

JEFFERSON COLLEGE

COURSE SYLLABUS

EGR228

ENGINEERING MECHANICS-STATICS

3 Credit Hours

Prepared by: Mr. Cliff Castle

Revised by: Dr. Bob Brazzle
April, 2016

Minor Revision or Update by: Fran Moore
Per Curriculum Committee Process Change: April 25, 2018

Dr. Rob Brieler, Division Chair, Math & Science
Dr. Shirley Davenport, Dean, Arts & Science Education

EGR228 Engineering Mechanics-Statics

I. CATALOG DESCRIPTION

- A. Course prerequisites:
- MTH180 Calculus I
 - Reading proficiency
- Course pre-/co-requisites:
- PHY223 General Physics I
 - MTH185 Calculus II
- B. 3 semester credit hours
- C. Engineering Mechanics-Statics is a course that applies principles of mechanics to engineering problems of equilibrium. There is a heavy emphasis on three-dimensional problems and vector methods to deal with the conditions for equilibrium. This course is required for the Associate of Science degree. (F)
- D. Curricular alignment:
- Elective course applies toward AA degree.
 - Fulfills AS degree requirement.

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Expected Learning Outcomes	Assessment Measures
Visualize and solve mechanics problems in two and three dimensions	Classroom discussions, homework, exams
Develop a knowledge of vectors and their applications to mechanics	Classroom discussions, homework, exams
Analyze the forces acting on and in systems and rigid structures for	Classroom discussions, homework, exams
Use calculus to solve problems involving continuous distribution	Classroom discussions, homework, exams
Acquire the necessary background to thrive in future mechanics related courses	Classroom discussions, homework, exams

III. OUTLINE OF TOPICS

- A. Force - force and equilibrium will be introduced as the basic concepts of statics
- B. Moments and couples
1. Students will discriminate between the rotational effects of force and the pushing/pulling effects of force
 2. Moment will be defined
 3. The concept of the moment arm will be examined
 4. Students will differentiate between moments and couples

- C. Resultants - students will learn how to analyze combinations of forces and moments
- D. Distributed force - convert a distributed force to a concentrated force
- E. Free body diagrams - students will learn how to draw free body diagrams
- F. Trusses
 - 1. Students will describe the various types of trusses
 - 2. Trusses will be analyzed by the method of joints
 - 3. The method of sections will be compared to the method of joints.
- G. Beam: shear and moment
 - 1. Types of beams will be investigated
 - 2. Shear diagrams will be outlined
 - 3. Moment diagrams will be derived from shear diagrams
- H. Friction
 - 1. Static friction will be introduced
 - 2. Kinetic friction will be compared to static friction
- I. Centroids and moment of inertia
 - 1. Students will use calculus to find the centroid of a body
 - 2. Students will find the centroid of a composite body
 - 3. Students will understand the radius of gyration
 - 4. Students will calculate the moments of inertia from tables
- J. Product of inertia
 - 1. Students will choose the principal axis.
 - 2. The product of inertia will be calculated about the principal axis
 - 2. Students will restate the product of inertia about any axis

IV. METHODS OF INSTRUCTION

- A. Lecture
- B. Classroom discussion
- C. Homework

V. REQUIRED TEXTBOOK

Hibbeler; *Engineering Mechanics - Statics*; (current edition). New Jersey: Prentice Hall.

VI. REQUIRED MATERIALS

Calculator

VII. SUPPLEMENTAL REFERENCES

None required

VIII. METHODS OF EVALUATION

A. Graded homework

B. Examinations

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (TC 101; phone 636-481- 3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see college website, <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.