

Syllabus

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Applied Mechanics I: Statics

Credits: #3

Format: In-Person

Prerequisites: Math 1132Q

Professor: Shinae Jang, Ph.D., PE, Professor in Residence of Civil & Environmental Engineering

Email: shinae.jang@uconn.edu; Add '[CE2110-001]' in the subject line.

Telephone: (860) 486-0540

Office Location: Engineering II (E2) 310

Office Hours/Availability: Wednesdays 1:15 PM – 2:15 PM and by appointment

Virtual Office hour link: <https://uconn-cmr.webex.com/meet/shj10001>

Email Response Time: I will check your email between business hours and respond to your questions within 1-2 business days. Office hours are scheduled between business hours (9 AM – 4 PM) as well.

Teaching Assistants:

Olin Green (olin.green@uconn.edu)

Leana Santos (leana.santos@uconn.edu)

Madelyn Kelly (Madelyn.kelly@uconn.edu)

In-Person Office Hours/Availability by TAs in CAST 136

Wednesday 3 – 5 PM, Thursday 12:15 – 2:15 PM and 3 – 5 PM, and Friday 2 – 6 PM

Professor Jang is a member of the INCLUDE program team, a neurodiversity initiative that aspires to create an inclusive learning environment in which *all* students can thrive. This course was designed to address the diverse thinking and learning styles that neurodiverse students possess. Several pedagogical innovations will be implemented in this course including, but not limited to peer learning, alternative examination modalities, project-based learning, etc.

Course Materials

Required course materials should be obtained before the first day of class. Required textbooks are available for purchase through the [UConn Bookstore](#) or online bookstore/vendors.

Required Materials:

1. Textbook: Vector Mechanics for Engineers: Statics or Statics and Dynamics

Beer, F.P., Johnston, E.R., Mazurek, D.F., Cornwell, P.J., Self, B.P. (2019)

McGraw Hill, 12th Ed. **Smartbook with CONNECT access, ISBN: [9781264178827](#)**

The required course components will be done on CONNECT site, therefore, an exact edition is required.

2. i>clicker: The mobile application, REEF Polling is required. Download REEF Student Apps from <https://www.iclicker.com/students/apps-and-remotes/apps>, find this course, and register by the add/drop deadline, **9/9**. It is your responsibility to check whether your I>clicker is properly working without technical issues – wifi, the

battery level of your phone, etc. Check the HuskyCT Grade center for the clicker points.

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

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 engineering students the ability to analyze any problem simply and logically and to apply to its solution, 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 that require the ability to analyze systems of forces in static equilibrium.

This course is prerequisite for ME 2120 Applied Mechanics II: Dynamics and CE 3110 Mechanics of Materials.

ABET/NACE Student Outcomes

By the end of the semester, students should demonstrate the following objectives aligned with course objectives:

1. ABET-SO1: an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics (NACE-Critical Thinking)
2. ABET-SO3: an ability to communicate effectively with a range of audiences (NACE-Communication)
3. ABET-SO5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives (NACE-Teamwork & Career & Self Development)

References: [ABET EAC Criteria 2024-2025](#), [NACE Career Readiness Competencies](#)

Course Objectives and Student Outcomes

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 the equation of equilibrium in 2D and 3D
3. Calculate the moment of a structure under a point load or a couple of forces
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 the moment of inertia
8. Determine the internal forces of systems with friction
9. Collaborate with team members to solve engineering problems

Meta Cognition Objectives

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

1. Set goals for their learning in the course
2. Identify and plan the behaviors that are necessary to do well in the course
3. Predict their performance on an upcoming exam with high accuracy, avoiding overconfidence
4. Explain how they received the grade that they did

