Identification	**Subject**	ENGR 205 Engineering Mechanics, 6 ECTS
	Department	Mechanical Engineering
	Program	Undergraduate
	Term	Fall 2025
	Instructor	Khalig Mammadov
	E-mail:	khaliq.mammadov@khazar.org
	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 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,	

<table>
<tr><td></td><td colspan="3">which will be widely delivered in the next course on strength of materials</td></tr>
<tr><td rowspan="7">Teaching methods</td><td colspan="2">Lecture</td><td>x</td></tr>
<tr><td colspan="2">Group discussion</td><td>x</td></tr>
<tr><td colspan="2">Experiential exercise</td><td>--</td></tr>
<tr><td colspan="2">Tutorials once a month on weekends</td><td>--</td></tr>
<tr><td colspan="2">Case analysis and assignments</td><td>x</td></tr>
<tr><td colspan="2">Course paper</td><td>--</td></tr>
<tr><td colspan="2">Others</td><td>--</td></tr>
<tr><td rowspan="8">Evaluation</td><td>Methods</td><td>Date/deadlines</td><td>Percentage (%)</td></tr>
<tr><td>Midterm Exam</td><td></td><td>25</td></tr>
<tr><td>Class Participation</td><td></td><td>5</td></tr>
<tr><td>Assignment</td><td></td><td>15</td></tr>
<tr><td>Quizzes</td><td></td><td>15</td></tr>
<tr><td>Project</td><td></td><td>-</td></tr>
<tr><td>Final Exam</td><td></td><td>40</td></tr>
<tr><td>Total</td><td></td><td>100</td></tr>
<tr><td>Policy</td><td colspan="3">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.
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.
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.
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.
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</td></tr>
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	Students are expected to maintain professional conduct and contribute to a positive academic environment during class. Unapproved discussions and unethical behavior are strictly discouraged.

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**	