

Óbuda University		Institute of Mechanical Engineering and Technology		
Bánki Donát Mechanical and Safety Engineering		Technology		
Course title and code: Structure and design of Machines BGXGT12MNF Credit: 4				
<i>Full-time 2024/2025. II. semester</i>				
Faculties in which the subject is taught: Mechanical engineer MSc				
Supervised by:	Dr. Ancza Erzsébet		Instructors:	Dr. Czifra Árpád docens
Prerequisites conditions:				
Lessons per week:	Lecture:2	Practise:1	Laboratory: 0	Consultation:--
Exam type	exam			
Syllabus				
Aim: <i>The aim of the subject is to familiarize students with the stress states that develop in machine structures, the stresses that occur in welds, the principles of design of structures according to EUROCODE, and the construction designs from a welding perspective.</i>				
Curriculum: Stress state. Stress concentration. Stresses in welded joints. Fatigue design of welded structures. Design for welding.				
Week	Topics			
1.	Mechanical stresses. Stress state. Announcement of 1st-4th Homework.			
2.	Principall stresses, theories of failures.			
3.	Discussion about 1st HW.			
4.	Nominal stress and stress concentration. Submission of 1st Homework			
5.	Material properties; design criteria.			
6.	Butt and fillet welds. Stresses in welds.			
7.	Discussion about 2nd and 3rd HW.			
8.	Stress calculation of welded joints. Submission of 2nd Homework			
9.	Cyclic load, fatigue.			
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11.	Stress concentration of welded joints. Submission of 3rd Homework			
12.	Fatigue design of welded structures.			
13.	Discussion about 4st HW.			
14.	Design for welding. Submission of 4th Homework			
Conditions for the signature: <i>Four obligatory homework's must be solved and submitted until the deadline. Students can collect maximum 10 points with each Homeworks. Wrong and/or not accepted homework's (less than 4 points) should be submitted again. The sum points of Homeworks must be no less than 20 (50%) to get a signature. Offered grade is based on the semester points (max 40): 31-35 points: good (4), 36-40 points: excellent (5)</i>				
Method of replacements: <i>In case of failed tests, one replacement test can be written in the first 10 day of exam season.</i>				
Examination: written (40 points). <i>Examination notes (based on the sum of the semester and exam points): 0-40 point: fail (1); 41-50 points: pass (2); 51-60 points: satisfactory (3); 61-70 points: good (4), 71-80 points: excellent (5).</i>				
Literature:				
1. <i>Schaum's Outline Series; William A. Nash: Theory and Problems of strength of Materials, McGraw-Hill, 1998</i>				
2. EN 1993-1-9: Eurocode 3: Design of steel structures				

Date: 2025. 02. 01.

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Dr. Árpád CZIFRA