

Course Syllabus: ME/CE H212 Statics

Professor: John Parr

E-mail: jp43@evansville.edu

Textbook: Vector Mechanics for Engineers-Statics, Beer, & Johnston, 8th Edition, McGraw-Hill

Text Online Learning Center: www.mhhe.com/beerjohnston8 , www.handsonmechanics.com

Equipment: 1) **Calculator with vector math and simultaneous equations solution capability**
2) Scale, protractor, drawing compass

Course Description

ME 212/CE 212 Statics includes resolution and composition of forces, moments, principles of equilibrium and application to trusses and jointed frames, friction, center of gravity, and second moments of areas. Uses vector analysis throughout. Co requisite: Mathematics 211 or 221.

Course Goals:

The student will learn to:

- Analyze, organize, represent, and design methods to solve problems,
- Apply vector mechanics concepts to analyze and determine forces and dimensions to solve particle or rigid body equilibrium problems,
- Determine centroids and moments of inertia of areas and masses,
- Analyze statically loaded structures, frames, and machines to determine forces and dimensions to solve problems,
- Analyze and solve problems that also must consider friction forces to solve statics problems.

The student will also have the following professional development goals:

- Develop the ability to organize and solve engineering problems.
- Apply knowledge of mathematics and science in the performance of engineering calculations.
- Develop the ability to work effectively in groups
- Develop study and learning skills to facilitate life-long learning.

Course Material:

Static force systems, including analysis of force systems, equilibrium problems, equivalent system of forces, friction, section and volume properties, vector methods of problem solution, Analysis and behavior of basic structural systems such as trusses, beams, frames, and machines.

Required Background:

This course assumes that students have a strong foundation in trigonometry and algebra, including solution of simultaneous equations, and knowledge from Physics I mechanics course and a Calculus 1 course. ***Students are expected to review (independently) this material as needed.***

Active Learning Structure:

This course will make significant use of active learning techniques. As much as 50% of the class may be devoted to students working on problems, participating in learning competitions, evaluating solutions, taking concept quizzes, and other activities that are intended to engage students and reinforce their learning. Many of the activities, including homework, will be collaborative. Lecture will be used to introduce topics, to present or reinforce key concepts presented in the text, and to answer questions. Homework for a segment (typically a chapter) will be assigned at the beginning of each segment, and students may ask questions in class about the homework as they work toward its completion. ***In order for students to participate effectively and benefit from the active learning approach they will be responsible for preparing for class. In particular, students are expected to have read and familiarized themselves with the material in the text assigned for a day's class.***

Course Structure and Policies:

Participation:

The class activities are designed to help you learn the concepts presented and provide you with guided practice in applying techniques. Clearly, you need to participate to gain these benefits. In order to provide some value for participation, a small portion of your final grade, as well as possible extra credit, will be derived from your participation.

In-class assignments will be collected randomly and graded **check or zero** to indicate perceived preparation and participation. The participation grade will be based on the thought and effort as demonstrated by the students' responses.

Homework:

Homework is critical to learning and significant effort and thought should be put into completing homework assignments. Homework for a topic section (typically a chapter) will be assigned when we begin discussing that section.

Students are encouraged to work together in groups on homework assignments. The goal here is to encourage cooperative learning. Students can teach each other as well as help one another to understand concepts that some students may not understand initially.

Quizzes and Exams:

Three exams, and a final exam (collectively called tests) will be used as the primary means to test student knowledge in this course. Test problems will be similar to the homework problems and to the problems discussed in class.

The final exam will be comprehensive, though the emphasis will be on the material in the latter part of the course.

Tests questions will be based on the learning objectives for the relevant topics. The tests may use a variety of techniques including: multiple choice, true-false, fill-in, short answer, short essay, as well as mathematical problems.

Students receiving a grade of D or less on a test must submit a corrected copy of the test no later than the next class meeting after receiving the graded exam. Students who fail to submit a corrected test will suffer a 5% reduction in the grade for that test.

Attendance: This course will adhere to the Harlaxton College attendance policy. The policy is as follows:

"In courses which meet three times a week students are allowed a maximum of three unexcused absences during the course of the semester which incur no grade penalty. In courses which meet twice a week, two such absences are permitted, and in courses which meet once a week, a single absence is allowed. Additional unexcused absences will attract a grade penalty, namely the lowering of the student's final grade for each absence in excess of the permitted quota."

"In the case of a student who is, without good reason, more than ten minutes late arriving for class, the faculty member may deem the offender inexcusably absent for that class period."

Grading:

Grades will be assigned on the basis detailed below.

Exam 1	25%
Exam 2	25%
Exam 3	25%
Final	25%

Course Information

The syllabus, schedules, assignments, notices, changes to schedule, suggestions on homework, etc. will be posted on Blackboard. Each student is responsible for keeping up with posted information.