



Syllabus for ENGR057-01: Statics and Dynamics

Fall 2021

Instructor: Mehmet Baykara

Designation:	ENGR 057
Catalog Description:	Fundamentals of statics. Kinematics and equations of motion of a particle for rectilinear and curvilinear motion. Planar kinematics of rigid bodies. Kinetics for planar motion of rigid bodies, including equations of motion and principles of energy and momentum.
Text Books and Other Required Materials:	Hibbeler, R.C. (2015) Engineering Mechanics: Statics and Dynamics, 14th Edition, Pearson. ISBN: 9780136852001 (available as e-text over CatCourses as part of the Inclusive Access (IA) program).
Course Objectives/ Student Learning Outcomes:	<ol style="list-style-type: none">1. Explain and demonstrate the role that analysis and modeling play in engineering design and engineering applications2. Construct free-body diagrams and calculate the reactions necessary to ensure static equilibrium3. Perform analysis of distributed loads4. Understand and calculate internal forces and moments in members5. Calculate centroids and moments of inertia6. Perform kinematic and kinetic analyses and energy and momentum methods for particles and systems of particles7. Perform kinematic and kinetic analyses and energy and momentum methods for rigid bodies8. Communicate about engineering systems using mathematical, verbal and visual means9. Describe how mechanics analysis fits into the larger framework of professional engineering
Program Learning Outcomes:	
Prerequisites by Topic:	MATH 021: Calculus I for Physical Sciences and Engineering PHYS 008: Introductory Physics I for Physical Sciences
Course Policies:	<ol style="list-style-type: none">1. Late arrivals to the classroom (beyond an initial grace period of 10 min.) are not allowed.2. Cell phone use during the lectures should be kept at a minimum for urgent purposes only.

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	3. No make-up exams / quizzes, unless there is an official doctor's note regarding a medical emergency.
	4. University policy on academic honesty concerning exams and individual work will be strictly enforced.
	5. Students are responsible for completing the reading from the textbook related to the topics covered in the lectures and for checking email / CatCourses regularly for important information and announcements related to the course.
	6. The quizzes, midterms and final exam will be closed book / notes. General formula sheets may or may not be distributed.
	7. HW sets will be distributed but not graded. They are simply meant to be used as a means to study for the in-class quizzes which will be held throughout the term.
Academic Dishonesty Statement:	<p>a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.</p> <p>b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.</p> <p>c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.</p>
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	See course calendar below.
Class/laboratory Schedule:	Lectures: T and R, 10:30-11:45am, SSB-160; Discussion Sessions: 02D – W, 1:30-2:20pm, ADMIN-350; 03D – W, 2:30-3:20pm, ADMIN-362; 04D – W, 12:30-1:20pm, ADMIN-353; 05D – W, 3:30-4:20pm, ADMIN-250
Midterm/Final Exam Schedule:	<p>Midterm Exam 1, Sep. 30, 2021, 10:30-11:45am, SSB-160</p> <p>Midterm Exam 2, Nov. 9, 2021, 10:30-11:45am, SSB-160</p> <p>Final Exam, Dec. 11, 2021, 3:00-6:00pm, SSB-160</p>
Course Calendar:	<p>1. General Principles & Force Vectors</p> <p>2. Equilibrium of a Particle</p>

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	3. Force System Resultants 4. Equilibrium of a Rigid Body 5. Review & Midterm 1 6. Analysis of Trusses and Frames 7. Distributed Loads & Springs 8. Kinematics of a Particle: Rectilinear Motion 9. Kinematics of a Particle: Curvilinear Motion 10. Kinetics of a Particle: Force and Acceleration 11. Midterm 2 12. Kinetics of a Particle: Work and Energy 13. Planar Kinematics of a Rigid Body 14. Planar Kinetics of a Rigid Body: Force and Acceleration 15. Review for Final Exam
Professional Component:	Engineering fundamentals: 75% Engineering applications: 25%
Assessment/Grading Policy:	Midterm Exam 1 (25%): Closed book / notes. Midterm Exam 2 (25%): Closed book / notes. Final Exam (30%): Closed book / notes. Quizzes (20%): A total of six to seven in-class quizzes will be held throughout the term, based on pre-assigned HW sets. The dates for the quizzes will be announced about one week in advance. Closed book / notes.
Coordinator:	Professor: Mehmet Baykara; TAs: Gokay Adabasi, Derek Hollenbeck
Contact Information:	Mehmet Baykara (Professor): mehmet.baykara@ucmerced.edu Gokay Adabasi (TA): gadabasi@ucmerced.edu Derek Hollenbeck (TA): dhollenbeck@ucmerced.edu
Office Hours:	Mehmet Baykara: W (3:00-4:00pm; Remotely via Zoom (https://ucmerced.zoom.us/my/mzbaykara)) Gokay Adabasi: F (1:00-2:00pm; AOA-142) Derek Hollenbeck: W (2:00-3:00pm; SRE 3rd Floor Lobby)