

Course title: Finite Element Method	Neptun code: GEMET407-a
Course coordinator: Dr. Attila Baksa, PhD, associate professor	
type of lesson and number of lessons: lecture (2)	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions (<i>if any</i>): -	
The task and purpose of the subject:	
By mastering the course material, the student will learn the mathematical and mechanical foundations and terminology of finite element modeling. Additionally, they will receive an introduction to the use of a commercial finite element software system through the solution of several simpler and a few more complex problems in solid mechanics and/or dynamics.	
Course description:	
Obtaining approximate solutions for mathematical and/or mechanical models with some accuracy is one of the most important goal of presents engineers. The main topics are as follows: finite element method (FEM) historical background, local approximation, theory of elasticity with variational principles, equations, isoparametric elements in two- and three-dimensions, h- and p- extension finite elements, modeling some special mechanical problems. Introduction to the use of a commercial finite element program with examples for some models in statics and dynamics.	
Required literature:	
<ol style="list-style-type: none"> 1. Logan, D.L.: First Course in the Finite Element Method, Enhanced Ed., SI version, Cengage Learning Inc, 2022. 2. Bathe, K.J.: Finite Element Procedures, Prentice-Hall, Englewood Cliffs, 1996 	
Recommended literature:	
<ol style="list-style-type: none"> 1. Fish, J. and Belytschko, T.: A first course in finite elements, John Wiley & Sons, Chichester, 2007. 2. Smith, I.M., Griffiths, D.V. and Margetts, L.: Programming the Finite Element Method, John Wiley & Sons, 5th. ed., 2013. 	