Identification	Subject	ME	361 Machine Elements I, 6 ECT	ſS	
	Department	Department Mechanical Engineering			
	Program	rogram Undergraduate			
	Term	Fall	2023		
	Instructor	Kha	lig Mammadov		
	E-mail:	khal	ig.mammadov@khazar.org		
	Phone:				
	Classroom/hours	Satu	rday 08:30 - 10:00 & 10:10 - 1	1:40	
	Office hours				
Prerequisites	Strength of Materials, Materials Science				
Language	English				
Compulsory/Elective	Compulsory				
Required textbooks and	Shigley's Mechanical Engineering Design 10 th edition- R.G. Budynas, J.K. Nisbett,				
course materials	2015	,	5 6 6		
Course outline	Mechanical enginee	rs are	closely linked to the creation	and production of machine	
Course outline	components Mecha	nical <i>i</i>	enosery linked to the creation	undamental pillar within the	
	field of mechanical	engin	eering with the primary object	ive of providing mechanical	
	engineering students	s with	a strong foundation in design	principles This foundation	
	equips them with the		ntial skills required to meticulo	usly prepare comprehensive	
	and precise calculati	ons fo	or machine elements	usiy prepare comprehensive	
	The course on machine elements consists of two parts. In the initial section it				
	encompasses a broad spectrum of topics, including general stress analysis failure				
	conditions, considerations for shafts, screws welded joints springs and the design of				
	various permanent and non-permanent joints. In the latter part, the course delives into				
	specific areas such a	s roll	ing contact and journal bearings	s gears clutches flywheels	
	flexible machine el	emen	t design, and the utilization of	of various analysis tools to	
	address these element	nts co	mprehensively.	,	
Course objectives	The primary objective of this course is to provide mechanical engineering students				
U	with a foundational understanding of design principles and essential skills necessary				
	for creating thorough, concise, and precise calculations for machine elements. The				
	initial segment of the course focuses on fundamental topics such as general stress				
	analysis, failure conditions, and the design of components like shafts and springs. By				
	the conclusion of this course, students will have the capability to formulate and				
	analyze stresses and strains within machine elements, including both permanent and				
	non-permanent joints. Additionally, they will acquire a comprehensive understanding				
	of static and fatigue design criteria.				
Learning outcomes	On successful completion of this course students will be able to:				
	1. Perform 3d s	stress	analysis and apply Mohr circle	theory, formulate and	
	analyze stresses and strains,				
	2. Apply multi	dimen	sional static failure and fatigue	criteria in the analysis and	
	design of mechanical components,				
	3. Analyze scre	ew and	d welding and the design of non	permanent and permanent	
	joints,				
	4. Analyze and	l desig	n power transmission shafts car	rying,	
	5. Analyze and	l desig	n mechanical springs,	r	
Teaching methods	Lecture			Х	
	Group discussion			Х	
	Case analysis and assignments x				
Evaluation	Methods		Date/deadlines	Percentage (%)	
	Midterm Exam			25	
	Class Participation			5	
	Assignment			10	
	Project			20	
	Final Exam			40	

		Total		100		
Polic	у	 Ethics Copy of other students' work is highly discouraged. All assignments must be handled by the student himself. This is a university policy and violators will be reprimanded accordingly. Preparation for class The structure of this course demands your individual effort outside the classroom for extra practice of many problems within the textbook. After each session, every student needs to put sufficient time to practice and finish the assignments by the predetermined date. Homework assignments will be an integral part of this course to reinforce learning and practice key concepts. Assignments will be assigned regularly and are due on specified dates. Late submissions will be accepted with a penalty of 10% per day. It is essential to complete and submit your homework on time, as it contributes to your understanding of the material. Detailed instructions and grading criteria for each homework assignment will be provided. Collaboration with fellow students is encouraged for understanding but not for copying. 				
		• Withdrawal (pass/fail) This course strictly follows grading policy of the School of Engineering. Thus, a student is normally expected to achieve a mark of at least 60% to pass. In case of failure, he/she will be required to repeat the course the following term or year.				
	 Cheating/plagiarism Cheating or other plagiarism in handling the assignments, Mid-term and Fi Examinations will lead to course failure. In this case, the student w automatically get zero (0), without any considerations. 					
		• Professional behavior guidelines The students shall behave in a way to create favorable academic and professional environment during the class hours. Unauthorized discussions and unethical behavior are strictly discouraged.				
		• Attendance Students who attend the whole classes will get 5 marks. for three absence student loses 1 mark.				
		• Assignment There will be a homework assignment for every chapter composed of exercises and problems.				
		• Project There will be a project for this course. You will be asked to present a final presentation and submit a project report.				
	Tentative Schedule					
Week	Date/Day (tentative)		opics	Textbook/Assignments		
1		Introduction to Mechanical	Engineering Design	Chap 1		
2		A review on Materials		Chap 2		
3		A review on Strength of Materials		Chap 3 & 4		

4	Failure Prevention	Chap 5
5	Failures Resulting from Static Loading	Chap 5
6	Fatigue Failure Resulting from Variable Loading	Chap 6
7	Fatigue Failure Resulting from Variable Loading	Chap 6
8	Fatigue Failure Resulting from Variable Loading, Midterms Exam	Chap 6
9	Shafts and Shaft Components	Chap 7
10	Shafts and Shaft Components	Chap 7
11	Screws, Fasteners,	Chap 8
12	Design of Nonpermanent Joints	Chap 8
13	Welding, Bonding, and the Design of Permanent Joints	Chap 9
14	Welding, Bonding, and the Design of Permanent Joints	Chap 9
15	Welding, Bonding, and the Design of Permanent Joints	Chap 9
16	Final Exam - Delivery of project	

This syllabus is a guide for the course and any modifications to it will be announced in advance.