

COURSE OUTLINE

ENSC 111 Mechanics I (Statics) 3 Credit Hours

The Community College of Baltimore County

Description

Mechanics I (Statics)

Covers the equilibrium of stationary bodies under the influence of various forces; covers vector forces, moments and couples, trusses, frames and machines, beams, friction, centroids, moment of inertia, and scalar and vector methods.

Prerequisite: PHYS 151, MATH 251 or consent of instructor

Overall Course Objectives

Upon completion of this course, the student will be able to:

1. utilize the terminology of Engineering Statics.
2. understand the fundamental concepts and units of Engineering Statics.
3. understand the different types of forces.
4. utilize the Free Body Diagram.
5. perform all of the Vector Products.
6. utilize the rules for Vector manipulation.
7. apply vector methods to the solution of 2D and 3D force systems.
8. analyze structures(frames, machines, trusses) in equilibrium utilizing the concepts of internal forces and moments.
9. compute centroids and moments of inertia of single and composite cross sections.
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: particle equilibrium and free body diagrams
- III. Systems of forces and moments
- IV. 2-D and 3-D force systems: rigid body equilibrium and freebody diagrams
- V. Structure equilibrium and analysis (trusses, frames and machines, internal forces)
- VI. Centroids and moments of inertia

VII. Friction

Course Requirements

Grading/Exams Grading procedures will be determined by the individual faculty member but will be based on exams.