

Óbuda University Donát Bánki Faculty of Mechanical and Safety Engineering		Institute of Machine Design and Safety Engineering	
Name of the subject: Mechanics II., BGBMN2ENND		Credit: 4	
<i>Academic year 2016/2017, spring semester</i>			
Programs for which the course is available: basic course of Mechatronic engineering (BSc)			
Subject leader:	Dr. Tibor Goda	Lecturer:	Dr. Tibor Goda
Prerequisites:	Mechanics I. BGBMN1ENND		
Weekly hours: 4	Lecture: 3	Practice: 1	Lab: 0
Requirements:	exam		
Course description:			
This course provides a basic introduction to 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.	Principle stresses and directions. Mohr's circles.		
4.	Strain state in 3D. Principle strains and directions.		
5.	Relation of stress and strain state. Strain energy.		
6.	Tension and compression. Bar of uniform strength.		
7.	Shearing and bending. Shear stresses in bended beam.		
8.	Deformation, stress state and strain energy of bended beam.		
9.	Torsion. Twisting of thin-walled pipes.		
10.	Elastic and plastic buckling.		
11.	Combined loads.		
12.	Sizing for strength.		
13.	The maximum-shear-stress and the distortion-energy theory.		
14.	The theorems of Betti, Maxwell, and Castigliano		
Tasks in semester			
Week	Homeworks and test		
3.	Hand out of the 1 st homework	Due date: week 7	
7.	Hand out of the 2 nd homework	Due date: week 12	
	1 st midterm test: stress states in frames (25 point)		
13.	2 nd midterm test: stress and strain states in frames (25 point)		
Conditions for the signature:			
One must participate in at least 70% of all classes and both homeworks 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. Two midterm tests must be written. Make up tests are available to students who have missed an in-class exam due to illness. The date of make up tests will be announced by the lecturer. The sum of the points of the midterm tests must be no less than 25 (50%). Otherwise an additional test must be written on one of the first 10 days of the examination period. If the result of the additional test is below 50% then the semester is invalid and no signature will be given. The examination is available for students with signature only.			
Examination: writing exam (max. 50 point).			
The grade will be established based on the results of the midterm tests and the writing exam. Grading policy: 25-50 point: fail (1); 51-62 point: pass (2); 63-75 point: satisfactory (3); 76-88 point: good (4), 89-100 point: excellent (5).			
Recommended books and notes:			
Dietmar Gross, Werner Hauger, Jörg Schröder, Wolfgang A. Wall, Javier Bonet: Engineering Mechanics 2: Mechanics of Materials, Springer (2011)			

Date: 09. January, 2017.

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subject leader