

MONTGOMERY COLLEGE
Dept. of Physics and Engineering, Rockville
ENES 102 Statics

Course Description:

ENES 102 Statics 3 credits.
Introduction to statics of particles, rigid bodies, forces, moment and equilibrium equations of rigid bodies. Distributed forces, centroids, and center of gravity. Analysis of structures, forces in cables, friction moments of inertia. PREREQUISITE: MATH 181. *Three hours lecture each week.*

Instructor:

C. Alex Hou, PhD, PE
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Required Text Book:

Engineering Mechanics – Statics, 13th Edition, by R. C. Hibbeler,
published by Prentice Hall

Main Objectives of the Course:

1. To understand the vector operation, concepts of forces, moments and their calculations.
2. To know how to draw free-body diagrams and setup equilibrium equations.
3. To analyze and solve simple engineering problems and their applications.

Course Contents:

1. General Principles
2. Force Vectors
Vector Operation and Resultant Forces
3. Equilibrium of a Particle
Free-Body Diagram
Coplanar Force System
4. Force System Resultants
Moment – Scalar and Vector Formulation
Equivalent System
Distributed Forces
5. Equilibrium of a Rigid Body
Free-Body Diagram
Equations of Equilibrium
Constraints

6. Structural Analysis
 - Method of Joints and Method of Sections
 - Frames and Machines
7. Internal Forces
 - Shear and Moment Diagrams
8. Friction Forces
9. Center of Gravity, Centroid and Moments of Inertia

Grading:

Attendance, Quiz and Project	15%
Homework sets (4)	15%
Midterm Tests (3)	45%
Final Exam (1)	25%

Reference Books:

1. *Engineering Mechanics: Statics*, 2nd edition, by William Riley and L. Sturges, John Wiley & Sons, Inc.
2. *Vector Mechanics for Engineers: Statics*, 9th edition, by Ferdinand Beer, E. Johnston, Jr. and E. Eisenberg, McGraw Hill.

Make-Up Exam Policy:

Make-up exams are only given to the students who are officially excused. Please contact the instructor at least three days before the exam to rearrange the make-up test. If emergency occurs that students can't prearrange the make-up test, students need to talk to instructor as soon as possible and provide documents to prove the situations. In these cases, doctor's letter, government's paper and other official documents are accepted.

Support Service:

A student who may need an accommodation due to a disability should talk to me as early as possible. A letter from Disability Support Service (DSS) authorizing your accommodations will be needed.