UCONN
UNIVERSITY OF CONNECTICUT

CE2110
Applied Mechanic I (Statics)
School of Engineering

Syllabus – May 2019

Course and Instructor Information

Course Title: Applied Mechanics I (Statics)
Credits: #3
Format: (Online)
Prerequisites: Math 2110 or 2130 which may be taken concurrently

Professor: Sarira Motaref Ph.D., P.E.
Assistant Professor
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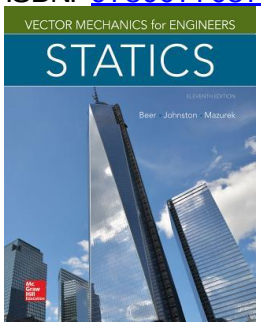
Telephone: 860-486-2731
Other: Office location: EII, 310
Office Hours/Availability: Via Blackboard collaborate with previous appointment

Texts are available through a local or online bookstore. The UConn Co-op carries many materials that can be shipped via its online Textbooks To Go service. For more information, see Textbooks and Materials on our Enrolled Students page.

Course Materials

Suggested Materials:

Text book: Vector Mechanics for Engineers: STATICS or STATICS and DYNAMICS
Ferdinand P. Beer, E. Russell Johnston Jr., & David F. Mazurek
McGraw -Hill, 11th Ed.,2013
ISBN: 9780077687304



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Additional course readings and media are available within HuskyCT, through either an Internet link or Library Resources

Course Organization:

The class is fully online. It means that the all class materials including lectures, Assignments, quizzes and exams are available via HuskyCT.

Class includes total of 3 weeks, 37 Lectures, [**05/13/2019 to 05/31/2019**]
The class has a fast pace and to be successful in this class, It is expected that you spend **30-45 hours per week** for this online course.

Class Outlines

1. Watch a video (approximately 10-15 min.) lecturing concepts and background information.
2. Watch a video (approximately 10-20 min.) solving sample problems.
3. Complete Assignments (available in HuskyCT) before deadline and upload your solution.
4. Take online quizzes at the end of each chapter.
5. Attend the discussion sections via HuskyCT.
6. Take 3 face to face (or online) midterm exams at the end of each week.

Course Description

Fundamentals of statics using vector methods. Resolution and composition of forces; equilibrium of force systems; analysis of forces acting on structures and machines; centroids; moment of inertia.

The main objective of this course is to develop in the engineering students the ability to analyze any problem in a simple and logical manner and to apply to its solution a few, well understood, basic principles. Vector analysis is first introduced and will be used later in the presentation and discussion of the fundamental principle of mechanics. This course introduces the concepts of engineering based on forces in equilibrium. Topics include concentrated forces, distributed forces, forces due to friction, and inertia as they apply to machines, structures, and systems. Upon completion, students should be able to solve problems which require the ability to analyze systems of forces in static equilibrium.
This course will be prerequisite for Mechanics of Materials CE 3110 and later in other advanced courses, such as CE 3630 and CE 3640.

Course Objectives

By the end of the semester, students should be able to:

1. Draw free body diagrams of objects with applied external forces
2. Calculate components of forces and solve equation of equilibrium in 2D and 3D
3. Calculate moments / force couples
4. Calculate centroids of areas and volumes
5. Analyze trusses, frames, and machines by finding the internal forces and reactions
6. Analyze beams and cables
7. Calculate moment of inertia
8. Explain the laws of friction and its application

Course Outline (and Calendar if Applicable)

