

**ENES 102 Statics**  
Spring 2020

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**Office Hour:** Mon-Wed 10:00-11:00; Tue-Thu 9:00-10:30.  
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**Textbook:** Engineering Mechanics: Statics, by R.C. Hibbeler, 14<sup>th</sup> edition, 2016, Pearson.

**Course Description**

Vectors and scalar methods, force systems, equilibrium of stationary bodies under the influence of various kinds of forces, analysis of frames and machines, beams and trusses for internal forces, friction, centroids, moment of inertia, and shear and bending moment diagrams are discussed.

**Prerequisite:** MATH 236 (Calculus I).

**Designation:** Required

**Course Objectives:**

During this course, students will develop and/or refine their knowledge in the following areas:

- Engineering problem formulation, organization, and solution methodologies
- Scalar and vector methods applied to forces and moments
- Static equilibrium of bodies – 2D and 3D
- Stresses and deflections in rods
- Material properties and failure
- Centroids and moments of inertia for plane areas
- Column analysis
- Structural analysis of trusses, frames, and machines
- Frictional forces and analysis

**Teaching Methods:** Lectures, Assignments, Quizzes, Exams.

**Communication:** Official communication (except lectures) about this course will be sent to your FSU email or through Canvas. You need to check them every day.

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

- apply knowledge of mathematics, science, and engineering to real-world problems
- identify, formulate, and solve engineering problems
- work within multidisciplinary teams

## **Policies and Procedures**

**Attendance Policy:** You can have up to two excused or unexcused absences. More than two unexcused absences will affect your grade. Every time you do not attend the class—once you already have two unexcused absences - one point from your overall grade will be deleted.

**Participation Policy:** This class will use some of the current techniques of active learning such as brainstorming, tell-me-something-new, and one-word-answer questions. Participation to the classes are important as the more you participate the more you learn effectively.

**Make-up Policy:** There will be no-make up for any of class activities, homework, pop quizzes or exams unless there is a documented personal and/or close family emergency. Please make your arrangements if the need should arise for a make-up exam.

**Assignment Policy:** No late assignment will be accepted. Details are given in Assignment Section below.

**Cellular Phone Policy:** Studies show that cellphones and other mobile devices can significantly enrich learning, so long as they are mindfully added to the classroom. Cell phones are only allowed during active learning that requires using an app or student engagement platform. Classroom pop quizzes, discussions and other active learning ideas may be executed on a mobile device. However,

- phones are not allowed to text/message for personal and/or social reasons during class,
- phones are only allowed to be used at times and for purposes directed by the instructor,
- when texting/messaging for classroom purposes, students will only text/message information relevant to the class activity and will refrain from adding extraneous and/or inappropriate information, and
- when texting/messaging for classroom activities, students are permitted to use university-appropriate abbreviations.

**Smart Watch Policy:** Students are not allowed to text/message for personal and/or social reasons during class using their smart watches. Smart watches are not allowed during exams, as well. Please ensure that your smart watch is placed in your bag before the start of the examination.

**Class Cancellation:** Class will only be canceled if FSU is closed during class time. The only reliable sources for FSU closing are the FSU website, the FSU email system, and BURG Alerts.

**Academic Dishonesty:** According to the Student Code of Conduct: “Academic dishonesty is defined to include any form of cheating and/or plagiarism. Cheating includes, but is not limited to, such acts as stealing or altering testing instruments; falsifying the identity of persons for any academic purpose; offering, giving or receiving unauthorized assistance on an examination, quiz or other written or oral material in a course; or falsifying information on any type of academic record. Plagiarism is the presentation of written or oral material in a manner which conceals the true source of documentary material; or the presentation of materials which uses hypotheses, conclusions, evidence, data, or the like, in a way that the student appears to have done work

which he/she did not, in fact, do. In cases involving academic dishonesty, a failing grade or a grade of zero (0) for either an assignment and/or a course may be administered. Students who are expelled or suspended for reasons of academic dishonesty are not admissible to other institutions within the University System of Maryland. Suspension or expulsion for academic dishonesty is noted on a student's academic transcript." Retrieve from:

<http://www.frostburg.edu/fsu/assets/File/Administration/policies/policystatements.pdf>

**Disruptive Behavior:** University regulations require that the following statement be included in any course syllabus: "The University will not tolerate disorderly or disruptive conduct which substantially threatens, harms, or interferes with university personnel or orderly university processes and functions. A faculty member may require a student to leave the classroom when his/her behavior disrupts the learning environment of the class. A student found responsible for disruptive behavior in the classroom may be administratively withdrawn from the course."

**Grade Grievance:** If you feel that you have been improperly awarded a grade that you did not earn, you may initiate the grade grievance process. More information, including the specific timeline and procedures, is available in the back of the undergraduate catalog.

**Confidentiality and Mandatory Reporting:** Frostburg State University and its faculty are committed to maintaining a safe learning environment and supporting survivors of violence. To meet this commitment and comply with federal and state law, FSU requires all faculty and staff (other than the confidential employees in CAPS and Brady Health) to report any instances of gender-based harassment, sexual misconduct, relationship violence, or stalking against students. This means if you share your or another FSU student's experience with gender-based harassment, sexual misconduct, relationship violence, or, stalking, I have a duty to report the information to the University's Title IX Coordinator. The only exception to my reporting obligation is when such incidents are communicated during class discussion, as part of an assignment for a class, or as part of a University-approved research project.

