

Identification	Subject	Engineering Mechanics (ENGR 205) – 6 ECTS
	Department	Mechanical Engineering
	Program	Undergraduate
	Term	Fall 2026
	Instructor	Khalig Mammadov
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	Phone:	
	Classroom/hours	
	Office hours	
Prerequisites	Physics I	
Language	English	
Compulsory/Elective	Compulsory	
Required textbooks and course materials	Engineering Mechanics: Statics, 9 th edition J.L. Meriam, L.G. Kraige and J.N. Bolton, 2018	
Course website		
Course outline	Engineering Mechanics, a branch of physical science, centers on examining the effects of forces on objects, playing a vital role in both engineering analysis and industrial applications. In the realm of engineering, the application of mechanical principles is crucial for evaluating how forces and other factors impact diverse subjects or systems. The progress and breakthroughs in various fields heavily depend on employing these fundamental principles of mechanics, acting as the cornerstone for research and advancements in areas like vibrations, fluid dynamics, engine performance, and more. A thorough understanding of this subject is indispensable for professionals working in these domains and beyond. Furthermore, a strong grasp of Engineering Mechanics not only serves as a prerequisite for individuals in these fields but also lays the groundwork for a deeper comprehension of material sciences in subsequent courses, offering students a robust foundation for their future studies.	
Course objectives	Engineering Mechanics serves as a fundamental pillar for numerous evolving fields. Disciplines such as civil, mechanical, and agricultural engineering rely heavily on statics and dynamics, which form the core of this subject. Even in fields not directly linked to mechanical systems, such as robotic electronics or various manufacturing processes, the principles of Engineering Mechanics find application in different ways. Consequently, it holds a vital place in the engineering curriculum, offering a structured approach to tackling complex problems in advanced subjects like applied mathematics, physics, and material sciences. Furthermore, it strengthens students' problem-solving skills in their current studies while fostering a solution-oriented mindset.	
Learning outcomes	Upon successful completion of this course, students will acquire the following skills: 1. Apply Newton's laws of motion to address real-life problems. 2. Utilize vectors and their applications in both 2D and 3D coordinate systems. 3. Identify the moment of a force, calculate its value about a specified axis, and define the moment of a couple. 4. Determine force applications at different points. 5. Construct "Free Body Diagrams" for real-world problems, employing Newton's Laws of motion and vector operations to assess equilibrium in particles and bodies. 6. Apply the principles of equilibrium to analyze forces in planar truss members.	

	7. Provide an overview for the structural analysis of the beam construction which will be widely delivered in next course during strength of materials		
Teaching methods	Lecture		x
	Group discussion		x
	Experiential exercise		--
	Tutorials once a month on weekends		--
	Case analysis and assignments		x
	Course paper		--
	Others		--
Evaluation	Methods	Date/deadlines	Percentage (%)
	Midterm Exam		30
	Class Participation		5
	Assignment		15
	Quizzes		10
	Project		-
	Final Exam		40
	Total		100
Policy	▪ Use of Generative AI (GAI) Generative AI tools (e.g., ChatGPT, Copilot, Claude, Gemini) are permitted only for limited, supportive tasks. Permitted Uses: Brainstorming and structuring ideas or assignment outlines. Editing grammar, style, and language clarity of your own draft. Clarifying course concepts and reviewing background materials. Formatting and preparing presentation materials. Prohibited Uses: Core Content & Analysis: GAI must NOT be used to generate primary technical content, conduct data analysis, perform calculations, or formulate conclusions. All submitted work must reflect your own original analysis and understanding Exams & Quizzes: GAI use is strictly prohibited during all quizzes, midterm exams, and final exams. Disclosure & Academic Integrity: Mandatory Disclosure: Any permitted use of GAI must be explicitly disclosed at the end of the assignment (stating the tool used and its specific purpose). Violations: Undisclosed use, unauthorized use, or presenting GAI-generated content as your own constitutes an academic integrity violation and may result in a warning, mandatory resubmission, or a grade penalty/zero. • Ethics Copying another student's work is strictly prohibited. Each student must complete their assignments independently in accordance with university policies. Violations of this rule will result in disciplinary action. • Preparation for Class The structure of this course necessitates individual effort outside the classroom for additional practice on various problems found in the textbook. Following each		

session, every student is required to allocate sufficient time for practice and completion of assignments by the specified deadline. In the Engineering Mechanics course, students will encounter four assignments designed to reinforce both theoretical and practical understanding. Timely submission is crucial, as late assignments will incur a 10% daily penalty. To gauge students' comprehension of recent lecture topics, six quizzes will be administered as self-assessment tools. There will be no makeup quizzes unless there are documented emergencies or prior arrangements. The final grade will be determined based on assignments, quizzes, and a comprehensive final exam, with clearly provided grading criteria. Upholding academic integrity is imperative; therefore, ensure that your work is original, as plagiarism or cheating is strictly prohibited. If students have any queries or need clarification, do not hesitate to reach out to the instructor. • Withdrawal (Pass/Fail) This course adheres to the School of Engineering's grading policy, requiring a minimum score of 60% for a passing grade. Failure to meet this requirement will result in the need to retake the course in the following term or year. • Cheating/Plagiarism Any instance of cheating or plagiarism on assignments, midterms, or the final exam will result in automatic failure of the course. The student will receive a grade of zero (0) with no exceptions or considerations. • Professional Behavior Guidelines Students are expected to maintain professional conduct and contribute to a positive academic environment during class. Unapproved discussions and unethical behavior are strictly discouraged. ▪ Homework There will be a homework assignment for every chapter composed of exercises and problems. ▪ Attendance Students who attend the whole classes will get 5 marks. for three absence student loses 1 mark.			
Tentative Schedule			
Week	Date/Day (tentative)	Topics	Textbook/Assignments
1		Syllabus & Introduction	Chap 1
2		Force Systems (Two-Dimensional Force Systems): -Rectangular Components -Moment -Couple -Resultants	Chap 2
3		Force Systems (Three-Dimensional Force Systems): -Rectangular Components -Moment and Couple -Resultants	Chap 2
4		Equilibrium (Equilibrium in Two Dimensions): -System Isolation and the Free-Body Diagram -Equilibrium Conditions	Chap 3
5		Equilibrium (Equilibrium in Three Dimensions): -Equilibrium Conditions -Review	Chap 3

6		Structures: -Plane Trusses -Method of Joints -Method of Sections	Chap 4
7		Structures: -Space Trusses -Frames and Machines	Chap 4
8		Solve problems – Review - Delivery of assignments. Midterm	
9		Distributed Forces - Introduction Centers of Mass and Centroids: -Center of Mass -Centroids of Lines, Areas, and Volumes	Chap 5
10,11		Distributed Forces - Introduction Centers of Mass and Centroids: -Composite Bodies and Figures; Approximations -Theorems of Pappus	Chap 5
12		Special Topics -Beams - External Effects -Beams - Internal Effects -Flexible Cables -Fluid Statics	Chap 5
13		Area Moments of Inertia	Appendix A
14		Mass Moments of Inertia	Appendix B
15		Review – Solve problems - Delivery of assignments	
16		Final Exam	