Course title: Numerical Methods I.	Neptun code: GEMAK411-a

Course coordinator: Dr. Attila Körei, 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 *(if any)*: -

The task and purpose of the subject:

Introduction of numerical analysis methods and algorithms for approximate solutions of mathematical problems. Solving numerical problems in engineering practice using computer.

Course description:

The process of mathematical modelling. Error sources, types of errors.

Numerical solution of linear systems of equations, eigenvalue problems.

Methods of solving nonlinear equations and systems of equations.

Interpolation problems, method of least squares.

Numerical differentiation and integration.

Case studies.

Required literature:

1. Steven C. Chapra, Raymond P. Canale: Numerical Methods for Engineers, 2015, McGraw-Hill Education

2. Holly Moore: MATLAB for Engineers, 2022, Pearson Education Inc

Recommended literature:

1. Timothy Sauer: Numerical Analysis, 2012, Pearson Education Inc.

2. Richard W. Hamming: Numerical Methods for Scientists and Engineers, 2012, Dover Publications

3. E. Ward Cheney, David R. Kincaid: Numerical Mathematics and Computing, 2012, Wadsworth Publishing