Faculty and staff are also obligated to report allegations of child abuse and neglect to University Police and to Child Protective Services. This obligation extends to disclosures of past abuse even if the victim is now an adult and the abuser is deceased. My duty to report suspected child abuse and neglect extends to disclosures that are made as part of classroom discussions and in writing assignments.

If you or someone you know has experienced an incident of harassment or violence, please go to [www.frostburg.edu/titleix](http://www.frostburg.edu/titleix) to find information on reporting options and the resources and services available for support.

## **Assignments**

**Homework:** Homework are assigned as the material is covered. Each homework assignment has a due-date that will be announced on Canvas. Each assignment will be graded, and assignment grades play a substantial part of your total grade. You are encouraged to discuss homework questions with your classmates; however, you should write up solutions separately. No late homework will be accepted.

**Quizzes:** Seven closed-book/closed-notes quiz will be given during classes. The problem will either be identical or very similar to one of the homework problems that were assigned previously. No make-up quizzes will be given. Students who miss a quiz will receive a grade of zero for the missed quiz. Lowest two quizzes will be dropped.

**Exam Policy:** There are two mid-term exams. All exams are closed-book/ closed notes. Students are strongly encouraged to bring a calculator (and possibly a back-up or spare batteries) to class. Use of cell phones and laptop computers are NOT allowed. Students who miss an exam due to a University approved excused absence must contact me prior to the missed assessment and provide documentary evidence to support their claim. Only one make-up exam will be given at a single date and time for all students who require it.

**Important notes:** There will be a review-exam class, as sort of question and answer (QA) session, before each exam. This session includes solving course-related problems, as well as answering your questions.

## **Grading**

The course grade will be determined in the following distributions.

Attendance	8%
Homework	20%
Quizzes	8%
Exam 1	20%
Exam 2	20%
Final Exam.	24%
<b>Total</b>	<b>100%</b>

## **Grading Scale**

A	90 – 100%
B	80 – 89%
C	70 – 79%
D	60 – 69 %
F	0 - 59%

## Tentative Class Schedule (Spring 2019)

Week	Day	Topics/HW
1	M, Jan 27 W, Jan 29	Introduction/Syllabus/Ch.1 General Principles (1) Ch. 1 General Principles (2) Homework 1 (due by Feb 5)
2	M, Feb 3 W, Feb 5	Ch. 2 Force Vectors (1) Ch. 2 Force Vectors (2) Homework 2 (due by Feb 12)
3	M, Feb 10 W, Feb 12	Ch. 2 Force Vectors (3) Quiz 1: Ch. 1 & 2 Ch. 3 Equilibrium of a Particle (1) Homework 3 (due by Feb 19)
4	M, Feb 17 W, Feb 19	Ch. 3 Equilibrium of a Particle (2) Quiz 2: Ch. 3 Ch. 4 Force System Resultant (1) Homework 4 (due by Feb 26)
5	M, Feb 24 W, Feb 26	Ch. 4 Force System Resultant (2) Quiz 3: Ch. 4 Ch. 4 Force System Resultant (3)
6	M, Mar 2  W, Mar 4	Ch. 4 Force System Resultant (4) Pre-Exam Review Exam 1 (Ch. 1–4)
7	M, Mar 9 W, Mar 11	Ch. 5 Equilibrium of a Rigid Body (1) Ch. 5 Equilibrium of a Rigid Body (2) Homework 5 (due by Mar 23)
8	M, Mar 23 W, Mar 25	Ch. 6 Structural Analysis (1) Quiz 4: Ch. 5 Ch. 6 Structural Analysis (2) Homework 6 (due by Apr 1)
9	M, Mar 30 W, Apr 1	Ch. 6 Structural Analysis (3) Quiz 5: Ch. 6 Ch. 7 Internal Forces (1) Homework 7 (due by Apr 8)
10	M, Apr 6 W, Apr 8	Ch. 7 Internal Forces (2) Quiz 6: Ch. 7 Ch. 8 Friction (1) Homework 8 (due by Apr 15)
11	M, Apr 13 W, Apr 15	Ch. 8 Friction (2) Ch. 8 Friction (3) Pre-Exam 2 - Review
12	M, Apr 20 W, Apr 22	Exam 2 (Ch. 5-8) Ch. 9 Center of Gravity and Centroid (1) Homework 9 (due by Apr 29)

13	M, Apr 27	Ch. 9 Center of Gravity and Centroid (2)
	W, Apr 29	Ch. 9 Center of Gravity and Centroid (3)
14	M, May 4	Quiz 7: Ch. 9
		Ch. 10 Moments of Inertia (1)
	W, May 6	Ch. 10 Moments of Inertia (2)
15	M, May 11	Pre-Final Exam - Review
	W, May 13	Reading Day
16	F, May 15	Final Exam: Ch. 1-10