Course Modules
See each Chapter's Objectives and Activities page for complete information and the calendar for all due dates.
Week 1
Lecture 1: Introduction (Ch1)
Lecture 2: System of Unit- Numerical Accuracy (Ch1)
Lecture 3: Vector Force Resultant(Ch2)
Lecture 4: Equilibrium of Particle(Ch2)
Lecture 5: Free Body Diagram(Ch2)
Lecture 6: Rectangular Components of Force in Space(Ch2)
Lecture 7: Equilibrium of Forces in Space(Ch2)
Lecture 8: External/Internal Forces-Transmissibility(Ch3)
Lecture 9: Vector Product-Moment(Ch3)
Lecture 10: Cross product –Moment of a force about a point(Ch3)
Lecture 11: Moment of a force about a point-Scalar product(Ch3)
Lecture 12: Equivalent Couple-Addition of Couple, Moment about an axis(Ch3)
Lecture 13: Reduction of Force-Equivalent System of Vectors(Ch3)
Exam 1 (Ch. 1, 2, 3)
Week 2
Lecture 14: Equilibrium in 2D-Support Reaction(Ch4)
Lecture 15: Equilibrium Rigid Body-Statically Determinate(Ch4)
Lecture 16: Equilibrium 3D Reactions/Support (Ch4)
Lecture 17: Centroid of Gravity/Area/Line (Ch5)
Lecture 18: First Moment of Area (Ch5)
Lecture 19: Distributed Load on Beam (Ch5)
Lecture 20: Submerged Surface (Ch5)
Lecture 21: Centroid of Volume/Gravity (Ch5)
Lecture 22: Truss/Method of Joint (Ch6)
Lecture 23: Truss- Method of Section (Ch6)
Lecture 24: Analysis of Frames (Ch6)
Lecture 25: Analysis of Machines (Ch6)
Exam 2 (Ch. 4, 5, 6)
Week 3
Lecture 26: Beam/Various Type of Loading (Ch7)
Lecture 27: Shear Diagram (Ch7)
Lecture 28: Bending Moment Diagram (Ch7)
Lecture 29: Relation Between Shear and Bending (Ch7)
Lecture 30: Cable (Ch7)
Lecture 31: Law of Friction (Ch8)
Lecture 32: Wedges (Ch8)
Lecture 33: Square Threaded Screw (Ch8)
Lecture 34: Belt Friction (Ch8)
Lecture 35: Moment of Inertia introduction (Ch9)
Lecture 36: Moment of Inertia by Integration(Ch9)
Lecture 37: Moment of Inertia of Composite Section(Ch9)
Lecture 38: Moment of Inertia of a Mass (Ch9)
Exam 3 (Ch. 7, 8, 9)

Course Requirements and Grading

Summary of Course Grading:

Course Components	Weight
Home works (9 sets)	25%
Quizzes (9 sets)	15%
Discussion sections (9sets)	15%
Midterm exams (3 sets)	45%

Home works

- There are 9 sets of Homeworks. Each set includes 4 to 8 homework problems. You will upload HWs to HuskyCT under "Assignments" and will get feedback online. You need to upload your assignments before the due date to HuskyCT. The due dates are available on calendar. The calendar file is located in HuskyCT under Syllabus & Calendar. **No late HWs** will be accepted. **DO NOT** email your late HW to instructor.
- To receive full credit on your homework, you must:
    - Write neatly;
    - Note any given values and the value you seek to calculate;
    - Write your solution including all equations and calculations; and,
    - Circle or box your final answer.
- You need to scan your home works and save as a **Pdf file** using the scanner or your smartphone device. Do not submit image (jpeg) or low quality files.
- Homework statements are available in each module under each assignment in HuskyCT.
- Homework Solutions will be available to you after due date under Course Resources/Homework Solutions.

Discussion sections

- A real life problem is shared for each chapter. Students are required to provide different responses on each discussion section.

Quiz

- There are total of 9 quizzes at end of each chapter. The due dates are available in calendar. The calendar file is located in HuskyCT under Syllabus & Calendar.
- Questions are multiple choices. The number of questions and assigned times are displayed in quiz description.
- You can have 2 attempts for each quiz. After each attempt, you can see your wrong answers. The latest quiz attempt should start before 11:59PM of the due dates. **No make-up quiz** will be offered to students.

Midterm exam

- **online** (for distance students) or **face to face** (for local students) Midterm exams (3 Midterm exams):

Midterm exam 1: Friday, May 17th , 2019, 10AM-11AM ET (60 minutes) [Chapters 1,2, 3]
Midterm exam 2: Friday, May 24th , 2019, 10AM-11AM ET (60 minutes) [Chapters 4, 5, 6]
Midterm exam 3: Friday, May 31st , 2019, 10AM-11AM ET (60 minutes) [Chapters 7, 8, 9]

- Midterm exams contain 4 questions.
- Solution to midterm exams will be available in HuskyCT under Course Resources/Exam Solutions.

a) Students with disability can contact CSD and use extra time if they are eligible.

