Óbuda University Donát Bánki Faculty of Mechanical and Safety Engineering				Institute for Natural Sciences and Basic Subjects (TAI)	
Name of the subject: Mechanics II., BBXMNE2BNE, BBXMNY2BNE **Credit*:* 4** *Academic year 2022/2023, spring semester*					
Programs for which the course is available: basic course of Mechatronic engineering (BSc)					
Subject leader:	Dr. Tibor J. Goda		Lecturer:	Dr. Tibor J. Goda	
Prerequsites:	Mechanics I. BBXMNE1BNE				
Weekly hours: 4	Lecture: 2	Practice: 2		Lab: 0	Consultation:
Requirements:	exam				

Course description:

This course provides a basic introduction to solid mechanics, especially to mechanics of deformable bodies; to develop confidence and competence in solving problems connected to strength of materials.

Shedule:

Week	Topic
1.	Fundamentals.
2.	Introduction to theory of elasticity. Stress state.
3.	NO TEACHING
4.	Principle stresses and directions. Mohr's circles.
5.	Strain state in 3D. Principle strains and directions.
6.	Relation of stress and strain state. Strain energy. Tension and compression.
7.	NO TEACHING
8.	Shearing and bending. Shear stresses in bended beam.
9.	Deformation, stress state and strain energy of bended beam.
10.	Torsion. Twisting of thin-walled pipes.
11.	Complex loads.
12.	Sizing for allowable stress.
13.	The maximum-shear-stress and the distortion-energy theory.
14.	Elastic and plastic buckling.

Tasks in semester

Week	Homework assignments	
3.	Hand out of the 1st homework assignment (Stress state in beams)	Due date: week 7
7.	Hand out of the 2nd homework assignment (Sizing of beams)	Due date: week 12

Conditions for the signature:

Students must participate in at least 70% of all classes and both homework assignments must be solved and submitted. Otherwise, the semester is invalid. If the quality of the homework does not reach the acceptable level then it must be revised and resubmitted before the end of the lecture period. For late submission of the homework extra fee must be paid.

The examination is available for students with signature only.

Examination: writing exam (max. 100 points).

The final grade will be established based on the points from the writing exam. Grading policy: 0-50 points: fail (1); 51-62 points: pass (2); 63-74 points: satisfactory (3); 75-84 points: good (4), 85-100 points: excellent (5).

Recommended books and notes:

[1] Dietmar Gross, Werner Hauger, Jörg Schröder, Wolfgang A. Wall, Javier Bonet: Engineering Mechanics 2: Mechanics of Materials, Springer (2011)

[2] Schaum's Outline Series; William A. Nash: Theory and Problems of strength of Materials, McGraw-Hill, 1998

Date: 01. February, 2023.

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subject leader