Course Calendar

Wk	Date	Online videos*	Topics	Quiz range
1	8/27	-	<ul style="list-style-type: none"> ▪ Introduction ▪ System of Unit – Numerical Accuracy ▪ Vector-force Resultant, Part I 	Pre-lecture Quiz1
	8/29	L1, L2, L3, S1	<ul style="list-style-type: none"> ▪ Active discussion section 	
2	9/3	L4, L5, L6	<ul style="list-style-type: none"> ▪ Vector-force Resultant, Part II ▪ Equilibrium of Particle ▪ Rectangular Components of Force in Space 	
	9/5	S2, S3, S4	<ul style="list-style-type: none"> ▪ Active discussion section 	
3	9/10	L7, L8, L9	<ul style="list-style-type: none"> ▪ Equilibrium Forces in Space ▪ External/Internal Forces-transmissibility ▪ Vector Product Moment 	Pre-lecture Quiz2
	9/12	S5, S6, S7	<ul style="list-style-type: none"> ▪ Active discussion section 	
4	9/17	L10, L11, L12, L13	<ul style="list-style-type: none"> ▪ Rectangular Component of Moment-Scalar Product ▪ Moment of a force about a point-Scalar product ▪ Equivalent Couple-Addition of Couple-Moment about an axis ▪ Reduction of Force-Equivalent System of Vectors 	Pre-lecture Quiz3
	9/19	S8, S9, S10, S11	<ul style="list-style-type: none"> ▪ Active discussion section 	
5	9/24	Midterm 1 (No discussion sections scheduled during the exam week)		
6	10/1	L14, L15, L16	<ul style="list-style-type: none"> ▪ Equilibrium in 2D-Support Reaction ▪ Equilibrium Rigid Body-Statically Indeterminate ▪ Equilibrium 3D Reactions/Support 	Pre-lecture Quiz4
	10/3	S12, S13, S14	<ul style="list-style-type: none"> ▪ Active discussion section 	
7	10/8	L17, L18, L19	<ul style="list-style-type: none"> ▪ Centroid of Gravity/Area ▪ First Moment of Area ▪ Distributed Load on Beam 	Pre-lecture Quiz5
	10/10	S15, S16, S17	<ul style="list-style-type: none"> ▪ Active discussion section 	
8	10/15	L21, L22, L23	<ul style="list-style-type: none"> ▪ Centroid of Volume / Gravity ▪ Truss/ Method of Joint ▪ Truss/ Method of Section 	Pre-lecture Quiz6
	10/17	S19, S20, S21	<ul style="list-style-type: none"> ▪ Active discussion section 	
9	10/22	L24, L25	<ul style="list-style-type: none"> ▪ Analysis of Frames ▪ Analysis of Machines 	Pre-lecture Quiz7
	10/24	S22, S23	<ul style="list-style-type: none"> ▪ Active discussion section 	
10	10/29	Midterm 2 (No discussion sections)		
11	11/5	L26, L27, L28, L29	<ul style="list-style-type: none"> ▪ Beam / Various Type of Loading ▪ Shear and Bending Moment Diagram ▪ Relation Between Shear and Bending 	Pre-lecture Quiz8
	11/7	S24, S25, S26, S27	<ul style="list-style-type: none"> ▪ Active discussion section 	
12	11/12	L30, L31, L32	<ul style="list-style-type: none"> ▪ Cables ▪ Law of Friction ▪ Wedges 	Pre-lecture Quiz9
	11/14	S28, S29, S30	<ul style="list-style-type: none"> ▪ Active discussion section 	
13	11/19	L35, L36, L37	<ul style="list-style-type: none"> ▪ Moment of Inertia Introduction ▪ Moment of Inertia by Integration ▪ Moment of Inertia of Composite Section 	Pre-lecture Quiz10
	11/21	S33, S34, S35	<ul style="list-style-type: none"> ▪ Active discussion section 	
(11/25 – 11/29) Thanksgiving Recess				
14	12/3	Midterm 3 (No discussion sections)		
15		No Final Exam		

* indicated videos should be watched **one day before** the class meeting - watching lecture videos (L) on Monday, problem solving videos (S) on Wednesday.

Summary of Course Grading:

Course Components	Weight
Midterm exams	50 %
Pre-lecture Quizzes	10 %
Homework	20 %
Teamwork activities	10 %
Class Participation and Weekly Reflections	10 %

Midterm exams

- There are 3 exams in person (60 minutes). Each exam contains 3-5 questions. The exam date and range are given below:
 - **9/24** Weeks 1-4
 - **10/29** Weeks 6-9
 - **12/3** Weeks 11-13
- Exams are closed books and closed notes. You can only have your calculator, paper, pencil, and eraser. There is no restriction on the calculator model for exams.
- Necessary equations and tables will be given as a part of the exam.
- Students with disabilities should contact the CSD to arrange their exams with proper accommodation, e.g. double-time extension, quiet space, etc.
- Make-up exams will be offered to students only in the following cases. The student must notify the instructor no later than **2 business before the exam** to arrange the make-up exam.
 - a) Athletic team members also can reschedule exams with a letter from their coach (in case of conflict between exams and their tournaments).
 - b) Another case (Medical emergency, family emergency,)
- **Only one exam** is allowed to make up, and the missed exam will be taken on **Friday, November 22nd, 11:00 AM- 12:00 PM.**

Pre-lecture Quizzes

- Before each week’s lecture session, you are required to review the textbook on CONNECT and finish pre-lecture quizzes there.
- There are 10 quizzes during the semester. The range of each quiz is listed in the Course Schedule above (in the syllabus), and the deadline for each quiz is 11:59 PM of the deadline (marked in the Course Calendar). Setting your electronic calendar (e.g. Google Calendar) on these dates is strongly recommended. Do not rely on HuskyCT’s automated calendar, it is your responsibility to keep the deadline for the quizzes.
- The number of problems in each quiz will be different based on your preparedness and confidence. Each quiz was designed to check your knowledge about the content; therefore, trying the quiz after reading textbooks and watching the pre-recorded videos is highly recommended to reduce the time.
- Due to the purpose of the quizzes (which have to be completed before Tuesday’s lecture), **no late submission is allowed**. However, to accommodate any emergency situation, there will be **one extra credit quiz** (Pre-lecture Quiz 11) is provided in the last week.

