

MAE 2081 APPLIED MECHANICS: STATICS
Fall 2013 Course Syllabus & Policies

Course: MAE 2081 Applied Mechanics: Statics (3 credits)
Lecture M & W at 5:00 - 6:15 PM in Evans Room 133

Instructor: Dr. Matthew Jensen, Department of Mechanical and Aerospace Engineering
344 Olin Engineering Complex, (321) 674-7103, mjensen@fit.edu

Office Hours: M & W 3:00 pm – 5:00 pm or by appointment

Grader: Mr. Hui Yan hyan2009@my.fit.edu
Office Hours: By appointment

Required Materials:

- Hibbeler, R., C., *Engineering Mechanics: Statics*, 13th Edition, Pearson Prentice Hall, 2013. ISBN: 978-0-13-291554-0
- Hibbeler, R., C., *Engineering Mechanics: Statics Study Pack*, 13th Edition, Pearson Prentice Hall, 2013. ISBN: 978-0-13-291556-4

Catalog Description: Includes the elements of statics in co-planar and three-dimensional systems; equilibrium of particles and rigid bodies; simple structures, centroids and center of gravity; beam shear and bending moment; friction; and virtual work (3 credits).

Prerequisites by Topic: Physics 1, PHY 1001.

Course Objectives: The student will be able to:

1. List positions, forces, and moments in Cartesian vector form, and carry out a 3-D force analysis by using Cartesian vector notation
2. Create free-body diagrams for particles, rigid bodies, and structures for the needs of statical force analysis
3. Identify the moment of a force about a point and an axis, recognize and identify equivalent force systems, and simplify a system of forces and moments to a wrench
4. Classify the conditions for the equilibrium, and provide the equations of equilibrium of a particle and a rigid body
5. Recognize the support reactions for different types of connections, and predict the support reactions and other unknowns from the equations of equilibrium
6. Conduct force analysis for trusses, frames and machines
7. Identify internal forces developed in structural members, create shear and moment equations and diagrams, and classify the relations between distributed load, shear, and moment
8. Solve problems involving dry friction, and identify the frictional forces between structural members in machines
9. Identify the center of gravity, center of mass, centroid, and moments of inertia

10. Recognize the principle of virtual work and use it to determine equilibrium configurations, and create the potential energy function and use it to investigate the stability of equilibrium (Time permitting)

Topics Covered:

1. Introduction to Applied Mechanics: Statics
2. Force vectors
3. Equilibrium of a particle
4. Force system resultants
5. Equilibrium of a rigid body
6. First hour-exam (covers Topics 1-5)
7. Structural analysis
8. Internal forces and distributed forces
9. Second hour-exam (covers Topics 7 and 8)
10. Friction
11. Center of gravity, centroid, and moments of inertia
12. Virtual work
13. Final Exam (covers all the topics)

Course Grading:

Homework, Quizzes, and Participation	= 25 %
Test 1	= 20 %
Test 2	= 25 %
Final Exam	= 30 %
Total	= 100%

ANGEL:

All announcements and material for this course will be posted on ANGEL. It is the responsibility of each student to regularly check for updates and important course information on ANGEL. Note: ANGEL works best using the Firefox web browser

Grading Policy:

All questions and problems regarding grades must be presented in writing within one week (i.e., 7 calendar days) after the test or assignment has been returned. It is the student's responsibility to seek timely discussions with the instructor/teaching assistant for re-evaluation of the assigned grade. After that time period, special circumstances must exist for consideration. Grades will be assigned based on all the work you have completed during the semester. They will follow the traditional practice of A=90-100, B=80-89, C=70-79, D=60-69, F<60.

Class Attendance and Participation:

Regular class and participation in discussions is expected. Daily attendance will not be taken in class; however, regular class attendance is highly recommended.

Students are responsible for all material covered and assigned during the semester. If you anticipate not being able to attend class for a particular reason, it is best to e-mail the instructor with the information. The classroom learning experience depends on

both a professional teaching environment and student participation. You are expected to keep course notes. In the event that the professor is late for the start of class, students are requested to wait fifteen (15) minutes before leaving the classroom.

Class Tests & Final Examination:

There will be three (3) tests during the semester. All tests will be closed book and closed notes. Absence from a test will be excused only for medical reasons or serious immediate family problems. Students who anticipate missing the test for legitimate Florida Tech. or professional activities should talk with the instructor at least one (1) week prior to the test date and discuss an acceptable resolution. A grade of zero (0) will be assigned for the missed test unless excused or discussed prior with the instructor.

Homework:

Throughout the semester, the student will be assigned problems that should be submitted in an individual manner. **Late homework will be penalized 2 letter grades (20%) for each day past the due date.** It is highly recommend that sufficient time be allotted to homework. Failure to do so will result in a lack of understanding of the material. Homework must follow the given guidelines (see separate homework guidelines handout).

Homework will be graded; however, not all problems will be fully graded. You will receive credit for every attempted problem, and one randomly selected problem will be fully graded based on the homework guidelines grading scale.

Classroom Behavior:

Please turn off (not just silence) your cell phone and silence any other note-taking device (laptop, tablet, etc.). Make sure you arrive to class on-time. The instructor reserves the right to turn away any late students. Finally, students are expected to be alert, focused, and respectful in the classroom setting.

Disability Accommodation

The Coordinator of Disabilities at the Academic Support Center will work with your professors to provide accommodation for your disabilities. In order to start this process, please fill out the Disability Intake form: www.fit.edu/caps/documents/DisabilityServicesRequestForm_000.pdf. This form asks basic questions about your needs and what accommodations have helped in the past and what would be requested today. For example, an easy accommodation is extended test time.

Please e-mail or FAX this form with any supporting documentation, and it will be reviewed. The Coordinator of Disabilities will communicate with you to discern the best path for success here at Florida Tech. E-mail: newcombe@fit.edu or FAX: (321) 674- 8072. The supporting documentation is important and may be an educational- or psychological-related evaluation (or medical documentation) that recommends ways of assisting or accommodating for your disabilities to level the playing field.

Florida Tech will try to address your needs as best we can. Once accommodations are activated, it is necessary to contact the support center four weeks prior to the next term so they can communicate with instructors and confirm your accommodations for each term. This allows for changes of needs and continued permission to share the accommodations with instructors.

Academic Integrity:

The Florida Institute of Technology's Academic Integrity & Academic Dishonesty Code is on the Internet at the following address:

<http://www.fit.edu/current/documents/plagiarism.pdf> The code will be strictly enforced for this course.