Course title: Continuum Mechanics	**Neptun code: GEMET401-a**
Course coordinator: Gyorgy SZEIDL, Professor Emeritus, DSC	
type and number of lesson: 2 lectures/ week	
method of accountability: colloquium	
curriculum location of the subject: **autumn**/spring	
pre-study conditions: -	
The task and purpose of the subject:	
The main objective of the course is to provide a concise introduction to continuum mechanics. Within the framework of the course, special emphasis is given to the nonlinearity of those equations which describe the deformations. A further aim is to introduce the basic concepts, the relevant principles and the methodology in such a way as to enable students to use commercial finite element programs for solving the nonlinear problems of continuum mechanics.	
Course description:	
Fundamentals of the tensor algebra and tensor analysis using index notation. Nonlinear theory of continuum motion and deformation. Lagrange's and Euler's methods of negotiation. Time derivatives of the most important kinematic quantities by introducing the concept of material time derivative. Linear theory of deformation. Stress tensors. Equation of continuity, equations of motion, the first and second laws of thermodynamics. Virtual power and virtual work principles. Constitutive equations. Primal and dual systems of equations in the linear theory of elasticity. Extremum principles of elasticity.	
Required literature:	
1. Gyorgy Szeidl and Imre Kozak: Introduction to Continuum Mechanics of Solid Bodies, 2023. (Lecture notes typeset by LATEX. They are given freely to the students in pdf format.)	
Recommended literature:	
1. Morton E. Gurtin: An Introduction to Continuum Mechanics, Academic Press, 1981.	