Homework

- There are 10 sets of homework during the semester. The homework is assigned through **McGraw Hill’s CONNECT** system, and it will be automatically graded.
- You can try unlimited attempts by the homework deadline, and the highest score will be used for grades.
- The homework deadlines are marked on the course calendar. The time of submission is 11:59 PM.
- **Late submission is allowed up to 48 hours with 1% deduction for each hour late**. For example, 1 hour late = 99% of your score, 24 hours late = 76% of your score. Submissions after 48 hours from the deadline will not be considered for points (0 points).

Teamwork Activities

- There are 11 sets of Teamwork activities during the semester. These are in-person activities for Thursday's active discussion sections. The score will be graded based on participation.
- Each Thursday, teams of 3 students will solve 1 problem together at the beginning of the active discussion section and graded the work real time. All participated students in each team will get credit regardless of correctness. Teams will be assigned with the designated table and posted on HuskyCT.
- If you do not attend the active discussion sections, you will NOT receive this point. To accommodate an emergency situation, 10 participations (out of 11 active discussion sections) will be regarded as perfect score (10 %).

Class Participation and Weekly Reflections

- Participation is from the I>clicker, surveys, and other active learning activity participation. No roll call is scheduled. Participation is NOT based on correct or wrong BUT based on participation.
- **Weekly Reflections:** Before adjourning Tuesday's lecture, students will reflect on each week's lesson using i<clicker, as a separate session.
- If you do not attend the lecture, you will NOT receive this point. To accommodate an emergency situation, 10 participations will be regarded as perfect score (10 %).

Grading Scale (subject to change):

Grade	Letter Grade	GPA	Grade	Letter Grade	GPA
93-100	A	4.0	73-76.99	C	2.0
90-92.99	A-	3.7	70-72.99	C-	1.7
87-89.99	B+	3.3	67-69.99	D+	1.3
83-86.99	B	3.0	63-66.99	D	1.0
80-82.99	B-	2.7	60-62.99	D-	0.7
77-79.99	C+	2.3	<60.99	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 appropriately.*

Professionalism and Expectations

Students must use appropriate language and behavior throughout the semester with the instructor, teaching assistants, and peers. Students are expected to keep up with the deadlines, and diligently complete assignments and exams on time. If there are any emergencies that need accommodation, students must contact the instructor as soon as possible to get proper accommodations. It is not allowed to request to make up any missed assignments or exams after the makeup exam date listed on this syllabus. Also, any requests to make up more than 50 % of course work after the make-up exam date will NOT be accommodated.

Feedback and Grades

You will receive automated online feedback and get solutions from CONNECT on your homework. Midterm exam results will be available to you in a week after the exam date. To keep track of your performance in the course, refer to My Grades in HuskyCT.

Weekly Time Commitment

You should expect to dedicate **9 – 12 hours a week** to this course. This expectation is based on the various course

activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. More information related to hours per week per credit can be accessed at the [Online Student website](#).

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. Review these important [standards, policies, and resources](#), which include:

- The Student Code
 - Academic Integrity
 - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.

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 [Blackboard's website](#))

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- HuskyCT/Blackboard ([HuskyCT/ Blackboard Accessibility Statement](#), [HuskyCT/ Blackboard Privacy Policy](#))
- [Adobe Acrobat Reader](#) ([Adobe Reader Accessibility Statement](#), [Adobe Reader Privacy Policy](#))
- Google Apps ([Google Apps Accessibility](#), [Google for Education Privacy Policy](#))
- Microsoft Office (free to UConn students through uconn.onthehub.com) ([Microsoft Accessibility Statement](#), [Microsoft Privacy Statement](#))
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- Webcam and microphone
- Webex (videoconferencing software): Anyone with a NetID can use the online conferencing tool WebEx. Use this service to host and attend online meetings with people inside and outside UConn. <https://its.uconn.edu/webex/>
- Refer to [the UConn accessibility policies](#).

Help

[Technical and Academic Help](#) provides a guide to technical and academic assistance.

This course is completely facilitated online using the learning management platform, [HuskyCT](#). If you have difficulty accessing HuskyCT, you have access to them in person/live person support options available during regular business hours through the [Help Center](#). You also have [24x7 Course Support](#) including access to live chat, phone, and support documents.

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the [Student Health and Wellness-Mental Health](#) (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and are also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor**, or contact the office at **(860) 486-4705**, or <https://studenthealth.uconn.edu/> for services or questions.

Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start to feel ill. If illness prevents you from attending class, it is your responsibility to notify your instructor as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with your instructor to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

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.
- Scan work and upload files.

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). In the end of the semester, the OIRE will send an email invitation to complete the Student Evaluation of Teaching (SET) individually. This anonymous survey can be completed using the link in the individual email.

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