Grading Scale: (Subjected to change)
Undergrad

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

Due Dates and Late Policy

All course due dates are identified in the calendar available in HuskyCT under Syllabus& Calendars. Deadlines are based on Eastern Standard Time; if you are in a different time zone, please adjust your submittal times accordingly. *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.*

No late assignments will be accepted. No makeup quiz will be offered.

Feedback and Grades

You will receive online feedbacks on your assignments and quizzes. Midterm exams and final exams results will be available to you in a week after the exam date. In addition solutions to all home works, quizzes, midterm exams, and final exams will be available in huskyCT under Course Resources.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. This section provides a brief overview to important standards, policies and resources.

Student Code

You are responsible for acting in accordance with the University of Connecticut's Student Code. Review and become familiar with these expectations. In particular, make sure you have read the section that applies to you on Academic Integrity:

- Academic Integrity in Undergraduate Education and Research
- Academic Integrity in Graduate Education and Research

Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism. If you need more information about the subject of plagiarism, use the following resources:

- Plagiarism: How to Recognize it and How to Avoid It
- Instructional Module about Plagiarism
- University of Connecticut Libraries' Student Instruction (includes research, citing and writing resources)

Copyright

Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated.

Netiquette and Communication

At all times, course communication with fellow students and the instructor are to be professional and courteous. It is expected that you proofread all your written communication, including discussion posts, assignment submissions, and mail messages. If you are new to online learning or need a netiquette refresher, please look at this guide titled, The Core Rules of Netiquette.

Adding or Dropping a Course

If you should decide to add or drop a course, there are official procedures to follow:

- Matriculated students should add or drop a course through the Student Administration System.
- Non-degree students should refer to Non-Degree Add/Drop Information located on the registrar's website.

You must officially drop a course to avoid receiving an "F" on your permanent transcript. Simply discontinuing class or informing the instructor you want to drop does not constitute an official drop of the course. For more information, refer to the:

- Undergraduate Catalog
- Graduate Catalog

Academic Calendar

The University's Academic Calendar contains important semester dates.

Academic Support Resources

Technology and Academic Help provides a guide to technical and academic assistance.

Students with Disabilities

Students needing special accommodations should work with the University's Center for Students with Disabilities (CSD). You may contact CSD by calling (860) 486-2020 or by emailing csd@uconn.edu. If your request for accommodation is approved, CSD will send an accommodation letter directly to your instructor(s) so that special arrangements can be made. (Note: Student requests for accommodation must be filed each semester.)

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from http://www.blackboard.com/platforms/learn/resources/accessibility.aspx)

Software Requirements and Technical Help

- Word processing software
- Adobe Acrobat Reader
- Internet access

(add additional items as needed and link to http://ecampus.uconn.edu/plug-ins.html)

This course is completely facilitated online using the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, online students have access to the in person/live person support options available during regular business hours in the Digital Learning Center (www.dlc.uconn.edu). Students also have 24x7 access to live chat, phone and support documents through www.ecampus24x7.uconn.edu.

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.

(add additional items as needed and link to http://ecampus.uconn.edu/plug-ins.html)

University students are expected to demonstrate competency in Computer Technology. Explore the Computer Technology Competencies page for more information.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

Additional informal formative surveys may also be administered within the course as an optional evaluation tool.

May 2019

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
Week 1 Starts	**Chapter 1** Quiz 1 HW-1 Discussion-1	**Chapter 2** Quiz 2 HW-2 Discussion-2		**Chapter 3** Quiz 3 HW-3 Discussion-3	**Exam 1 (Ch.1, 2 and 3)** ***Week 2 Starts*** Initial Survey	
19	20	21	22	23	24	25
Chapter 4 Quiz 4 HW-4 Discussion-4		**Chapter 5** Quiz 5 HW-5 Discussion-5		**Chapter 6** Quiz 6 HW-6 Discussion-6	**Exam 2 (Ch.4, 5 and 6)** ***Week 3 Starts***	
26	27	28	29	30	31	
Chapter 7 Quiz 7 HW-7 Discussion-7		**Chapter 8** Quiz 8 HW-8 Discussion-8		**Chapter 9** Quiz 9 HW-9 Discussion-9	**Exam 3 (Ch.7, 8 and 9)** Survey	