

Course title: Optimization Methods	Neptun code: GEMAK413-a
Course coordinator: Attila Körei, associate professor, PhD	
type and number of lesson: 28 lectures / semester	
method of accountability: colloquium	
curriculum location of the subject: autumn	
pre-study conditions: GEMAN411-a	
The task and purpose of the subject:	
Overview of linear and nonlinear optimization problems. Modelling of optimisation problems. Study of basic optimization algorithms. Solving optimization problems in engineering practice by computer.	
Course description:	
Basics of constrained and unconstrained optimization. Methods for solving linear programming problems. Duality and sensitivity analysis. Hyperbolic and quadratic programming. Integer programming models. Multipurpose optimization. General solution methods for nonlinear optimization problems. Description of the most well-known optimization software.	
Required literature:	
<ol style="list-style-type: none"> 1. Niclas Andreasson, Anton Evgrafov, and Michael Patriksson: An Introduction to Optimization: Foundations and Fundamental Algorithms, Göteborg, 2013. 2. Rao, S. S.: Engineering Optimization: Theory and Practice, John Wiley & Sons, 2020. 	
Recommended literature:	
<ol style="list-style-type: none"> 1. Kenneth Lange: Optimization, Springer, 2013. 2. Winston, W. L, Operations Research, Applications and Algorithms, Thomson, Brooks/Cole, 2004. 3. Nocedal, J., Wright, S. J.: Numerical Optimization, Springer, 2006. 	