Identification	**Subject**	CIV 420, Strength of Materials 6 ECTS	
	Department	Civil Engineering	
	Program	Undergraduate	
	Term	Fall 2023	
	Instructor	**Aynura Aliyeva**	
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	Classroom/hours		
	Office hours		
Prerequisites	Engineering Mechanics general understanding of rules and techniques of Phisic Mechanics		
Language	English		
Compulsory/Elective	**Elective**		
Description	general understanding of rules and techniques of Phisic Mechanics		
Required textbooks and course materials	Mechanics of Materials, F.P. Bear, E.R. Johnston, J.T. DeWolf, D.F. Mazurek Copies of the book is available in the library. Also, students are encouraged to Send an email to the instructor. The pdf file will be emailed back in 24h. .		
Course outline	Strength of materials, also called mechanics of materials, is a subject which deals with the behavior of solid objects subject to stresses and strains. The complete theory began with the consideration of the behavior of one and two dimensional members of structures, whose states of stress can be approximated as two dimensional, and was then generalized to three dimensions to develop a more complete theory of the elastic and plastic behavior of materials. An important founding pioneer in mechanics of materials was Stephen Timoshenko. Strength of materials is based on the understanding of basic concepts and on the use of simplified models. This approach makes it possible to develop all the necessary formulas in a rational and logical manner, and to clearly indicate the conditions under which they can be safely applied to the analysis and design of actual engineering structures and machine components.		
Course objectives	The main objective of the study of the strength of materials is to provide the future engineers with the means of analyzing and designing various machines and loadbearing structures. This course is aimed to develop in the engineering students the ability to analyze a given problem in a simple and logical manner and to apply to its solution a few fundamental and well-understood principles. This course in mechanics of materials or strength of materials is offered to engineering students in the sophomore or junior year.		
Learning outcomes	• Recongise physical phenomenon in the context of strength of materials, • Demonstrate an understanding of the structural mechanics theory for deformable bodies • Apply structural mechanics of deformable bodies to solve engineering problems • Demonstrate an understanding of the relationships between loads, member forces and deformations and material stresses and strains • Demonstrate an understanding of the assumptions and limitations of the structural mechanics theory • . Competence in problem identification, formulation and solution.		
Teaching methods	**Lecture**		x
	Experiential exercise		x
	Assisted work		x
	Assisted lab work		x
Evaluation	**Methods**	**Date/deadlines**	**Percentage (%)**
	Midterm Exam		30
	Class Participation and Attendance		5

	Quizzes		10
	homework		5
	Project (3 phases)		10
	Final Exam		40
	Total		100
Policy	• NO CELL PHONES are allowed during lecture and lab sessions. PLEASE turn them off before lecture! (Not silent or vibrating mode) • No late assignments will be accepted without prior arrangement with the instructor for acceptable excuses. Medical and family emergency will be considered on case-by-case basis. • No late homework will be accepted. Homework is to be completed on an individual basis. Students may discuss homework with classmates, but students are responsible for your own work. If students have consulted classmates, please note the individuals name on the top of students' assignment. • Quizzes may be given unannounced throughout the term and will count as one homework. There will be no make-up quizzes. • No make-up exams. If students miss an exam, a zero score will be assigned to the missed exam. • If students should miss class due to personal emergency or medical reasons, please notify the instructor by email immediately. A doctor's note will be required for make-up work. • Students are responsible for completing the reading assigned from the textbook related to the covered topics and for checking email regularly for important information and announcements related to the course. • University policy on academic honesty concerning exams and individual work will be strictly enforced. • BE ON TIME!		

Tentative Schedule			
Week	**Date/Day (Tentative)**	**Topics**	**Textbook/Assignments**
1		In troduction to the concept of stress	Chapter 1
2		In troduction to the concept of stress	Chapter 2
3		Stress and strain – axial loading	Chapter 3
4		Stress and strain – axial loading	Chapter 4
5		Tortion	Chapter 4
6		Pure bending	Chapter 4
7		Midterm exam	-
8		Case study	-
9		Case study	-
10		Analysis and design of beams for bending	Chapter 5
11		Shearing in beam and thin walls	Chapter 5
12		Transformation of stress and strain	Chapter 6
13		Cross structures, Aqueducts and transitions	Chapter 7
14			
15			
		Final Exam	

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