

ENSC 111

Mechanics I (Statics)

3 Credits

Community College of Baltimore County Common Course Outline

Description

ENSC 111 – Mechanics I (Statics): is a course in which students examine the equilibrium of stationary bodies under the influence of various forces. Topics include vector forces, moments and couples, trusses, frames and machines, beams, friction, centroids, moment of inertia, and scalar and vector methods.

Pre-requisites: MATH 251 or higher or permission of the program coordinator

Co-requisites: PHYS 151 or permission of the program coordinator

Overall Course Objectives

Upon completion of this course, students will be able to:

1. use the terminology of Engineering Statics;
2. demonstrate the fundamental concepts and units of Engineering Statics;
3. demonstrate the different types of forces;
4. use the free body diagram;
5. calculate vector products;
6. use the rules for vector manipulation;
7. apply vector methods to the solution of 2D and 3D force systems;
8. analyze structures in equilibrium utilizing the concepts of internal forces and moments;
9. compute centroids and moments of inertia of single and composite cross sections; and
10. analyze the effects of friction in equilibrium force systems.

Major Topics

- I. Vector operation and definitions
- II. 2-D and 3-D force systems
 - a. Particle equilibrium
 - b. Free body diagrams
- III. Systems of forces and moments
- IV. 2-D and 3-D force systems
 - a. Rigid body equilibrium
 - b. Freebody diagrams
- V. Structure equilibrium and analysis
 - a. Trusses
 - b. Frames
 - c. Machines

The Common Course Outline (CCO) determines the essential nature of each course.
For more information, see your professor's syllabus.

- d. Internal forces
- VI. Centroids and moments of inertia
- VII. Friction

Course Requirements

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- Three homework assignments
- Mid-term exam
- Four lab assignments
- Final exam

Date Revised: 2/16/2021