

MECHANICAL ENGINEERING PROGRAM
ABET COURSE SYLLABUS

ME 211 Engineering Statics (3) Required

Course Description:
(2019-20 Catalog) Analysis of forces on engineering structures in equilibrium. Properties of forces, moments, couples, and resultants. Equilibrium conditions, friction, centroids, area moments of inertia. Introduction to mathematical modeling and problem solving. Vector mathematics where appropriate. 3 lectures.

Prerequisite Courses: MATH 241 (or concurrently), PHYS 131 or PHYS 141

Prerequisites by Topic:

1. A calculus based general college physics course containing an introduction to mechanics.
2. Calculus courses through multiple integrations.

Textbook:
(and/or other required material) **Vector Mechanics for Engineers, Statics and Dynamics**, 12th Ed., by Beer, Johnston, Mazurek, Cornwall and Self, McGraw-Hill, c 2019

References:

Course Coordinator/Instructor: John Chen, Professor of Mechanical Engineering

Course Learning Outcomes:

1. A thorough knowledge of the properties of forces, moments, couples, and resultants.
2. Ability to apply these concepts to the isolation of rigid bodies and to the solution of engineering problems involving equilibrium.
3. Ability to analyze the effect of distributed force systems including the calculation of centroids and moments of inertia.
4. Ability to analyze the effect of dry friction in typical engineering problems.
5. A significant introduction to the formulation and solution of engineering problems.
6. Effectively communicate legible problem solutions to be understood by engineers in and out of their specific discipline.

Relationship of Course to Mechanical Engineering Student Outcomes:

SO 1: Develop (D)
SO 2:
SO 3:
SO 4:
SO 5:
SO 6:
SO 7:

Topics Covered:

1. Force Systems
 - a) Introduction
 - b) Force
 - c) Moment
 - d) Couple
 - e) Resultants
2. Equilibrium
 - a) System isolation
 - b) Equilibrium
3. Structures
 - a) Simple trusses
 - b) Frames and machines
4. Distributed Forces
 - a) Centroids
 - b) Moments of Inertia
5. Friction
 - a) Principles of dry friction
 - b) Friction in machines

Laboratory Projects:

None

Class/Lab Schedule:

Contribution of Course to Meeting the Professional Component:

- | | |
|---|-----------------|
| (a) College-level mathematics and basic sciences: | 0 credits |
| (b) Engineering Topics:
Design | 3 credits
no |
| (c) General Education: | 0 credits |
| (d) Other: | 0 credits |

Prepared by:
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Date:
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