Standard letter grades

## Total contact hours

40

## Lecture hours

40

## Prerequisites

MTH 251 and PH 211.

## Course Description

Analyzes forces induced in structures and machines by various types of loading.

## Course learning outcomes

1. Present all work in a professional manner - communication skills are essential.
2. Draw a free body diagram of an object.
3. Calculate resultant vectors from a system of forces and moments.
4. Write and solve equations of equilibrium for statically determinate objects.
5. Apply statics concepts to trusses, frames and machines.
6. Compute internal forces - draw shear and moment diagrams for a beam.
7. Solve common engineering problems using established evaluation techniques, methods and processes.

## Content outline

Introduction to engineering and mechanics, Newtonian gravitation, scalars and vectors, components in two dimensions, components in three dimensions, dot products, cross products, forces, equilibrium, free-body diagrams, two and three dimensional force systems, two dimensional description of the moment, the moment vector, moment of a force about a line, couples, objects in equilibrium - two and three dimensional applications, two and three force members, statically indeterminate objects, trusses - method of joints, method of sections, frames and machines, distributed loads, axial force, shear force, bending moment, shear force and bending moment diagrams, relations between distributed load, shear force, and bending moment, pressure and center of pressure.

## Required materials

The course will require a statics textbook.