STRENGHT OF MATERIALS I

1	Course Title:	STRENGHT OF MATERIALS I
2	Course Code:	MAK2003
3	Type of Course:	Compulsory
4	Level of Course:	First Cycle
5	Year of Study:	2
6	Semester:	3
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Doç. Dr. BETÜL GÜLÇİMEN ÇAKAN
15	Course Lecturers:	Dr.Öğr.Üye. Kenan TÜFEKCİ Doç.Dr.Betül GÜLÇİMEN ÇAKAN Doç.Dr.Betül SULTAN YILDIZ
16	Contact information of the Course Coordinator:	bgulcimen@uludag.edu.tr
17	Website:	
18	Objective of the Course:	The purpose of this course is to help students apply basic principles of statics for rijid and deformable bodies and develop their engineering intuition for strength and deformation of engineering structures under external loadings. In addition, this course is intended to prepare students to apply design theory and approach that they learn for the mechanics of deformable bodies to complex systems that will be encountered in advanced design courses.
19	Contribution of the Course to Professional Development:	This course will enable students to apply design theory and approach that they learn for the mechanics of deformable bodies to complex systems that will be encountered in Professional experience.
20	Learning Outcomes:	
		1 Ability to calculate the stress and strains of the structures loaded by tension, compression, shear, torsion, bending and combined loading.
		2 Ability to determine the mechanical properties of a material considering the tensile tests and engineering curve
		3 bility to compute the elastic stress and strains when the temperature of a component is increased or decreased.
		4 Ability to compute the hoop and longiditional stress at thin-walled pressure vessels.
		5 Ability to derive the stress transformation formulas and determine the normal and shear stresses in any given section for a given stress state by using Mohr Circle for plain stress condition.
		6 Ability to draw shearing force and bending moment diagrams.
		7 Ability to determine the appropriate dimensions of beams under vertical loadings to safely carry their loads.
		8 Ability to solve torsion problems of circular shafts as solid or hollow bars.

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21	Course Content:	

Week	Theoretical	Practice
1	Definitions and content of course, basic assumptions of Strength of Materials	
2	Concepts of internal force and stress in structural elements, types of stress, axial loading, tensile test	
3	Concepts of normal stress and strain	
4	Shear stress and shear strains	
5	Thermal stresses, the general form of Hooke's Law and unit volume chance, constitutive equation	
6	Thermal stresses, the general form of Hooke's Law, constitutive equations	
7	Thin-walled pressure vessels	
8	Shearing force and bending moment diagrams	
9	Torsion of circular shafts as solid or hollow bars	
10	Bending, normal and shear stress in beams	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	4.00	56.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	10.00	10.00
Others	0	0.00	0.00
Final Exams	1	10.00	10.00
Total Work Load			128.00
Total work load/ 30 hr			3.93
ECTS Credit of the Course			4.00

| **22** | Textbooks, References and/or Other | 1.Mechanics of Materials, Russell C. Hibbeler, Pearson Johnston, John T. Dewolf, David F. Mazurek, McGraw-Hill. 2."Mukavemet Cilt:1", Onur Sayman, Ramazan Karakuzu |

23	Assessment		
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Midterm Exam	1	40.00	
Quiz	0	0.00	
Home work-project	0	0.00	
Final Exam	1	60.00	
Total	2	100.00	
Contribution of Term (Year) Learning Activities to Success Grade	40.00		
Contribution of Final Exam to Success Grade	60.00		
Total	100.00		
Measurement and Evaluation Techniques Used in the Course	Midterm Exam and Final Exam		

24	**ECTS / WORK LOAD TABLE**

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK6	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK7	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK8	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives   PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High