

EGNT 121

Statics

3 Credits

Community College of Baltimore County Common Course Outline

Description

EGNT 121 – Statics: covers fundamental concepts of mechanics relating to forces acting on rigid bodies. Other topics included are problems involving actions and reactions on structures and machines in two and three dimensions, vector algebra operations, and centroids. Specific scientific calculator required.

Pre-requisite: MATH 135 or MATH 163 or higher

Overall Course Objectives

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

1. construct free body diagrams of an object, group of connected objects, or part of an object;
2. calculate the forces exerted on one member of a structure by another;
3. apply force analysis to system equilibrium;
4. solve for forces in truss members using both the method of joints and the method of sections;
5. solve for the frictional forces due to sliding friction, belt friction, disk friction, and rolling resistance;
6. locate the centroid or center of gravity of both a homogeneous and non-homogeneous body;
7. calculate the moment of inertia of both two and three dimensional bodies; and
8. use applicable software to solve specific types of statics problems.

Major Topics

- I. Statics of Particles
- II. Forces, Vectors, and Resultants
- III. Moments and Couples
- IV. Statics of Rigid Bodies in Two Dimensions
- V. Statics of Rigid Bodies in Three Dimensions
- VI. Vector Algebra Operations
- VII. Distributed Forces: Centroids and Centers of Gravity
- VIII. Analysis of Structures and Members
- IX. Forces in Beams and Cables
- X. Friction
- XI. Distributed Forces: Moments of Inertia

Course Requirements

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

- Five homework assignments
- Two exams
- Three laboratory assignments
- Final exam

Other Course Information

Labs may involve exposure to electric currents and voltages, and to potentially heavy and/or sharp tools and materials.

Revision date: 02/10/2021